

**PROCEEDINGS OF
2017 INTERNATIONAL CONFERENCE
ON PUBLIC ADMINISTRATION (12th)
& INTERNATIONAL SYMPOSIUM ON
WEST AFRICAN STUDIES (1st) (Volume I)**

November 14-17, 2017

Accra & Cape Coast, Ghana

Editors in Chief

TANG Zhiwei

ZHAO Shurong

Co-Sponsored by

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Supported by

**School of Political Science and Public Administration
of UESTC, P.R. China**

Center for West African Studies of UESTC, P.R. China

***Chinese Public Administration Journal*, P.R. China**



UESTC Press

图书在版编目（CIP）数据

2017 公共管理国际会议（第十二届）暨西非研究论坛
（第一届）论文集 = Proceedings of 2017 International
Conference on Public Administration(12th) & International
Symposium on West African Studies (1st): 英文 / 汤志伟,
赵蜀蓉主编. —成都:电子科技大学出版社, 2017.10
ISBN 978-7-5647-5222-4

I. ①2… II. ①汤… ②赵… III. ①公共管理—国际
学术会议—文集—英文 IV. ①D035-53

中国版本图书馆 CIP 数据核字（2017）第 252454 号

2017 公共管理国际会议（第十二届）暨西非研究论坛（第一届）论文集

Proceedings of 2017 International Conference on Public Administration (12th) & International
Symposium on West African Studies (1st)

汤志伟 赵蜀蓉 主编

策划编辑 张 琴 吴艳玲
责任编辑 吴艳玲

出版发行 电子科技大学出版社
成都市一环路东一段 159 号电子信息产业大厦九楼 邮编 610051

主 页 www.uestcp.com.cn
服务电话 028-83203399
邮购电话 028-83201495

印 刷 成都金龙印务有限责任公司
成品尺寸 185 mm × 260 mm
印 张 64.5
字 数 2040 千字
版 次 2017 年 10 月第一版
印 次 2017 年 10 月第一次印刷
书 号 ISBN 978-7-5647-5222-4
定 价 980.00 元（全套）

版权所有，侵权必究

Designing Editor: Zhang Qin Wu Yanling

Executive Editor: Wu Yanling

Published by

University of Electronic Science and Technology of China Press (UESTC Press)

Add: No. 159 Electronic Information Building, Eastern Section One, Ring Road One, Chengdu

Postcode: 610051

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Proceedings of 2017 International Conference on Public Administration (12th) & International
Symposium on West African Studies (1st) (Volume I)

Editors in Chief: TANG Zhiwei ZHAO Shurong

Http://www.uestcp.com.cn

E-mail: uestcp@uestcp.com.cn

Publisher: Xin Hua Book Store

Printed by

The Printing House of Chengdu Jinlong Co., Ltd.

Format 185mm×260mm Printed Sheet 64.5 Words Quantity 2 040 000

First Edition: October 2017

First Printing: October 2017

ISBN 978-7-5647-5222-4

A Set Price: RMB 980.00

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Foreword

Whether grappling with natural disasters or delivering day-to-day public services as education or healthcare, public bodies increasingly must work with other organizations to get the job done. Similarly, government managers themselves often need to identify and address risks in ways that require cooperating across multiple organizations to reduce the potential for serious harm.

The growth of complexity is a major reason for these developments—that is, increased complexity in the types of services that public bodies deliver; waves of technology; and organizational sprawl. To the extent that complexity leads to problems that extend beyond any one organization’s boundaries, these problems are likely to be with us for a long time.

2017 ICPA will address ways of managing governmental organizations to focus problems or deliver services that require cooperation across organizational boundaries. What kinds of governance work best to ensure collaborative efforts across governmental organizations—or between government and such private organizations as NGOs, for-profit contractors and other third-parties—that ensure effective public service delivery? How should these relationships be structured? Can new technologies help to bridge organizational gaps and provide public services seamlessly? The first ISWAS will address ways of having the issues, challenges and problems facing western African countries in the process of economic and social development settled as Africa is currently one of the most dynamic developing regions worldwide.

The *Proceedings 2017 International Conference on Public Administration (12th) & International Symposium on West African Studies (1st)* encompass a wide-ranging analysis and examination of excellence and innovation in public administration research and practice. *The Proceedings of Volume I* contain Part One and Part Two with a rich and broad collection of ideas and research findings directed at *Managing across Organizational Boundaries: Innovation and Collaboration* and *Promoting Social and Economic Development in West Africa from Global Perspective* respectively.

The collections of papers are authored by academics and practitioners worldwide, promising to advance public administration research and practice from Governance and Management to Improve Cooperation Across Organizations, Public Private Partnerships, Reducing Complexity When Delivering Public Services, Managing Risk Across Organizational Boundaries, Encouraging Collaborative Behavior by

Public Officials, Social Equity and the Quality of Inter-organizational Cooperation, Big Data and Effective Network Management, Theory and Practice on Cross-boundary Governance respectively and how to promote social and economic development for Western African countries from global perspective.

The submissions of *2017 International Conference on Public Administration (12th) & International Symposium on West African Studies (1st)* have amounted to Five Hundred and Twenty-Eight pieces from both China and abroad by experts, scholars and practitioners to School of Political Science and Public Administration of University of Electronic Science and Technology of China and American Society for Public Administration respectively. After peer reviews by 2017 ICPA Academic Committee, the papers collected in *Proceedings of 2017 International Conference on Public Administration (12th) & International Symposium on West African Studies (1st) (Volume I)* are One Hundred and Thirteen, which offers a wide array of new knowledge and information on subjects that public administrators and scholars should find out some valuable and practical uses.

The *2017 International Conference on Public Administration (12th) & International Symposium on West African Studies (1st)* bring together an array of authors and topics drawn from many countries and regions and attracted international interests and inquiries from scholars and public administration practitioners in China, Ethiopia, Ghana, India, Indonesia, Japan, Macao SAR of P.R. China, Netherland, Nigeria, Philippines, South Africa, South Korea, Uganda, the United Kingdom, the United States and Zambia. The Twelfth International Conference on Public Administration (12th) & International Symposium on West African Studies (1st) were truly international.

ACKNOWLEDGEMENT

Sincere Thanks to

All Those Who have Always Supported and Will Go on Supporting ICPA & ISWAS.

Sincere Thanks to

All Co-sponsoring Institutions That have Always Made Great Contributions for the Successful Holding of ICPA & ISWAS.

Editors in Chief

Tang Zhiwei

ZHAO Shu-rong

October, 2017

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Part One

Managing across Organizational Boundaries: Innovation and Collaboration

Key Elements of a Freedom of Information Law

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Abstract In the US, there is a federal Freedom of Information Act (FOIA) that applies to federal agencies only. The FOIA was initially enacted in 1966 and completely revised in 1974 in reaction to the Watergate scandal. Each of the 50 states has enacted its own version of such a law. In New York, the analogous statute is the Freedom of Information Law (FOIL), which was enacted in 1974. It, too, was substantially revised, but its structure has remained intact since 1978. Dozens of nations have also enacted access to information laws. Although there are similarities among them, all differ in some respects. A key element of an FOI law should be a presumption of access; the overriding principle is that government information must be disclosed, unless disclosure would “hurt”—an individual, a governmental function, or a private entity in relation to its competition. The focus involves flexibility, common sense, and the basic question: what would happen if the government disclosed? Also important are a strong statement of legislative intent useful to courts or other decision-makers, as well as definitions that clearly indicate the scope of an FOI law in terms of the nature of information and entities included within its coverage. Exceptions to rights of access should be based on standards involving potentially harmful effects of disclosure, and the law must incorporate information technology to enable as many as possible to effectively gain access to information. The government should bear the burden of defending secrecy, and final determinations must be made by an independent official or body. It is critical that the official or body be free of political influence to be trusted by the public.

Key words Freedom of information law, Culture of openness, Common sense

Introduction

Key elements of a freedom of information law

“Knowledge will forever govern ignorance, and a people who mean to be their own governors, must arm themselves with the power knowledge gives. A popular government without popular information or the means of acquiring it, is but a prologue to a farce or tragedy or perhaps both”—James Madison, 4th U.S. president, August 4, 1822

With those words, James Madison has been credited as the father of freedom of information (“FOI”), and as the world has become more complex and nations more interdependent, they are more significant now than ever before.

The notion is simple: public records belong to the people—not elected officials, and not bureaucrats. They are prepared at public expense for the benefit of the public, and every citizen should have an explicit right of access to public records.

A well-crafted FOI law is based on a presumption that government records must be made available, unless disclosure would result in identifiable harm. Access to records should be denied only for extraordinary reasons, and only when exceptions to rights of access are spelled out in law. In short, disclosure by the government should be the rule, not the exception.

Building a culture of openness

In the state of New York, the Freedom of Information Law¹ is typically referenced as “FOIL”, and the term “FOIL” has become part of the language; it is both a noun and a verb. A person might submit a “FOIL” to gain access to records of an agency of state or local government; that person might say that he or she “FOILED” the records; and the government might indicate that it was “FOILED.” The term has also become an adjective; is this record “foilable?” Often people may not know what the

¹ New York (hereafter “NY”) Public Officers Law, sections 84-90.

letters stand for—but they know what the letters mean and recognize that they have a right of access to government information. The mere existence of an FOI law should create an expectation of openness.

The first modern FOI law was signed into law in the United States in 1966¹ and substantially amended, due largely to Watergate and other scandals, in 1974. By the early 1980's, each of the fifty states engaged in a quiet but important revolution, resulting in the enactment of a FOI law of some sort. Today there are approximately ninety nations that have joined the movement by enacting laws designed to facilitate access to government records, and several more are currently considering FOI laws.

The expansion of access, also characterized as “transparency”, has arisen in response to the demands of civil society organizations and the news media, as well as the needs of the commercial sector. While the impetus for the passage of FOI laws is often grounded in democratic principles, even nations with minimal motivation based on those precepts have considered FOI as necessity. China, for instance, is involved in FOI, due to its interest in being an active player in the world marketplace, and the World Bank, the International Monetary Fund and others have actively encouraged nations to adopt access laws in order to reduce corruption. There is a recognition of a need for a structure, for a degree of certainty that enables the public, and the business community as well, to know that certain records will be accessible, while others will be protected.

The reality is that the development of a “culture of openness” is beneficial to the public and the government. An FOI law serves as a means of guaranteeing accountability, checking corruption, economically benefitting the poor, improving many areas of human rights, and encouraging participation in government by every sector of society, especially those that have historically been the have nots. Disclosure serves as means of enhancing the public's understanding of the functions of government, not only by making available records reflective of decisions, but also those used in decision-making. The more that is disclosed about the decision-making process, about what the government is up to, the greater is the trust in government. The more the public, the average person, whether rich or poor, can know about how his or her government functions, the more level is the playing field, and greater is the likelihood of fairness by the government.

The right to gain access to information as a means of enabling people to express opinions has been considered a basic human right. Article 19 of the Universal Declaration of Human Rights, approved and adopted by the United Nations in 1948 states that: “Everyone has the right to freedom of information and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.”

The overriding principle: Common sense

The overriding principle is that government records must be disclosed, unless disclosure would “hurt”—an individual in terms of an invasion of privacy, the government in carrying out its duties in a manner most beneficial to the public, or a private company in relation to its competitors. The primary question should be, very simply: What would happen if the government disclosed? If the answer, the common sense response, is that the kinds of harm described would arise, there should be basis for denying access. Conversely, if disclosure would not “hurt”, significantly, there should be no basis for a denial.

It is emphasized that exceptions to rights of access should reflect flexible standards and a recognition that the effects of disclosure may change due to the passage of time or the occurrence of events. If a crime is committed today and is currently under investigation, disclosure of records might interfere with the investigation. In that kind of situation, records may properly be withheld. If, however, the perpetrator is found and convicted, it is likely that records that could properly have been withheld may become available, for the harmful effect of disclosure, interference with a governmental function, may have disappeared. Government officials must constantly be reminded that embarrassment is not one of the grounds for denying access. It may be embarrassing to disclose the salary of a public official, but the people should have the right to know, for they are paying the salary.

1 Federal Freedom of Information Act, 5 USC section 552.

A Clear statement of intent

While the public and government officials should know what an FOI law is about, often there is a need to be reminded of why the law was enacted. In many jurisdictions, the legislative body that drafts the law will include, at the beginning of the enactment, a clear and unequivocal statement of intent. Words that express the foundation of and the need for the law are useful to citizens dealing with recalcitrant government officials, the officials themselves when faced with difficult decisions, and judges or others who are given the authority to determine rights of public access.

The introductory section of the New York FOIL, the legislative declaration, is a typical example of a statement of legislative intent:

“The legislature hereby finds that a free society is maintained when government is responsive and responsible to the public, and when the public is aware of governmental actions. The more open a government is with its citizenry, the greater the understanding and participation of the public in government. “As state and local government services increase and public problems become more complex and therefore harder to solve, and with the resultant increase in revenues and expenditures, it is incumbent upon the state and its localities to extend public accountability wherever and whenever feasible.” The people’s right to know the process of decision-making and to review the documents and statistics leading to determinations is basic to our society. Access to such information should not be thwarted by shrouding it with the cloak of secrecy or confidentiality. The legislature therefore declares that government is the public’s business and that the public, individually and collectively and represented by a free press, should have access to the records of government in accordance with the provisions of this article.”

Coverage of the law

An obvious but key aspect of an FOI law involves which entities are covered. In general, laws of that nature include governmental entities, entities characterized as “public bodies” or “agencies.” Frequently, one FOI law will pertain to a national or federal government, and others will apply to the states, provinces or similar, more local districts within the nation. In the United States, Canada, Mexico and Japan, for example, one statute deals with records of national government agencies, and each state, province and prefectural government has enacted its own version of a law dealing with public access to records of the governmental entities within that unit, i.e., those of counties, cities, towns, villages, public school districts and publicly owned corporations, such as transit systems, power companies and the like. Some FOI laws also include entities that receive government funds or that contract with the government.

A critical ingredient involves defining what information is included within the scope of an FOI law. When the law deals with access to records, the term “record” should be defined. If a definition of “record” is narrow, the law may have limited utility. Some FOI laws include only those records that are required to be kept or filed by the government. Older FOI laws might include only paper records within the scope of rights of access.

Better is a definition that acknowledges a presumption of access and that can accommodate changing technology. One such provision defines the term “record” to mean “any information, in any physical form whatsoever, kept, held, filed, produced or reproduced by, with or for” a government agency.¹ That definition was drafted in 1977 when few had computers, when there was no internet, when e-mail did not exist, and before government agencies began to contract with private companies or non-profit entities to carry out functions on their behalf. Because of its breadth, that definition has been crucial in ensuring that rights of access exist when dealing with requests for records maintained electronically and in situations in which records are prepared or kept for the government by a private entity or consultant.

Often related laws pertain to records management, their retention and disposition. Archivists, in collaboration with government officials familiar with records of their agencies, can develop schedules indicating that certain records must be retained for designated periods of time before they may be destroyed or discarded. The more important or significant is the record, the longer it must be retained.

Information technology experts can assist in the design of electronic information systems in a way

1 NY Public Officers Law, section 86(4)

that can maximize access and, at the same time, serve to protect personal privacy. For example, a database containing items regarding the incidence of a particular disease can be designed in a way that enables the government agency to electronically separate those items that are personally identifiable, nobody's business, such as the names and addresses of persons afflicted with the disease, from the remaining data, which can be made available to the public.

Presumption of access and limited exceptions

The law should provide that all government records are accessible, except those records or portions of records that fall within the grounds for denial of access that are listed in the law. Access laws should not involve "all or nothing." There are many instances, as in the case of the database relating to the incidence of disease, in which some aspects of the record might justifiably be withheld, but in which the remainder of the record must be disclosed.

An FOI law should also be permissive. It should provide in most instances that government may withhold records or portions of records in accordance with exceptions, but that it is not required to do so. The situations in which government must withhold often relate to other statutes that exempt records from disclosure, as in the case of national defense, or to protect personal privacy with regard, for example, to medical or mental health records.

Statutory Exemptions

Legislative bodies often create exemptions from disclosure in separate statutes that deal with particular records, and an FOI law ordinarily does not affect those exemptions. Medical, mental health, personal income tax and similar records may be exempted from disclosure by other statutes.¹

Protection of Personal Privacy

In the United States, access laws typically provide that government agencies can withhold records insofar as disclosure would result in "an unwarranted invasion of personal privacy"; in Canada, access laws refer to the ability to when disclosure would result in an "unreasonable" invasion of privacy. Despite their vagueness, those standards offer the flexibility to deal with changes in the sensibilities of society and particular factual situations. Generally, if an item of information would be viewed by the reasonable person of ordinary sensibilities as intimate or highly personal, government should ordinarily have the ability to deny access.

Frequently the standards regarding privacy are applied differently with respect to government officials and employees. In short, government officials and employees are generally required to be more accountable than others, and the records that are relevant to the performance of their official duties should be accessible to the public. We have choices when we want to have dinner— we can eat at home or choose from any number of restaurants. But we have only one government, and that government and its employees have a responsibility to be accountable to the public. Salary and attendance records, for example, are often accessible to public, because the public has the right to know how much they are paying government employees and when and whether they work when they are scheduled to do so.

In my work as a public employee, I provide workshops, seminars and other kinds of presentations throughout my jurisdiction. When I travel, either in a personal car or by train, I incur expenses. When I return to the office, I complete a voucher for reimbursement that indicates where I went, what I did, how many miles I drove, and the tolls or fares that I paid. Each of those items would be relevant to the performance of my official duties, and disclosure would result in a permissible, not an unwarranted invasion of my privacy, and they must be disclosed. To be paid, however, I must include my social security number on the voucher. That item has nothing to do with the performance of my official duties and may be deleted because disclosure of that item would clearly constitute an unwarranted invasion of privacy.

Misconduct on the part of government officials or employees is often a critical element in relation to the possibility of corruption or abuse. If there is a finding or admission of misconduct, the record containing a conclusion of that nature should be public. Clearly a finding that a public official or employee has violated a rule or has in some way violated the public trust bears upon how well or

¹ See, e.g., NY Public Health Law, section 18, NY Mental Hygiene Law, section 33.13, NY Tax Law, section 697(e)

poorly that person has carried out his or her official duties. Disclosure in that instance would constitute a permissible rather than an unwarranted invasion of personal privacy. On the other hand, if there is a wholly unsubstantiated complaint regarding a public employee, or if following an inquiry, it is determined that the complaint is without merit and is dismissed, disclosure may substantially damage the reputation of the subject of the complaint. In that case, it may be contended that disclosure of the unsubstantiated complaint, charge or allegation would be improper.

Internal Governmental Communications—The “Deliberative Process Privilege”

In most jurisdictions, there is either a legislative enactment or a common law principle relating to what may be known as “executive privilege” or the “deliberative process privilege”; sometimes reference is made to “cabinet confidences.” The notion is that government officials and employees should have the ability to express their opinions, recommendations, advice and ideas without a requirement that those kinds of written communications be disclosed. All of us, I am sure, have made brilliant recommendations, but sometimes our recommendations may have been creative but crazy. If all such recommendations had to be disclosed, those in an advisory role would be reluctant to offer advice, and realistically, decision makers need as much advice as possible in order to make appropriate decisions. In the United States, those communications are described as “inter-agency or intra-agency” materials or memoranda, and they may be withheld. However, the ability to deny access is restricted to deliberative material; statistical or factual information within those materials, expressions of policy or government determinations must be disclosed. Again, within a single record, portions consisting of opinions might properly be withheld, but others consisting statistics or facts should ordinarily be disclosed.¹

Often, particularly at the local or state agency level, the agency lacks the staff or expertise to engage in a certain kind of function, and it may retain experts or consultants to offer guidance or assistance. In New York, the state’s highest court has determined that a consultant retained by an agency is essentially an extension of the agency, and that the records prepared by the consultant for the agency should be treated as though they were prepared by agency employees. Consequently, they have been found to be “agency records” that fall within the exception concerning “intra-agency” materials. The Court, however, was careful to point out that while opinions and recommendations contained within those materials may be withheld, other portions of the materials consisting of statistical or factual information must be disclosed, unless a separate exception may properly be asserted.²

Public Safety and Security

Providing safety and security is a primary function of government, and the government must have the ability to withhold information when disclosure could interfere with its proper law enforcement functions or impair its capacity to protect the public from harm.

Most national FOI laws include provisions dealing with national security. It is reemphasized that exceptions to rights of access should include a standard relating to some sort of jeopardy that could arise by means of disclosure. A law should not authorize the government to deny access when records merely relate to national security; it might provide, however, the authority to deny access when disclosure would impair the government’s ability to secure its borders, ensure the safety of its citizens, or to shield its military secrets or intelligence.

Since the events September 11, 2001 and the attack on New York City and Washington, governments have been reviewing their laws dealing with access in an effort to attempt to improve public safety and security, while at the same time preserving rights of access to government information. An exception to rights of access in the New York FOI law has stated since 1978 that government may withhold records to the extent that disclosure “could endanger the life or safety of any person.”³ That provision has served the public and government well by offering the flexibility needed to reach conclusions regarding disclosure based on common sense and consideration of the effects of disclosure.

After September 11, local government agencies in New York began to reevaluate their disaster

1 See, e.g., NY Public Officers Law, section 87(2)(g)

2 Xerox Corporation v. Town of Webster, 65 NY2d 131

3 NY Public Officers Law, section 87(2)(f)

preparedness plans, and inquiries were received within the span of a week from officials of two agencies raising issues regarding disclosure of the plans. One asked whether the disaster preparedness plan should be placed on the agency's website; the other asked whether the disaster preparedness plan may be shielded in its entirety. To respond, the same questions were raised concerning each of the inquiries. First, are there aspects of the plan which if disclosed would enable citizens to be safer and more secure? The response was that some elements of the plans inform the public of the best courses of action in the event of an emergency, a disaster or an attack (i.e., when to stay in a home or a vehicle, to go into the basement, to boil water, etc.). Clearly the law should provide the flexibility to provide a right of access to portions of the disaster preparedness plan which would enhance safety and security if disclosed, and it does. The second question was whether disclosure of certain aspects of the plan could enable terrorists or others to jeopardize public safety and security. The answer was, of course, that disclosure of some aspects of a disaster preparedness plan could enable terrorists or criminals to evade detection or act in a manner resulting in danger to the public. Because that is so, just as clearly, the law should provide a basis for denying access to those portions of the record.

Frequently consideration of disclosure involves the degree of detail contained within a record. If a request is made for a map indicating the location of water supplies, if it is similar to the map that can be purchased at a local market or any number of other locations, its contents are widely known. Everyone knows that River Road is near the river. However, if the map is so detailed that it indicates the locations of intake valves, places where criminals or terrorists could insert biological or chemical agents, there should be a basis for denying access.

Law Enforcement Records

In addition to matters involving national security are those pertaining to police and other law enforcement activities. It is important, once again, to consider the effects of disclosure of records compiled for law enforcement purposes. Those kinds of records should be withheld only to the extent that disclosure would interfere with an investigation, deprive a person of a fair trial or impartial adjudication, identify a confidential source, or reveal non-routine investigative techniques and procedures. Often, particularly in the context of law enforcement activities, and as suggested earlier, harmful effects of disclosure diminish or even disappear due to the occurrence of certain events or the passage of time. If a crime is committed now and remains unsolved, disclosure of details concerning the course of the investigation, the names of suspects or similar records, would clearly interfere with the investigation. However, if, as a result of the investigation, a person is arrested and taken into custody, it is likely that disclosure of many details would no longer "interfere" with the investigation, which may be complete. In that instance, records that might have been withheld with justification yesterday may be accessible today, for the harmful effects of disclosure would diminish or even be eliminated.

Another area particularly pertinent since September 11 and recent events in several nations relates to investigative techniques or procedures. Years ago, the highest court in New York reviewed a manual prepared by a law enforcement agency and found that some aspects of the manual would, if disclosed, enable the public to better understand the law and encourage compliance. Those portions of the manual were determined to be accessible to the public. However, the court also stated that FOIL was not intended "to give the safecracker the combination to the safe" and found that other aspects of the manual would, if disclosed, enable criminals or others to evade detection or tailor their activities in a way in which they could circumvent effective law enforcement. Those portions of the manual were, according to the court, justifiably withheld.¹

Security of Electronic Information Systems

Until recently, a description of an agency's security procedures concerning the protection of its records would not, if disclosed, compromise the ability to guard against unauthorized access. Even if written procedures were available, without the first key to unlock the door to the room in which the records were stored, and more importantly, without the second key needed to unlock the filing cabinet, records could be protected with reasonable certainty. In contrast, today's disclosure of an agency's security procedures could result in devastating attacks and incursions on agencies' electronic

¹ Fink v. Lefkowitz, 47 NY2d 567.

information systems. The use of the key to unlock the door or filing cabinet, being physically present, is no longer necessary; an electronic attack can emanate from anywhere.

An amendment to the New York FOIL provides state and local government with a means of denying access when the security of electronic information systems may be threatened.¹ Specifically, the law states that an agency may deny access to records when disclosure “would jeopardize an agency’s capacity to guarantee the security of its information technology assets.”

Contracting

Contracts between the government and public employee unions or private entities should be accessible, for they indicate the nature of an agreement and the amount of taxpayers’ money that is being spent. But what if the union, during negotiations, asks for the records that indicate how much the government is willing to pay or the issues that the government considers to be critical in its negotiation strategy? In that situation, if the government had to disclose, it would be placed at a disadvantage at the bargaining table. What if the government wants to buy goods and is soliciting bids, and three bids have been submitted so far, and a fourth bidder asks to see the three bids. In both of those situations premature disclosure would impair the process, and a proper exception might indicate that government may withhold when disclosure would impair present or imminent contract awards or union negotiations. An exception of that nature would guarantee the fairness of the process and also guarantee accountability. After a contract is awarded, the contract would be public, but just as importantly, all of the bids would also be available for comparison, because the harmful effect of disclosure would have disappeared, and the public would have the right to know that the appropriate bid was accepted and approved.

An FOI law can save taxpayers’ money

When we have the right to know which public employees receive overtime payment, and how much they are paid, that kind of information gives the public the ability to identify waste, abuse and to know whether government resources are being used effectively and economically. That kind of disclosure results in accountability and more efficient government.

When a contract is awarded for the government’s purchase of goods and services, the contract and the successful bid are routinely disclosed. Often those records are used by businesses to bid on the next contract. Through disclosure, they can offer a government agency a better deal. Disclosure is at the heart of competitive bidding, and disclosure results in more for taxpayers’ dollars.

Commercial information—Trade secrets

When a private company submits records to a government agency, those records are subject to rights of access. But what if the records include a unique process, a trade secret or valuable financial information concerning the company? In that instance, a typical ground for denial of access indicates that the government may deny access to the extent that disclosure would cause substantial injury to the competitive position of the company. If disclosure of current financial information to a company’s competitors would be devastating, there should be a basis for a denial of access. However, if the same financial information is requested two years from now, the information is stale and outdated; no longer would disclosure result in competitive harm, and the records should be made available.

“What would happen if the government disclosed?” That should always be the key question in considering rights of access and the ability to withhold records or perhaps portions of records. Unless it can be demonstrated that disclosure would result in identifiable harm, the records should be accessible to the public.

Procedural implementation

How does the public use the law? How must government officials respond when they receive requests for records?

The FOI Officer and Time to Respond

Every government agency should be required to designate at least one person as “FOI officer”(or similar title). That person should have the duty of coordinating the agency’s response to requests for records, and requests should be directed to that person. His or her name should be included in guides

1 NY Public Officers Law, section 87(2)(i)

and other publications, and it should be posted in the offices of the agency and on the agency's website.

In New York, an agency has five business days from the receipt of a request to grant access to the records, deny access in writing, or if more than five business days is needed due to the volume of the request, the need to engage in an extensive search, to review the records to determine which portions, if any, may be withheld, the agency must acknowledge the receipt of the request in writing. The letter of acknowledgment must indicate an approximate date when the request will be granted or denied, usually not to exceed twenty additional business days. If the approximate date is reasonable in consideration of the factors mentioned above, the agency would be complying with law. In the case of the unusually expansive or complex request, if the agency needs more than twenty additional business days, it should offer a self-imposed deadline, which must be reasonable in consideration of the circumstances associated with the request. If a request is not answered based on the kinds of time limits for response, the person seeking the records may consider the request to have been denied.

In many FOI laws, when a request is denied, either in writing or due to a failure to respond within the proper time, the person denied access has the right to appeal the denial. The appeal is often made to a person designated by the head of the agency, and to be fair, that person's review of the denial must be independent of the rationale for the denial expressed by the FOI officer.

What if a request is unclear or the records are not maintained in manner in which they can be located? In both the federal FOI Act and the NY FOIL, the applicant must "reasonably describe" the records sought. New York's highest court has held that a request meets that standard when an agency has the ability to locate the records with reasonable effort. The court found that whether or the extent to which that standard is met often relates to the manner in which records are kept, retrieved or generated.¹ For example, if I walk into a government office and see a telephone directory, I might say "Aha!" it's a government agency record. If I ask for all of the listings concerning those whose last name is "Smith", and if the listings in the phone are given by last name in alphabetical order, it would be easy to locate all of the Smiths. The request would in that example reasonably describe the records sought. But what if go to the same office tomorrow and ask for all the listings for those people whose first name is "John", to find them, the FOI officer might have to review thousands of listings, one by one, to find the John's. Even though the request was specific, and we know that there are John's listed, the request would not "reasonably describe" the items requested, because they cannot be found with reasonable effort. But what if it's 2017, and the agency maintains the same data electronically and a clerk can enter "John" on the screen, and instantly, all of the John's can be retrieved and seen? In that situation, when a government agency has the ability to retrieve, generate or extract the data maintained electronically with reasonable effort, the law must require the agency to do so to comply.

Costs

The cost of seeking records should not be so high as to deter people from making requests. In many jurisdictions, when records are available in their entirety, inspection of the records is free. If copies are requested, the fee for copies optimally should be based on the agency's actual cost of reproduction.

Some government officials have contended that it costs money and takes time to develop a records or information systems, and that the public should have to incur some of the cost when seeking records under an FOI law. Nevertheless, the government would have developed its records or information systems in the ordinary course of its business and even if nobody sought records under such a law. Government agencies buy computers and produce and store information electronically. That a request is made for the information in electronic or printout form is incidental to the ordinary work of the agency, and the cost of the computer or the development of the information would have been incurred even if there had been no request or, for that matter, no FOI law. Moreover, a reasonable fee based on the actual cost of reproduction is consistent with the intent of an FOI law and the notion that the law confers a right upon the public. As stated by one court, "Compliance with FOIL is neither a gift of, nor waste of public funds", but rather is "a governmental obligation."²

1 *Konigsberg v. Coughlin*, 68 NY2d 245.

2 *Doolan v. BOCES*, 49 NY2d 341.

Independent review of denials of access to records

There are many mechanisms under which a review of denial of access may be accomplished. The key to success, however, is that the review must be conducted by an independent person or body with the authority to compel a recalcitrant agency or official to disclose the record.

When visiting Peru to assist in the possible enactment of an FOI law and discussing a variety of issues with one of that nation's leading journalists, I explained that an agency's denial of a request may be reviewed in court in New York, and that our courts have been consistent in favoring disclosure in a manner consistent with the intent of the law. He laughed and said, "Oh you Anglos. You can trust your courts!" The systems that work well in one jurisdiction might not work in others. History and culture are often most significant in attempting to develop appropriate mechanisms.

In some jurisdictions, notably the Canadian provinces, Parliament designates an information commissioner for a specific term, which insulates that person from the executive branch agencies. The commissioner is authorized to make binding decisions regarding disclosure by agencies. In New Zealand, the ombudsman carries out a similar function. In the United States, when an agency denies access, typically the person seeking the records may appeal to the head of the agency or a person designated by the head of the agency to determine appeals, either of whom must act on the appeal within a specified time. If the head of the agency or his designee upholds the agency's initial decision to deny access, the applicant for the records may bring an action in court to review the agency's determination. Early in this century, Mexico created a five member commission to oversee and provide education and training regarding its access to information law. The Commission also performs a quasi-judicial function and determines rights of access when there are disputes.

The government must have the burden of defending secrecy

Whether a challenge to an agency's denial of access to records is taken to an information commissioner, an ombudsman, a court or some other decision maker, the burden of defending secrecy must be borne by the government agency that has withheld the records. Stated differently, the government have the burden of proving that the harmful effects of disclosure described in the exceptions to rights of access listed in the law would indeed arise. It should not be able to assert, without proof, that disclosure would result in the harm that the law seeks to avoid. On the contrary, it must demonstrate to the decision maker's satisfaction how disclosure would result in harm of that nature. In order to ensure that the records are reviewed properly, the decision maker may inspect them in camera, or behind closed doors.

Additionally, many FOI laws specify that the cost of seeking review of a denial of access is paid by the government, unless the government prevails in an action before a commissioner, an ombudsman, a court or other tribunal.

Why is foI important to the average person?

Government affects everyone's life, and disclosure of government information serves as a means of improving our lives and ensuring that the government treats us fairly and carries out its duties in a manner consistent with law. A strong FOI law can be used a tool used to expose corruption and to enhance social and economic change. It should be "pro-people" and "pro-poor." The public has a right to have an honest government, just as it has a right to clean water.

Examples of Records Available under FOIL

- arrests and convictions, thereby precluding secret arrests or incarcerations;
- budgets and fiscal information, enabling the public to know how public money is spent;
- community planning, giving the public the ability to know where development will occur, where roads will be built, what increase in traffic there will be, and whether plans consider public safety;
- environmental findings and test results, providing the public with information needed to ensure safety and health by knowing the quality of air and water and the nature of pollutants and toxic substances;
- public health statistics and findings indicating the nature, source and prevalence of disease, as well as information to diminish health risks;

- public education performance measures, providing data regarding how well or poorly schools are educating children, and whether wealthier areas are given advantages over poorer areas;
- government employee records indicating how much they are paid, whether overtime pay is abused, whether they work as scheduled, whether they are qualified for their jobs, whether they have engaged in misconduct; and
- property tax records, which can be reviewed to determine whether the government is taxing landowners fairly.

These are but a few among countless instances in which disclosure of government records through a grant of public rights of access can improve peoples' lives and the operation of government.

Benefits of FOI

A strong FOI law will improve and enhance the accountability of government institutions, as well as government officials and employees. The mere existence of such a law serves as a check on corruption and misconduct and, at the same time, encourages government to be honest. Openness enhances honesty.

A well-designed law provides a framework and a structure for predictability. The public should have the ability to know, with a likelihood of certainty, that particular records will always be made available, while others will be protected. This is especially important in relation to economic planning and development and the growth of international trade. Companies from beyond a nation's borders must have the ability to rely on a structure that provides reliability and knowledge regarding disclosure to the public and protection against harmful disclosure to business competitors.

Disclosures indicating what the government has done, what it is doing, and what it plans to do create trust in government. The more open a government is with its citizens, the greater is the citizens' trust. And when disclosure becomes the rule, the expectation, a nation can develop a "culture of openness", enabling its citizens and its government to learn, to exchange ideas, and to thrive in an increasingly complex world.

Operation Sukuma Sakhe: Lessons in Managing across Organizational Boundaries

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Abstract In April 2011, the KwaZulu-Natal (KZN) Provincial Premier launched Operation Sukuma Sakhe (OSS), in isiZulu for “Stand Up and Build”. The OSS challenges the common frustration of government’s pervasive and entrenched “silo mentality” resulting in weak coordination and collaboration across the public service that severely impact services to vulnerable households. To ameliorate this situation, the OSS has created political and technical governance structures at provincial, district, local and ward levels. At the community level, ward-based War Rooms are the crucial nexus that connects vulnerable households and communities to government services and social partners. Operating from these War Rooms, under the leadership of the Ward Councilor, the fieldworkers are the lifeblood of these War Rooms. This paper will briefly outline the OSS integrated service delivery model and showcase its workings, achievements, constraints and lessons. A good practice War Room in Ward 4 in the Umngeni Local Municipality is presented.

Key words War Rooms, Integrated service delivery, Vulnerable households, Collaboration, Leadership, Governance, Community participation, Poverty

1 Background

1.1 A vignette on OSS

Phindile Ndlovu, a Community Caregiver (CCG), was doing her home visits in Lidgetton, 16km from Howick, in KwaZulu-Natal, when she discovers three young children – alone, dirty and half naked. They were below the age of 10 years. They looked very hungry and there was no food in the house.

Phindile immediately sent a WhatsApp message to her colleague, Fakazile Nzimande, the Community Development Worker (CDW), based at the Lidgetton Community Hall, who in turn phoned the local Ward 4 Councilor Sithembiso Nkuna. On the same day, Councilor Nkuna and the CDW visited the house.

Councilor Nkuna bought groceries from the local shop so the children could receive their meals. Together with the CDW and CCG, they traced the children’s maternal aunt. They were informed that the children’s mother was staying at her workplace in Nottingham Road, 20kms away.

The Ward Councilor drafted a report and referred the children to a Department of Social Development (DSD) social worker. The children were placed at the Khazimula Children’s Home. Their uncle later took them and they lived with him. The children were returned to their mother, but she passed away tragically in a train accident. Since then the children have been in the care of their aunt.

The CCG and CDW followed up the case and monitored the situation. They assisted the aunt with applications for her Identity Document from the Department of Home Affairs (DHA), so she could apply for child support grants from the South African Social Security Agency (SASSA).

The above case was recorded in 2014 in the casebook of the Ward 4 Operation Sukuma Sakhe (OSS) War Room in Lidgetton and situated in the Umngeni Local Municipality in the uMgungundlovu district in the KwaZulu-Natal province, South Africa.

Since 2012, the Lidgetton War Room led by Councilor Nkuna (the political champion), together with Ndlovu (from the KZN Department of Health – DoH), Nzimande (a Department of Cooperative Governance and Traditional Affairs – COGTA – official) and eight other CCGs and two volunteers, including other provincial departmental officials, and social partners have actively and passionately pursued the noble vision of Operation Sukuma Sakhe: *Together with committed leadership, creating*

sustainable livelihoods, through the provision of integrated services to communities, and promoting a better life for all.

1.2 Introduction

The intention of the War Rooms, initiated through the War on Poverty programme by the South African Presidency in February 2008, was to address high levels of poverty, inequality, unemployment and the associated social determinants through community-centric and integrated service delivery, i.e. to address the systemic challenges of weak horizontal and vertical collaboration in the public service.

The purpose of this paper is, firstly, to outline the OSS model, and secondly, to broadly reflect on the challenges and the lessons from the past five years of implementing the integrated, people-centric service delivery model to address poverty. A good practice example of the Ward 4 War Room is presented. This paper starts with a brief contextual background to the KZN province.

The methodology for this paper included literature and document reviews, semi-structured interviews with key resource persons managing the OSS programme, site visits and interviews at War Rooms.

1.2.1 Poverty and inequality

KwaZulu-Natal bears the largest burden of poverty: 26.3 percent of the poor South Africans reside in this province; and 42 percent of the provincial population live in poverty (StatsSA, 2011). Compounding and complementing the high level of poverty, KZN carries the country's largest burden of disease, with the highest rate of HIV infection prevalence among antenatal clinic attendees. Tuberculosis claims the second largest number of lives in this province.

The social ills rife in KZN include crime, drug and substance abuse, and women and child abuse. Studies show that sexually transmitted infections are linked to drug and alcohol abuse, multiple sexual partners and unsafe sex. 75% of young children in this province live in poor households – the second highest rate of child poverty after the Eastern Cape Province with 78% (Children's Institute & Ilifa Labantwana, 2016).

In light of this situation, the cornerstone of Operation Sukuma Sakhe is the promotion of healthy lifestyles and behaviour change. Such changes are expected to decrease the prevalence of HIV, tuberculosis, teenage pregnancy, substance abuse and women and child abuse. Central to the success of the OSS model, in reducing these social ills, is community participation mediated through War Rooms: the nexus of the KZN government's integrated service delivery model, together with civil society participation.

The OSS theory of change is founded on behaviour change and the empowerment of the youth and women. As Dr Fikile Ndlovu, Chief Director, Priority Programmes at the KZN Office of the Premier (OTP), responsible for Operation Sukuma Sakhe, explains:

“People must stand up and drive the process. By government providing services and a support system, this allows people to lead, and create partnerships with civil society organizations. Our current structures are not developmental. In areas where OSS works it provides the structures for community participation, and anchored in its own challenges of poverty.”

1.2.2 Institutional transformation of the public service

In the mid-1990s, the democratic South African government adopted a set of founding policy frameworks and legislation to fundamentally transform the public service from an Apartheid authoritarian bureaucracy to a democratic, developmental and people-centered one. A key objective of the major South African administrative change initiative was to empower, challenge and motivate senior public service managers to be “leaders, visionaries, initiators and effective communicators and decision-makers, capable of responding pro-actively to the challenges of the change process” (RSA, 1995: 3).

Furthermore, the White Paper on Transforming Public Service Delivery (RSA, 1997), was guided by a set of principles for the public service called the Batho Pele (People First) principles, which was later translated into three key public service beliefs: to care, to serve and to belong. These policy changes were mindful of South Africa's history of poverty, social exclusion and inequality, and also that the previous public service administration drew heavily on industrial-era scientific management

and administrative organizational theory and practice. The latter management models led to the dominance of the machine metaphor of organizations.

These models endure into the 21st century and in the shadow of this metaphor many organizations, such as the democratic South African public service, emerge as (Robledo, 2013: 62)

... hierarchical, control-oriented, bureaucratic, and inflexible. Everything must be carefully planned and mechanized... The main problem with this approach is that it tends to suppress the human side of an organization – individuals are mere cogs in a machine that operates under management control...

Despite the post 1994 public transformation agenda, the “bureaucratic and mechanical mindsets” (Ndlovu, 2013) of public managers persists across the public service, including the KZN provincial government. For example a recent study (Haricharan, 2015) in a South African provincial government showed the negative outcomes of rigid, centralized, overly bureaucratic processes, top-down hierarchical structures and governance systems on public servants and their performance. Rather, these models and practices engender dissonant leadership styles and social exclusion the workplace, with negative impact on fairness, equity, voice, recognition and rewards, consequently impeding teamwork and co-ordination, and further entrenching centralized rank-conscious command and control governance, with limited or no delegated power to lower levels.

The organizational culture in such a context is strongly deontological, i.e. primarily focused on bureaucratic norms, duties, rules and regulations; rather than serving, caring, and belonging (in line with the Batho Pele (People First) ethos of the South African government). This results in a discordant culture: disempowering and demoralizing managers and subordinates, and hindering trust building, innovation, efficiency, agility, motivation, and in so doing delaying decision-making and effective service delivery (Haricharan, 2015). Therefore, in the current uncertain, complex and turbulent public institutional environment, research evidence suggests that the traditional organizational models, still popular in the South African public service, as well as in other countries, are obsolete (Haricharan, 2015).

Moreover, scholarly evidence indicates that the traditional image of government as the top-down bureaucracy is gradually shifting towards the idea of networked governance, and that organizational hierarchy is becoming “less important than inter-organizational relationships defined in multiple manners” (Kellis & Ran 2013: 133).

The OSS has experienced the effects of the institutional environment outlined above, and has challenged the programme’s guiding aim to promote networked governance through integration and co-operation among key government stakeholders in addressing poverty and inequality.

2 The journey of Operation Sukuma Sakhe

The OSS journey started in 1994 with the introduction of the democratic government’s pro-poor policies and programmes, which recognized the high levels of poverty and inequality inherited by provinces such as KwaZulu-Natal, comprising a former homeland administration. To achieve the national government’s strategic priority in addressing poverty, the KZN government launched Operation Mbo in 2006 in Msinga and Nkandla, two of the poorest areas. The intention of this Massification Programme was to promote departments working together in a coordinated and integrated manner, together with communities and local government to implement development projects.

In February 2008, KZN’s efforts to address poverty received another strategic boost with the launch of the War on Poverty Programme by former President Thabo Mbeki. The programme targeted the most deprived wards and households, whose needs were profiled. The concept of a ‘War Room on Poverty’ was introduced in the Presidency, and similar structures started to emerge at a local level in KZN.

In 2009, the War on Poverty programme received greater impetus as a provincial Flagship Programme, with the aim of implementing a comprehensive, inclusive, and holistic plan on poverty eradication. The objectives were: 1. Fighting diseases such as HIV and TB, and addressing poverty, 2. Behavior change related to HIV, substance abuse, teenage pregnancy, crime and gender based violence,

3. Empowerment of women and youth. These objectives were to be achieved through five pillars which are community partnerships, behavior change, integration of government services, economic activities and environmental care. At the centre of integration of government services was the drive to profile the poorest households in the most deprived wards, initially in three provincial districts, subsequently spreading to all districts in KZN. Task teams were established to oversee the profiling, referral and monitoring of households. Relevant provincial government departments provided specific interventions to vulnerable households. The Flagship Programme fostered the participation of communities and other social partners in the delivery of services and community development.

Building on these efforts to redress poverty, using a people-centric approach to service delivery and through government's support to public participation processes, Operation Sukuma Sakhe (isiZulu for Stand up and build) was launched in April 2011. This programme's aim is to rebuild the fabric of society by promoting human values, fighting poverty, crime, diseases, deprivation and social ills, ensuring moral regeneration and by working together through effective partnerships.

Partnerships include civil society, development partners, communities, and government departments all working together to provide a comprehensive integrated service package to communities.

3 The OSS strategic framework and service delivery model

The overall strategic objective of OSS is to integrate, co-ordinate and facilitate transversal services to communities. In response to the persistent cycle of poverty, social ills and the bureaucratic service delivery inefficiencies, and to realize the intent of a 'better life for all', the OSS pursued outcomes of healthy lifestyles, sustainable livelihoods, social partnerships, committed leadership, and integrated service delivery. In line with the pro-poor agenda of government, the primary beneficiaries of the OSS are the most vulnerable groups within poor households. These include the elderly, women, children, youth, disabled, working poor, jobless, unskilled and illiterate and the sick.

The implementation of the OSS integrated service delivery model is central to achieving the programme's desired outcomes (refer to Figure 1). The three key elements of the OSS model are: a) Five critical areas, b) Governance and leadership structures, and c) War Rooms. To address the needs of the most vulnerable groups, five interlinked critical areas, namely community partnerships, behaviour change, integration of government services, economic activities and environmental care, forms the pillars of the Sukuma Sakhe service delivery model.

Community participation is integral to the philosophy of Operation Sukuma Sakhe and for the success of the programme. The War Room in a ward provides an important space to build community partnerships through government departments interfacing with the community on the services they can expect, and the community providing their needs and feedback on public services. At the centre of community participation is the role of community leaders who provide leadership to the community, such as religious leaders and traditional leaders, viz. Amakhosi and Izinduna, civil society leaders and professionals residing in the ward. The political leaders (Councilor), supported by ward committees, champions the approach in the ward; while the Amakhosi with traditional councils champion the approach in areas that falls under traditional councils.

The governance and leadership of OSS is through a matrix of political oversight structures, coordinating task teams, oversight committees and the AIDS councils, at provincial, district, local and ward levels. These structures mostly exist already as political and administrative structures. The OSS structures and oversight mechanisms were intended to provide leadership guidance and direction, and to facilitate cooperation and coordination among stakeholders, across all levels of government in the province. This intention was to give effect to the objective of comprehensive, integrated, transversal services to communities through seamless service delivery.

The Provincial Task Team (PTT) maintains the momentum of Operation Sukuma Sakhe at a provincial level. It is made up of an executive, government departments and strategic Operation Sukuma Sakhe 'champions'. The overall champion for OSS is the Premier of KwaZulu-Natal. The Premier, MECs and Heads of Departments (HODs) are assigned to each of the eleven districts to play the role of champions from a political and administrative perspective respectively. A provincial level

champion (senior official) is appointed as a convener and is charged with supporting the district in gaining buy-in from all stakeholders and to assist in mobilizing resources.

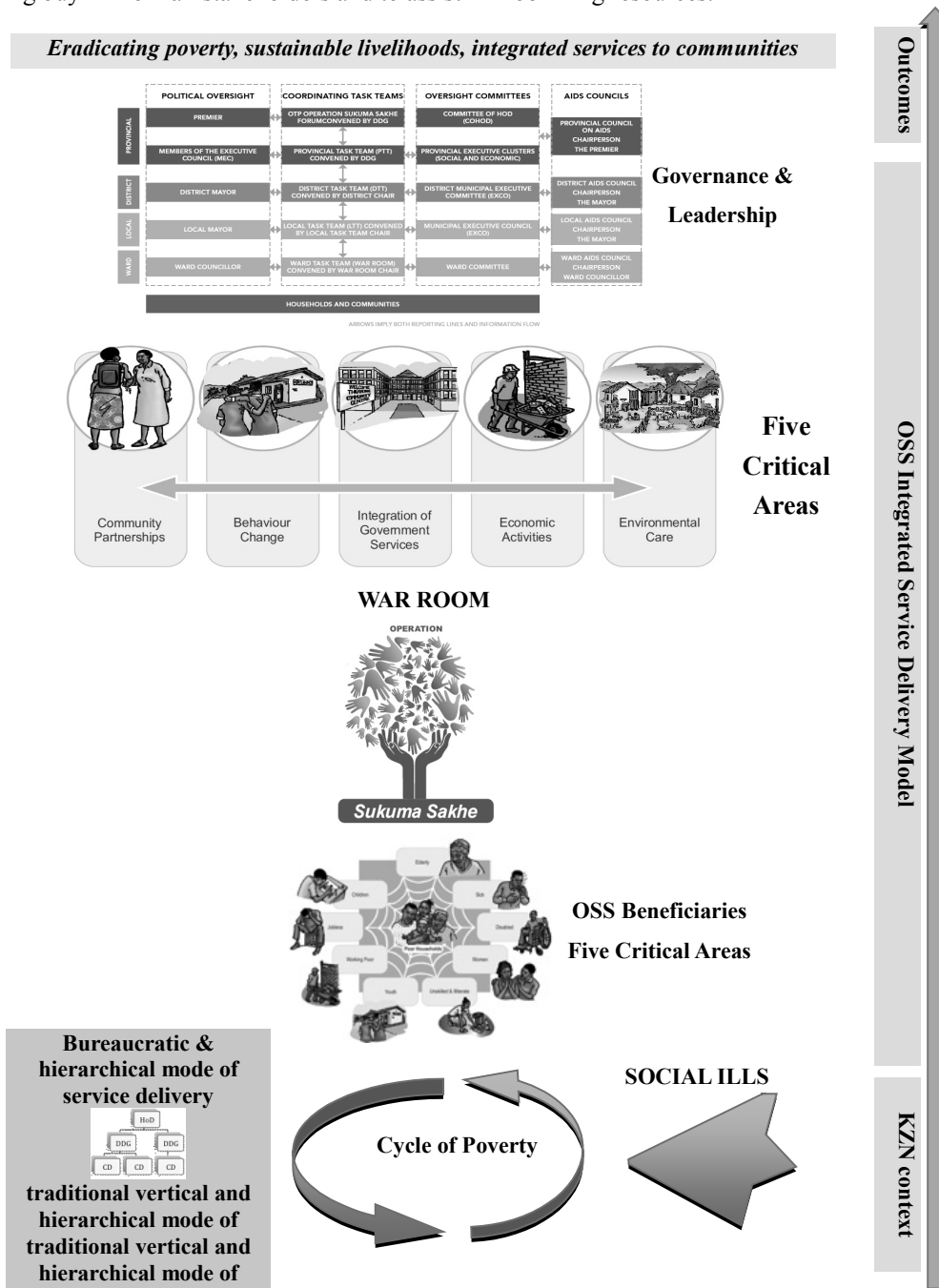


Figure 1 Operation Sukuma Sakhe integrated service delivery model

War Rooms are the intended central nodes from which government services are rendered. Key to the optimal functioning of a War Room and achieving the overall objective of OSS are government departments working at ward, local, district and provincial level to ensure that services are delivered in line with identified community needs. In partnership with government departments, civil society

organizations and the private sector also contribute to service delivery, adding another dimension to integrated service delivery through the War Rooms.

Each department is mandated to be involved in the War Room and to render services where they are most needed. Some of the key government departments are Health, Social Development (its agency, the South African Social Security Agency, SASSA), Basic Education, Home Affairs, Agriculture and the South African Police Service. Service delivery also takes place through mobile clinics or scheduled visits by the departments to the War Rooms on set days.

The 'backbone' of OSS is community fieldworkers (Community Development Workers, CCGs, Extension Officers, Sport Volunteers, Social Crime Prevention Volunteers), located at a War Room, who are responsible for encouraging social behaviour change through their interaction with household members. The intention is to support vulnerable groups to take responsibility for their sexual behaviour, practice safe sexual conduct, respect the law, prevent crime, prevent violence and live healthy lifestyles.

Through their household visits and profiling, fieldworkers gather important data on the conditions on the ground, and identify common problems and issues in the community, as well as the specific problems that each household faces. The fieldworkers' job, such as a CCG (belonging to the Department of Health and the Department of Social Development) is not only limited to health or social services issues; they will also look at other issues in the household, such as food insecurity, employment, Identity Documents, basic services whilst educating the household on a range of topics among others.

4 OSS good practice: Ward 4 War Room

Those wards that have implemented Operation Sukuma Sakhe in line with the model and objectives have high performing War Rooms. One such is the Ward 4 War Room in Lidgetton, near the town of Escourt.

The Ward 4 War Room team attributes their success to planning, teamwork, leadership, hard work, and passion. The CDW, CCGs, volunteers and Ward Councilor work as a closely-knit team. As the Ward Councilor Sithembiso Nkuna notes: "The War Room team tackle matters hands-on and find solutions." They meet weekly. The CCGs are proud of their Councilor as he provides exemplary leadership. In the past five years he has built strong relationships with stakeholders and embedded planning and operational systems. As one CCG admired: "He is a hard-worker, kind, and communicates well, and is not fearful to elevate issues to higher levels [within the provincial government]."

At the monthly stakeholder meetings of government and social partners, the CCGs report on their households, follow-up on interventions and closure of cases. Departments report on progress of the referrals from the War Room. An annual schedule of meetings is sent to departments. Once a month, CCGs meet with their counterparts from the other wards in the Umngeni local municipal area as a platform for sharing and receiving updates from their departmental supervisors.

The Ward 4 War Room works with many support organizations, such as Ethembeni, TB/HIV Care Association, Rotary, Red Cross and CareWorks. These organizations, including school principals, attend the monthly War Room meetings. Over the past five years, the Ward Councilor has worked hard to build relationships with social partners, recognizing that, as he says, "Government alone cannot provide services."

Ward 4 has a Phila Mntwana health facility. A CCG measures the children's basic growth and health indicators, while urgent cases are referred to the local health clinic. The CCGs work closely with the family health team at the clinic through social media (SMS and Whatsapp). A mobile clinic visits the War Room twice a month. The Ward 4 AIDS Council ensures that people take their medication. The CCGs follow-up on defaulters and check on chronic medication users. Residents find it difficult to get to the clinic as public transport is not readily available or people have no money for the fare. As from March 2016, the introduction of a mediport at the War Room has made it easier for patients to receive their medication rather than to travel to the clinic.

The team proudly lists the many achievements: 50% referrals closed, reduced new infections in

TB and HIV, increased awareness within households, better understanding of households, 99% of those eligible receive social grants, attended to and provided services to people living on farms, 21 water tanks distributed, and so on.

Although Ward 4 is a Premier's Annual Award-winning War Room with many achievements to show over the past five years, the community and the War Room continue to confront several challenges: for example there are too few CCGs, administrative resource deficits, social ills, like drug and alcohol abuse, and a lack of social facilities.

5 Discussion

Over the past five years, Operation Sukuma Sakhe has achieved many successes, and also experienced several challenges, in operationalizing the initiative as an integrated, people-centric approach to service delivery to address poverty, inequality and social ills. This section highlights key successes and challenges that the OSS experienced in achieving the overall strategic objective of OSS to integrate, co-ordinate and facilitate transversal services to communities.

5.1 Impact of OSS

The ultimate desired outcome of Operation Sukuma Sakhe is the eradication of HIV, poverty and social ills in KZN. To achieve this, the programme set itself intermediate outcomes of committed leadership, sustainable livelihoods and integrated services to communities. The initial focus of the OSS in accomplishing these outcomes was to address the huge social ills in the province through promoting healthy lifestyles and behaviour change, and secondly to establish War Rooms as the integrating nexus for government services, social partners and communities. Currently, there are 823 War Rooms across the province with a population of approximately 10 million people and 2,5 million households (StasSA, 2011).

As no formal evaluation of the OSS exists, it is difficult to assess the degree to which the programme has achieved the planned outputs or desired outcomes. However, Ndlovu's study (2013) and the OTP's five-year review (2015) do provide some insights into the programme's achievements. The main findings of the study (Ndlovu, 2013) on organizational change factors that impact on the implementation of OSS in KZN were that all change levers were important in driving change. The levers implemented were leadership, strategy, communication/marketing and structure, while the levers of technology, human resource management, budget and quality, were either not implemented or not effectively implemented. The OTP's review (2015), supported by BroadReach Corporation, tracked 40 households and received insightful feedback and reflections from beneficiaries. The review presents a number of household case studies, narratives, and interviews relating to the programme's activities, outputs and outcomes.

For example, a Community Caregiver, Thembisile Mdletshe, from Stezi in the Ntambanana Local Municipality, reflected as follows (OTP, 2015):

The child said, "Yes, I am strong" and came over and gave me a big hug and said, "Thank you for the job you do, thank you!" For the mother too, it was the hope I had brought into the house and that is something I learnt from Operation Sukuma Sakhe.

The following narrative from a family in Msinga, one of the poorest areas in South Africa, illustrates the potential of OSS in addressing poverty and development (OTP, 2015):

In 2008, 17 of us children, ranging from 2 to 22 years of age, lived with our grandmother in a one-bedroom mud shack in Msinga. It was initially three bedrooms before parts of the house collapsed. There was no electricity in our community, nor did we have safe ablutions. We had no access to clean water and used to collect water from the stream.

In 2011, the Department of Human Settlements (DHS) built us a house. All children were assisted by the War Room to obtain Identity Documents and birth certificates. The Department of Water Affairs and Forestry (DWAFF) helped establish a food garden tunnel and planted fruit trees. We received an environmentally friendly stove from the Greengel Company. We make use of pre-paid electricity and now have upgraded ablution facilities thanks to the installation of two water tanks.

By 2014, we are now out of poverty. Our change agent is now economically active having qualified as a professional nurse, thanks to the eThekweni Metro learnership programme. We continue

to receive child support grants and the old age pension grant. All children attend no-fee paying schools and receive nutritional support at school. The tunnel garden provides us with food security together with our earned income. We are glad to report that we are out of poverty. We are forever grateful to the War Room.

Besides this household in Msinga, since 2008, through ongoing efforts of the War on Poverty initiatives, 6 609 households (28 613 individuals) were profiled in the poorest wards in the Msinga Local Municipality (OTP, 2015). Households in these wards are slowly overcoming entrenched poverty through access to government services, such as birth certificates, Identity Documents, social grants, housing, health care, among others, and improving their livelihoods, and moving out of poverty.

The OSS model has been lauded as a best practice model by the South African Deputy President, Mr Cyril Ramaphosa, PEPFAR, UNAIDS, and other provinces that have launched this model. The Deputy President's office has based its "Best Practice Guidelines for the Implementation of an Integrated Service Delivery Model" on the OSS model.

The OTP's five-year review is based on narratives from beneficiaries and stakeholders and on data from government departments. While the review provides anecdotal data, there is a dearth of research on OSS and service delivery models in the South African public service. Ndlovu's (2013) study raises the need for further research using a larger sample with employees across the service delivery value chain, including the municipal ward level. Additionally, research on OSS needs to include social partners and communities as OSS is about collaboration between government and communities.

5.2 Inter-governmental collaboration

The success of the OSS model is contingent to the involvement of a range of government and civil society stakeholders. Municipalities are key stakeholders, however, delays in municipal service delivery negatively impact the functionality of OSS. The understanding of Mayors of the OSS model is uneven: while some Mayors support OSS, others do not. Furthermore, provincial departments' irregular or non-attendance at War Room and task team meetings leads to poor resolution of the service delivery issues identified by the War Rooms. Also, at times there is a lack of response from the responsible departmental manager once issues are referred to them or the departments' planned interventions are delayed. While the OSS receives good support from several civil society social partners, their funding has eroded over time.

While most (93%) senior provincial manager respondents (n=54) were aware and participated in the OSS, fewer (59%) district level counterparts (n=22) showed the same level of awareness and participation (Ndlovu, 2013). These district managers have a vital task in implementing government programmes at the local level. These results typify the challenge in government that "decisions made at strategic level do not seem to trickle down to the operational level where the implementation of those decisions should take place (Ndlovu, 2013)."

Further, the study indicates that the majority of senior manager respondents indicated that OSS has not increased decentralization of decision-making. The study recommends that the OTP and Provincial Treasury should introduce a strategic planning and budget planning process to integrate the OSS with the provincial-wide processes. Departments at district and provincial levels are either not optimally using the information or not at all in their planning, monitoring and evaluation of their respective sector outcomes.

While OSS promotes bottom-up planning and data collection, several provincial departments continue with the mainstream top-down governance processes – illustrating the dynamic tension between the OSS change initiative and the ongoing business-as-usual mindset of government departments.

5.3 Resourcing the OSS

Resource and budget allocations at a human and material level raise serious questions on the sustainability of Operation Sukuma Sakhe.

The success of the OSS model is integrally linked to the effectiveness of fieldworkers. Until their needs (including recognition and appreciation) receive attention, the objective of people-centric and integrated service delivery will falter.

A number of issues influence the effectiveness of the fieldworkers in OSS: Firstly, there are too few fieldworkers in most War Rooms. The spread of fieldworkers is thin as wards could cover vast areas with many households. Secondly, there are a number of human resource administrative issues relating to fieldworkers, as they are not government employees their conditions of employment is unstable. Thirdly, the issue of rank and professional status (highly valued in government as it bestows power and privilege) irks the CCGs as it leads to poor communications and frayed relationships with public health clinic nurses. A CCG shares her frustration: “The clinic nurses look down on us as unqualified. They don’t respond to us. The clinic refuses to share HIV/AIDS statistics with CCGs.” Fourthly, as the “foot soldiers”, CCGs are the first interface with households, building rapport and caring relationships with households; however, at times they experience resistance from some household members who refuse to provide information for the household profile or decline receiving support or show resistance to changing behaviours.

Physical structures, infrastructure and equipment are limitations in establishing War Rooms. Existing resources employed by the provincial government, such as used furniture was sent to War Rooms. For the first three years of Sukuma Sakhe, no dedicated budgets were allocated. Only in the 2015/16 financial year, a small budget allocation (R14 million; or 1 million USD) was made to purchase furniture, equipment and computers. In the 2016/17 financial year, R4 million (or 290 000 USD) was allocated. The resource insufficiency has major negative effects on the functionality at many War Rooms.

The OTP OSS has two full-time middle managers. Eight interns capture household profile data. The senior managers in the team have responsibilities beyond the OSS. Local municipalities are not dedicating resources for full-time coordination of the OSS.

Of significance to the issue of resources for the OSS, Ndlovu’s (2013) study shows that almost 90% of the provincial heads of departments and most senior managers (85.5%) at district and provincial departments affirm that budget is important. However, the majority of senior managers and half of the HoDs disagree that departmental budgets have been aligned to OSS priorities.

In the face of some of the challenges outlined above, in particular the structural and systemic contradictions of the dominant hierarchical and bureaucratic governance model, there are key lessons on leadership and rethinking public service institutional design from the OSS change initiative in promoting a people-centered, integrated, collaborative and co-ordinated approach to service delivery.

5.4 Leadership is central

A key factor in Operation Sukuma Sakhe’s success is the presence of political champions who have bought into the philosophy of people-centric and integrated service delivery. An early and crucial achievement in 2009 was gaining the buy-in of the provincial government’s Members of the Executive Committee (MECs) as political champions of the programme, and winning over Councilors and Mayors over time. The political champion roles are institutionalized and are an official part of the structure of OSS.

Through the strong leadership of former and current Premiers, OSS promoted accountability across the provincial government, together with a central message of integrated service delivery—a challenge to the entrenched silos. Since 2011, the philosophy of Sukuma Sakhe was reinforced, identifying weaknesses in the system, and making improvements, i.e. institutionalizing the programme. The continuity and stability of political champions, building on their predecessor’s programmes, has strengthened the structures and systems of OSS.

As the KZN OTP’s Dr Fikile Ndlovu points out: “When leadership is strong, we perform well. Leadership is central in OSS. How Councilors see development is important. Where there is no political leadership, officials and community members give leadership. OSS harnesses community leadership, leaders who are actively engaged in community structures.” A key display of political leadership was to take OSS to the people through monthly provincial Cabinet Day visits to a designated district and local municipality. Departmental heads and senior managers accompany the politicians for these visits. During these community visits citizens engage with politicians and senior managers on a range of issues.

However, Ndlovu’s (2013) study highlights that only half of the senior manager respondents at

provincial and district levels consider that there is support from senior management in implementing OSS, while a third of the managers' responses were neutral and a fifth disagreed. The study concludes that without senior managers' leadership role, "government institutions are likely to continue working in silos, regardless of the enabling frameworks that have been put in place. Operation Sukuma Sakhe is identified as a programme that seeks to integrate service delivery, therefore leadership is important... Operation Sukuma Sakhe will not be as effective unless the issue of leadership is addressed."

5.5 Rethinking public service institutional design

According to the Presidency's ISDM (2015), in order to achieve integrated service delivery, all departments and stakeholders would need to change the way they currently do things, combine resources and utilize an integrated service delivery approach to plan and implement services. OSS has attempted to achieve integrated service delivery through introducing a matrix structure into government; however, OSS has experienced many challenges due to the ingrained silos and the top-down management mindset, i.e. the public service institutional design and management behaviours and organisational culture.

On whether the provincial departmental organizational structure supports the implementation of OSS, Ndlovu's (2013) study found that the majority of senior managers (65%) were either neutral (29%) or disagreed (36%), while 55% of the provincial heads of departments' were either neutral or disagreed. Furthermore, Ndlovu's (2013) study indicates that half of senior management respondents and 44% of heads of departments identified that culture in government hinders the implementation of Operation Sukuma Sakhe.

Cross-functional teams (comprising provincial government departments, local government, social partners and service providers) are a practical example of integration through the War Room. These teams are able to escalate matters faster than the vertical hierarchies. When fieldworkers or Councilors pick up issues or when community members report issues to the War Room, the fieldworkers then refer the matter to the relevant government department or authority. In urgent cases, the matter is given priority attention by the relevant department or facility.

However, cross-functional teams operate at the fringes of the dominant rigid and hierarchical departmental edifices. Promoting cross-functional teams require governments to rethink how it plans, budgets, allocate resources, assesses performance (currently biased to individuals and not teams) and monitors government initiatives. Greater resourcing is required for integration, coordination and collaboration across government. A mindset shift among politicians and managers is essential. Working in this manner requires government officials to have the requisite technical skills and relational competencies. Collaboration is about relationships. For OSS it is about the relationship between the Ward Councilor, fieldworkers, the War Room convener, social partners, local municipalities and government departments.

Ndlovu (2013) found that all the KZN provincial heads of departments and most senior managers (92.1%) at provincial and district levels agreed that task teams were important in OSS. The study concludes that task teams are "structures not normally found in government but the findings imply that they are an important element of Operation Sukuma Sakhe." Governments need to recognize and reward officials working in cross-functional teams and the outcomes of these teams.

The current Performance Management and Development System (PMDS) is not designed to appraise teamwork, and as such rewards individual and silo delivery, not integrated service delivery. One way to recognise and reward collaboration of public servants and integrated service delivery is the KZN Premier's Service Excellence Award, which confers recognition of the best War Room in the province, dependent on its level of functionality.

OSS is working towards creating greater equality among the rank levels when working as a team as the strong rank consciousness and positional power in government is regarded as a major constraint, stifling collaboration. Mindful of the issue of rank, rank or title does not determine the War Room convener and the chairperson of War Room meetings.

The majority of provincial and district senior managers and all provincial HoD study respondents agreed that the introduction of OSS has led to an increase in collaboration (Ndlovu, 2013). The

findings indicate that collaboration in delivering services is one area that has improved with the advent of OSS. Furthermore, the War Rooms promote accountability as it forces politicians and officials to account to each other and to the community regarding service delivery.

6 Concluding remarks

The South African public service architecture and governance systems are rigid, hierarchical and overly bureaucratic. This industrial age organizational proclivity continues to dominate government institutions in all spheres, embedding centralized and rank-conscious command and control management and leadership styles. Such archaic and ineffectual public service governance structures and management behaviors only serve to perpetuate the stark poverty and inequality, especially in provinces with former homelands, such as KwaZulu-Natal, with huge historical backlog in socio-economic development.

Against this backdrop, over the past five years, the KZN provincial government has attempted to counter the dominant public governance models and approaches to service delivery to the severely marginalised communities and households in the province. Instead, an integrated, bottoms-up, household-centric, and social partnership driven service delivery model – Operation Sukuma Sakhe – was introduced, which built on the achievements of previous programmes addressing poverty. The KZN's Office of the Premier continued with the War on Poverty programme, despite the withdrawal of leadership support from the programme's progenitor, the Presidency.

Even though the OSS model challenges the dominant public service governance and management models, it remains trapped within the powerful 20th century dominant narrative of public organizations. It is in the shadow of this narrative that the democratic South African public service has emerged. Despite the structural and systemic contradictions and tensions experienced by Operation Sukuma Sakhe, there are key lessons to draw from this noble change initiative in promoting an integrated, collaborative and coordinated approach to service delivery that supports the South African government's Batho Pele (People First) values of caring, serving and belonging. Lessons for example, on the importance of both political and public administrative leadership; sufficient human and material resources, in particular community workers on the ground; and rethinking the archaic top-down public service institutional design and planning processes.

The challenge for the public service globally is to deconstruct the rigid bureaucratic and hierarchical governance structures, and to evolve integrated, dynamic and agile structures and systems that are people-centric rather than bureaucrat-centric. OSS bears several lessons for such a shift. As living expression of Chapter 3 of the South African Constitution, relating to co-operative governance and inter-governmental relations, OSS provides a verdant landscape for learning. This initiative needs a platform in public service change discourse and literature.

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Acknowledgements

The author acknowledges the following organisations and persons:

- The Programme to Support Pro-poor Policy Development (PSPPD) located at the national Department of Planning, Monitoring and Evaluation for funding the case study on Operation Sukuma Sakhe.
- The Government Technical Advisory Centre (GTAC), an agency of the South African National Treasury, at which the author is a senior advisor.
- The Office of the Premier, KwaZulu-Natal Provincial Government, in particular, Dr Fikile Ndlovu, Chief Director: Priority Programmes and Ms Senzeni Mkhize, Director: Inkululeko Development Project and Operation Sukuma Sakhe for their support with the case study and their valuable input to this paper.
- Councilor Sithembiso Nkuna and his team at the Ward 4 War Room in Lidgetton, in the Umngeni Local Municipality for sharing their stories.

Urban Solid Waste Management System and People's Participation in Aizawl City

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Abstract Mizoram is one of the most urbanized states in India. The higher rate of urbanization brings about a challenging task to the service delivery agencies. Sanitation effort has started under the Mizo District Council (MDC) and activities were gradually intensified with the Union Territory and State Government and now ultimately driven by the urban local body, i.e. Aizawl Municipal Corporation backed by the 74th Constitution Amendment Act (CAA.). Solid Waste Management (SWM) in Aizawl, since 2009 has been managed through modified public—private partnership mainly based on a quantum of people's participation. Local Councils are engaged in the collection and disposal of waste. Urban governance is facing numerous challenges in solid waste management system—due to its topography, only 80.44 per cent of households have participated in the PPP mode and the rest 16.73 per cent are out of its purview. Hence, the question is how far has Solid Waste Management system through PPP mode a success in Aizawl? The study explored and analyzes the status of people's participation in SWM in Aizawl.

Key words Solid waste management, Urban, People's participation, Aizawl, Mizoram

1 Introduction

India's urban population is 31.16% and rural population is 68.84% as per Census 2011. Among the 29 states, Mizoram has become one of the most urbanized states. Next to the state of Goa, it has the highest proportion of urban population in India. Mizoram population is 1,097,206 out of which the urban population constitutes 52.11 and rural population comprises 47.89 per cent (Census, 2011). There are 23 notified towns and the total urban population is 571,754 making the state having more urban to rural population. Aizawl, the capital city of the state's population also achieved growth from 74,493 in 1981 to 293,416 in 2011 which constituted 26.74 per cent of the entire state population and 51.32 per cent of the total urban population in Mizoram.

Mizoram is a land of rolling green hills and steep slopes situated in the Northeast India. Mizo categorised as Scheduled Tribe (ST) make up 94.6% of its population. The state is characterised by remoteness along three dimensions and these have played an important role in shaping its development trajectory and its identity (Kamath & Wainganka, 2015). The first is physical remoteness due to its topography consisting of thick forests, steep slopes and heavy rainfall. The second is remoteness engendered due to poor infrastructure with only a single major road transport link to the Indian Union via National Highway 54 that connects the capital city of Aizawl to Silchar in Assam, Shillong in Meghalaya in the north, Churachandpur in Manipur in the northeast, and Agartala in Tripura. The final dimension is remoteness in terms of imagination, situated as it is at the edge of the nation. It is the southern most of the Northeastern states with three quarters of its boundary being an international one, shared with Myanmar and Bangladesh.

2 Aizawl-Capital City of Mizoram

Aizawl is the capital of Mizoram and is one of the eight North Eastern States in India. It is geographically located between latitude 23°43'38"N and longitude 92°43'04"E. It was established on 25th February 1890 as a fortified place and a military outpost of the British and it was colonised until 1947.

Mizo District Council was formed in 1952 and since then the growth of Aizawl is haphazard and without any control.



Figure 1 Map of Mizoram

Until recently, there was no effective urban planning mechanism. Arbitrary allotment of land to the people/immigrants from rural and adjoining areas has a tremendous negative impact on the growth of Aizawl. It then became a capital of Mizoram under the Union Territory in 1972, since then there were more scope for employment, both in private and public sector which has resulted into pull factor and more and more people migrated to Aizawl.

Table 1 Decadal population growth of Aizawl

Census Year	Population	Decadal Change	Growth Rate (%)
1971	38,260		
1981	74,493	36,233	94%
1991	155,240	80,747	108%
2001	228,280	73,040	47%
2011	293,416	63,542	28.53%

Source: *Census of India 1971, 1981, 1991, 2001 & 2011*

The Aizawl decadal population growth rate was higher in the years 1971-1991 and there is a downward trend since 2001. The growth rate has increased from 94 per cent during 1971-81 to 108 percent in 1981-91; however, a decline was witnessed between 1991-2001, at a low 47 per cent and 28.53 per cent during 2001-2011. The Aizawl City population according to 2011 Census was 293,416 lakhs, male population constitute 144,913 and female population 148,503 it constitutes 26.74 per cent of Mizoram total population. There are 60,635 households and the sex ratio was 1000:1025 and literacy rate 98.36%.

Aizawl was declared as a city by the Government of Mizoram in 1999. An urban local body known as Aizawl Municipal Council (AMC) was formed and the office started functioning in the month of October, 2008. Several localities taken together with their respective boundaries were declared as AMC area by the State Government and subsequently, localities have been added from time to time. The First General Election to Aizawl Municipal Council was held on November 3, 2010. The AMC area is 437 sq. km. comprising 19 Wards, which have been created mainly on the basis of population, and a total of 83 localities.

Solid Waste Management is among the biggest problems faced by the urban area. Compared with other urban management issues, solid waste management receives little attention. The quality of waste management services is an indicator of a city's governance. The way in which waste is produced and discarded gives us a key insight into how people live. In fact if a city is dirty, the local administration may be considered ineffective or its residents may be accused of littering. Available data show that cities spend a substantial proportion of their available recurrent budget on solid waste management, yet waste collection rates for cities in low and middle income countries range from a low of 10 per cent in peri-urban areas to a high of 90 per cent in commercial city centres (Tinajuka, 2010).

Resource available with the urban government and their management for effective utilization is a

challenging task in the urban governance. Government is over-burdened with enormous multiple responsibilities and provision of effective and efficient delivery of services to the citizens is an uphill task which it has to perform continuously. There is a tilt in the delivery of services with the infusion of new trends and tools in public governance such as new public management, outsourcing, public-private partnership, decentralization and people's participation in the development process. Participation of people in city governance is a dream of urban governance. The goal of decentralisation and good urban governance is to enlarge citizen's role, access and participation in city government. In India the need for decentralisation and participative local management is constitutionally recognised (Sivaramakrishna, 2006).

As per the 74th Constitution Amendment Act (CAA) 1992 (12th Schedule Article 243W) and Section 57 of the Mizoram Municipalities Act 2007, there are 18 subjects envisaged to be transferred to the urban local body which is now called Aizawl Municipal Corporation and Solid Waste Management is among them. Asian Development Bank Mission Team which has visited Aizawl city felt the imperative needs of developing solid waste management system. In January 2009, a tripartite agreement was signed by Asian Development Bank (ADB), Government of India and Government of Mizoram on financial assistance for solid waste management system which was to be managed through public-private partnership. For this, local councils were dutifully engaged to manage their respective area and collect the fund from each and every household. Asian Development Bank doled out a loan amounting to Rs. 17.01 crore, out of which 30% were to be repaid by Government of India (GOI). The fund sharing was pegged at the ratio of 80:20 between AMC (ADB assisted) and local council. Therefore, SWM is one of the sub-projects under North Eastern Region Capital Cities Development Investment Project (NERCCDIP) which is doing works in Agartala, Aizawl, Kohima, Gangtok and Shillong, investing in creation and improvement of urban infrastructure. In Mizoram, State Investment Programme Management and Implementation Unit (SIPMIU) under Urban Development and Poverty Alleviation Department (UD&PA) look after the project (HC Lalchhuanawma, 2016).

3 Organization of implementing solid waste management

Waste management is now looked after by the Sanitation Wing, AMC, which has its office in Sikulpuikawn, Tuikhuahtlang. The office was occupied on 27th January 1989 as a subsidiary of the LAD which was then allocated to Urban Development & Poverty Alleviation Department (UD&PA) in 2006. With the formation of AMC, the wing has been finally handed over to them since Solid Waste Management (SWM) is one of the functions within the ambit of urban local body as per the 74th Constitution Amendment Act (CAA). SWM in Aizawl is regulated by the Mizoram Municipalities Act, 2007, The Mizoram Urban Sanitation and Municipal Solid Waste Rules, 2000 and Solid Waste Management Policy, 2011 which was notified by the Government of Mizoram (GoM). At present, the numbers of employees in solid waste management are 203, Sanitation Officer-1, Assistant Sanitation Officer-1, Inspector of Sanitation-6, and Sweepers-195.

4 Financial aspects of solid waste management

Twelfth Central Finance Commission (FC:XII) grants were received for urban development and distributed during 2005-2010. Much importance was given to SWM and as much as 50% of FC:XII grants to ULB were earmarked for solid waste management through public-private partnership and municipalities are expected to concentrate on collection, segregation and transportation of solid waste. The FC:XII allocates equal amount of 200/- lakhs each year for five years to the urban area. Out of the total amount of Rs. 1000 lakhs, 410 lakhs have been spent solely for SWM and the rest for basic civic services in the urban areas. Garbage dumping ground is located in Tuirial, 30 kms away from Aizawl. Half the funds allocated went for preparation of garbage dumping ground. The other half was spent on civic services, e.g. pedestrian pavements, retaining wall, drain, bridges as well as renovation and beautification of the city, etc. within Aizawl city.

5 Local council

The Aizawl Municipal Council (now elevated to the status of Corporation) according to the

Mizoram Municipalities Act, 2007 (Act No. 6 of 2007) has framed The Mizoram Municipalities (Ward Committee and Local Council) Rules, 2010. As per this rules, Local Councils are created within the geographically divided territory of Aizawl. These localities were geographically compact areas which had been formed a part of Village Council area before constitution of Municipality. During the pre-independence period in Mizoram, each village had a traditional institution of autocratic chiefship to manage village affairs. The Lushai Hills Autonomous District Council, created in 1952 democratized the village administration by enacting the Lushai Hills District (Village Councils) Act, 1953 (Lalnehzovi, 2006). This has been adapted by the Government of Union Territory and State Government of Mizoram with its subsequent amendments and in operation even within Aizawl city until 2010. Every locality was administered by the VC. Till now, in rural parts of Mizoram VC still operates by administering all the village affairs within their jurisdiction. At present there are 83 localities or local councils in Aizawl. The strength of local council is five members in a locality of 1500 voters or less, seven members in a locality comprising more than 1500 voters and 9 members comprising above 1500 voters. They perform general functions such as common civic services and common benefit of the community and other matters according to the Mizo traditions, customs and practices (Rules, 2010).

6 Review of literature

In relation to people's participation in waste management, it is considered that the local government should shoulder the responsibility of waste management and the public are not expected to take part or contribute (Vidanaarachchi et. al., 2006). The level of involvement of the people in waste management depends on initiatives from the local authority (Al-Bakri *et al.*, 1988, Al-Yaqout and Hamoda, 2002). Other scholars have pointed out that both the municipal agency and the citizens must take active part to bring about the operational efficiency of solid waste management, and people's participation in decision making is mentioned by scholars as a socio cultural aspects (Sharholy et al., 2008), besides, community awareness and societal apathy for solutions (Moghadam et al., 2009). Among the many stakeholders, the people are the largest category of stakeholders in waste management systems and have a multi-faceted relationship with waste management activities such as waste generators, waste service clients, receivers of information and participants in waste management and urban sanitation (Ball and Tavitian, 1992, Joseph, 2006). Studies also found that when the community participates in segregation of its waste, there is lesser cost of waste management (Agarwal *et al.*, 2005, Rathia, 2006). Meanwhile, the importance of the involvement of public in waste management is not recognised by many local authorities (Awortwi, 2004; Barnes, 1999; Beecher and Goldstein, 2005).

7 Objectives of the study and methodology

The paper tries to assess the status of sanitation coverage in Aizawl, to find out the extent of the coverage of Solid Waste Management through Public-Private Partnership (PPP) and to realize the degree of people's participation. Aizawl is divided into 19 wards; each ward consisted of several localities which are politically and administratively managed by Local Councils. Random Sampling method was employed and two localities from each Municipal Ward were selected for the survey. There are 83 localities in Aizawl, the samples were drawn from a total of 38 localities which makes up for 45.78% of the total population. The localities are managed by a very unique institution known as the Local Councils which are the subsidiary grass-root level bodies of Aizawl Municipal Corporation which will deliver services as per the Mizo traditions and customs. Unstructured interview schedule was arranged with the local council leaders and an in-depth study was made possible through the interviews conducted with the local council leaders, inquiring into the status of solid waste management in their jurisdiction. A thorough and clearer picture of the solid waste management system in Aizawl Municipal Corporation area was brought out as a result of the high coverage of the survey.

8 Results and discussion

The structured questionnaires were distributed to the local council leaders. There were nine

variables in the questionnaire to determine the extent of people’s participation and the reason for not participating in the waste

management, the amount of money collected by different local councils and the challenges faced by these organisations and the future course of actions. Participation here means people taking part in the waste management through public-private partnership, difference between households who paid monthly contribution or collection as a fee for dumping waste in the collection centre, and those who did not paid the money and did not dump their waste in the designated dumping place and the reason for not participating in the waste management. There are 60,432 families in Aizawl according to 2011 census. It is believed that 38 per cent of waste produced by Aizawl city is biodegradable while 39 per cent recyclable. Total number of households covered by the survey is 36,039. The total number of households participated or covered by SWM is 28,988, of which 80.44 per cent. The numbers of households not covered/not participated in the PPP mode is 6030 which is 16.73 per cent. With active participation and collaboration of the local councils in arranging solid waste management system in the municipal area, majority of the households regularly dump waste in the vehicle collection point at designated place. However, sizeable portions of the population have not participated in the collection system as a result of many factors. The common reasons for non-participation are:- Residences in the slope side/step areas which are located far off from the road where garbage collection is held. And, usually those locations are not reachable by the collection vehicle. Out of 38 respondents (localities), 36 which is 94.73% have said that their location is at a disadvantaged area and step area which is not accessible by the collection vehicles. Only one respondent (2.63%) has blamed the local council for not collecting waste directly in those slope areas. People have to walk through some distance on a slope to reach the designated centre. Door to door collection of waste as required by section 22 (5) of Solid Waste Management Rules, 2016 is not possible in hilly areas. So, an alternate arrangement is made by the local council with people’s participation and partnership. People near and far off from the roads have to come to the collection point and dump their waste which is very much troublesome for the people in the step areas. In certain localities, dumping bag is placed at certain places in the step areas and manual collectors were appointed to collect periodically.

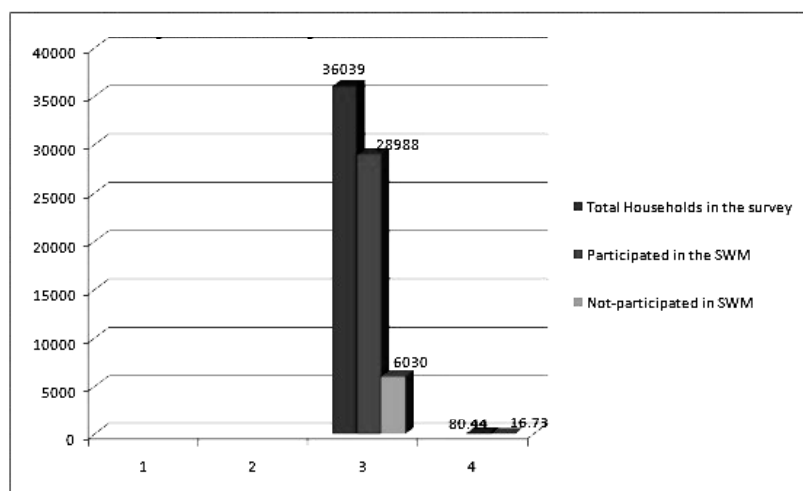


Figure 2 People’s Participation in SWM

Another viewpoint is that the people are lazy and stubborn. This view is held by one respondent (2.63%). Local Councils instructions are not paid heed by the people residing in the step area. They are constantly requested not to dump garbage in the stream or drainage. There is absence of strict enforcement of solid waste management rules.

8.1 Availability of funds

There are nineteen wards and 83 local councils in Aizawl and during four weeks a number of 774 Light Motor Vehicles (LMV) trips and 1593 (Medium Motor Vehicle) trips totalling 2367 trips carry

garbage from different places to Tuirial dumping place which is 25 kilometres from the main city. The total cost of hiring comes to Rs. 3,801,600/- out of which AMC granted 80% of the cost of hiring the vehicles which is Rs. 3,041,280/- and 20% is collected from the people

**AIZAWL MUNICIPAL CORPORATION
WARD-WISE VEHICLES, NO. OF LOCAL COUNCILS AND NO.OF TRIPS
PROVIDED FOR GARBAGE DISPOSAL DURING FOUR WEEKS**

WARD NO.	LOCAL COUNCILS	LMV	HMV	NO.OF TRIP (within 4 weeks)	Amount
Ward No-1	6	4	5	LMV-56; MMV-76	199,200
Ward No-2	4	2	4	LMV-88; MMV-105	273,600
Ward No-3	5	4	4	LMV-52; MMV-84	203,200
Ward No-4	4	2	4	LMV-16; MMV-100	199,200
Ward No-5	3	2	3	LMV-24; MMV-140	280,800
Ward No-6	3	1	3	LMV-20; MMV-52	117,600
Ward No-7	4	4	2	LMV-84; MMV-36	158,400
Ward No-8	3	3	2	LMV-38; MMV-32	103,200
Ward No-9	4	1	4	LMV-28; MMV-190	375,600
Ward No-10	4	0	4	LMV-Nil; MMV-68	124,800
Ward No-11	7	1	7	LMV-04; MMV-72	155,200
Ward No-12	3	3	3	LMV-76; MMV-100	271,200
Ward No-13	3	2	2	LMV-44; MMV-50	142,800
Ward No-14	4	3	4	LMV-40; MMV-80	192,000
Ward No-15	5	2	5	LMV-20; MMV-84	183,200
Ward No-16	3	2	3	LMV-48; MMV-52	151,200
Ward No-17	4	4	4	LMV-60; MMV-72	201,600
Ward No-18	8	6	6	LMV-72; MMV-120	312,000
Ward No-19	6	1	6	LMV-04; MMV-80	156,800
Total	83	47	75	LMV-774; MMV-1593=2367 trips	3,801,600

Note LMV—Light Motor Vehicle,
MMV—Medium Motor Vehicle

Figure 3 Ward-wise Vehicles and Trips

which amounts to Rs. 760,320/-. Garbage collection is held twice or thrice a week. The frequency of collection is short of requirement and there are not enough vehicle trips corresponding to the volume of garbage piled up in the neighbourhood. Due to urbanization, quantity of garbage is increasing. The food habit of the Mizo also added the problem. For instance, bamboo shoots, the flower and fruit bud of the banana, etc. before sell in the market, the cover is peeled off and the inner part is sold, added hugely to the quantity and volume of the garbage. This however is not a regular source of garbage because market day is Saturday and the supply of Bamboo shoots and Banana is seasonal and it is not a problem throughout the year. And the people who brought garbage into the market are the small time vendor not commercial firms.

There is a variation in the amount of money collected by the Local Council from each and every family depending on the geographical location. In the centre of the city where market is located such as Zarkawt and Dawrpui the amount of collection from each and every household is comparatively higher than the collection in localities at the peripheral areas. Out of the 38 localities surveyed, in 17 localities the amount collected is Rs 30 per household, Rs 40 in five localities, Rs 20 in 10 localities, Rs. 50 in four localities, Rs. 33 and 25 in one locality each.

8.2 Place of dumping waste

For families who are not participated in solid waste management system through PPP mode, the place of dumping solid waste are waste pit owned by household, stream nearby, drainage, cliff nearby the locality, and it is also occasionally burned causing air pollution. In the area not accessible by road, garbage bags were placed but the disposal management was too difficult and was discontinued. The

reason for not partake in the PPP mode is due to the locations. The topography of Aizawl is a hilly area, rugged and steep slope. We can conclude that the 17% of the population in Aizawl are located in the geographically inaccessible area, far from the roads, beyond the reach of the vehicles and the topography of the place conforms to that which affects the solid waste collection system.

8.3 Punctuality of timing of vehicles and people

Due to narrow roads there is traffic jam and punctuality of collection vehicles is very critical. In several localities, garbage is dumped on the roadside which can be picked up afterwards by the collection vehicle. Normally, people have to wait for the vehicle to come and sometimes late on its timing. This creates a lot of problems for the people. Some localities are located in the commercial centre, vehicles cannot wait for the people due to traffic jams. At the collection centre, people put waste/garbage bags after collection timing which makes a problem for local councils.

8.4 Dumping ground for aizawl

Majority of the local council leaders are of the opinion that we need more dumping grounds. At present, there is only one major dumping ground at Tuirial located in the eastern side. Aizawl being a large urban centre, it is not convenient for the southern and western part of Aizawl to utilize the service of Tuirial dumping ground. Volume of garbage is increasing year by year. A study was conducted by National Environmental Engineering Research Institute (NEERI) in 2011 and the Pilot Demonstration Project on SWM in Aizawl under the Government of India assisted North Eastern Region Capital Cities Development Investment Programme (NERCCDIP) in 2014. As per the study, the waste generated per day in Aizawl has been calculated as:

Table 2 Waste generated in Aizawl City

2011 Population (Last Census)		293416		
2015 Population (Base year)		319837		
2020 Population (Projected Year)		353590		
Waste Composition	Percentage Waste	Quantity (MT/day) in 2011	Quantity (MT/day) in 2015	Quantity (MT/day) in 2020
Bio-degradable/Wet Waste	38%	52.4	60.75	71.65
Recyclable/Dry Waste	39%	53.78	62.35	73.53
Inert Ash & debris	23%	31.72	36.77	43.36
Total Waste	100	137.91	159.88	188.54
15% of the waste are considered as Debris and Demolition waste and the remaining 8% of Inert Matter will go to the landfill.				
Inert & other going directly to the landfill	8% of Total waste	11.03	12.79	15.08
Rejects from Composting to Landfill	10% of Wet Waste	5.24	6.07	7.16
Rejects from Resource Centre to Landfill	20% of Dry Waste	10.75	12.47	14.7
Total Reject/Inert going to Landfill	TPD (%)	27.02 (19.59)	31.33 (19.59)	36.94 (19.59)
Per-capita Waste Generation		470 gms/day/person	495 gms/day/person	528 gms/day/person

Source: SIPMIU, Aizawl

9 Good practices

1) In some localities such as Zarkawt, in the streets and market places Closed Circuit Television (CCTV) have been installed to observe the defaulters, thieves and pick-pocketers at the behest of the Clean Zarkawt Committee consisting of the people from the place. Now, Aizawl Municipal Corporation has installed CCTV at 33 different places of Aizawl for maintenance of peace and order.

2) Some of the Local Councils has formed Village Health Sanitation and Nutrition Committee and they function autonomously and they are selected from the citizen within the village/locality area

active in sanitation and health concerns. In some localities Clean and Beautification Committee actively works for cleanliness. The local council occasionally hire labour for cleanliness from the surplus fund collected for the SWM. A fine is imposed by the local council for offender disposing waste in the stream – first time Rs. 100/- and further – Rs 200/-.

3) Cleanliness awareness through a non-government organization known as Young Mizo Association (YMA) newsletter and through information mike announcement is occasionally held. House to house campaign is also held at certain points of time. Local Council and YMA jointly organised community service for cleaning drainage. Sanitation awareness campaign is organized at schools and offices.

4) Local churches of different denominations, as Mizoram is a Christian state also play an important role in maintenance of cleanliness and held campaign towards this end occasionally during the church services. They also distribute pamphlets and leave-lets as awareness generation within their church jurisdiction.

10 Local Council's plan for waste management

Local Councils in Aizawl are planning a course of action to be implemented in the near future which are:

- 1) To hire waste collector at the expense of local council in places located far from the road.
- 2) To organize community cleanliness work
- 3) House to house campaign
- 4) Setting up task force to strictly enforce/implement regulations
- 5) Awareness campaign among the temporary dwellers of the locality
- 6) Distribute dustbin/ dustbin placed on the road
- 7) To strictly ensure waste is dumped only in vehicle
- 8) To build good roads within the locality so that waste can be collected from each and every household
- 9) Occasional campaign through information mike
- 10) Hire extra vehicle for waste disposal at the expense of local council
- 11) Cleanliness competition between different section to section in a locality
- 12) Imparting importance of cleanliness on Sunday morning/ local newspaper
- 13) Distribute garbage bag for every household.

11 Conclusion

The results arrived from the analysis entails several important areas for consideration and discussion. Resource available with Aizawl Municipal Corporation for waste management is limited and there is infrastructure deficit. This is supplemented by people's participation with or without stakeholders in the different aspects of waste management- finance, collection, manpower, planning, dumping, awareness, monitoring, knowledge and behaviour. Without people's participation, waste management would not be at the level of progress as it were today. People's contribution and involvement in the waste management is undoubtedly the reason for its achievement. The stakeholders are the local council, Young Mizo Association, village sanitation and nutrition committee, community and the Aizawl Municipal Corporation. Enhancement of infrastructure and other necessary resources along with increasing the level of awareness and strict enforcement of regulations are the next step in urban solid waste management in Aizawl. Meanwhile, it is also pertinent to mention here that while solid waste management was touted as a successful local PPP by the UD & PA and AMC, the Jawaharlal Nehru National Urban Renewal Mission (JnNURM) Secretariat has an opposite view and disagreed to it because it did not involved private parties. ADB Consultants, state government and AMC confessed that private companies were not interested in doing business in Mizoram, making more typical PPPs unlikely to roll out in the future (Kamath & Wainganka, 2015). This also makes it clear that capacity building of the AMC is the best and most feasible option for achieving better service delivery in the long run.

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Fairness Perception, Political Trust and Civic Engagement

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Abstract In this paper, we seek to explain: 1) How does the degree of political trust affect citizen participation? 2) Does fair perception play a moderating role in the relationship between political trust and civic participation? We use the data of Chinese Democratic Barometer Survey in 2015 to investigate the above problems. Picking two types of political trust—organizational trust and institutional trust as independent variables, we explore the relationships between them and civic engagement: electoral participation, political contact and non-electoral participation. Our results show that: 1) The higher the degree of institutional trust, the higher the enthusiasm of citizen participation, except the violence activities, but the degree of the trust of court is negative related to civic engagement. 2) Fairness perception is significantly related to political trust, and the perception of fairness will further strengthen the influence of political trust on citizen participation. What's more, we also found that the higher the income, the lower the degree of civic engagement, and in our society, men, older in age and more educated people would like to participate in political activities more frequently.

Key words Fairness perception, Political trust, Civic engagement

1 Introduction

The citizen's moderate participation in the country's political life will not only benefit a country's political stability, but also, to a certain extent, improve the government's work efficiency, administrative capacity and service level. The degree of citizen's participation in political life depends on the social and economic development of the country and the political attitude of the individual.^[1] Political trust as a kind of political attitude effects a country's political life in two aspects, the macro aspect and the micro aspect: macroscopically speaking, good political trust indicates that the country has good governance and then the civic morality will be improved, from the microscopic perspective, political trust affects people's enthusiasm for political engagement. As far as its function is concerned, political trust helps to maintain political stability, and a government with high levels of political trust shows that citizens are satisfied with the government, which allows them to voluntarily obey the law, to coordinate the policy and to support the government.^[2] At the same time, to stimulate a higher level of political system also satisfied with the government, thereby increasing the stability of political system and continuity, political trust also enables citizens to actively respond to the government's call, to participate in various public activities, the goal of the government is more likely to succeed. At present, the most researches on political trust and citizen participation are concentrated on qualitative analysis. Our country started relatively late, and the conclusions of those studies are mostly focused on the direct relationship between political trust and citizen engagement. Therefore, this paper takes the degree of political trust as the independent variable to explore the influence of political trust on the electoral participation, political contact and non-electoral participation.

However, according to the current national conditions of our country, the contradiction between steady economic development and equitable distribution of interests has become increasingly prominent, so the degree of political trust is not only affected by the individual's evaluation of the service quality of the government, but also affected by the degree of the individual's fair recognition of the distribution of benefits.^[3] People's perception of fairness has formed an invisible influence on political trust, which further affects the enthusiasm of citizens to participate in political life. So this paper starts from the relationship between fairness perception and political trust, focusing on the moderating effects of fairness perception to the relationship between political trust and civic engagement. It has practical significance for improving political trust and increasing people's willingness to participate in the country's political life.

2 Literature review and research hypotheses

2.1 Political trust and civic engagement

Political trust is an interaction between the people and the political system, a specific relationship between the people, the political system and the social environment, a historical, continuous adjustment, repair and development of the dynamic process. From the perspective of political psychology, political trust reflects the consistency between government performance and civic expectations.^[4] Generally speaking, political trust includes three aspects: organizational trust, institutional trust and government official trust. Therefore, a higher level of political trust greatly benefits the stability of the national political system and continuously, also affects more people's willingness to participate in the national political life.^[5] There are some studies that suggests individuals with higher participation in political activities have higher political trust. However, those who lack of confidence on government, and do not trust political systems often show a relatively lower enthusiasm to civic engagement, and their political efficiency is weak either. All of those phenomena can be seen in their negative performances on voting and election.^[6] Besides, many domestic studies support the conclusion that there is positive relationship between political trust and citizen participation. For example, many studies have shown that urban and rural residents actively participate in the election vote, often corresponding to higher political trust.

However, some studies have found that there is a negative correlation between political trust and political participation. The person with the higher degree of the trust to the inspection organ and the people's Congress would like to has the lower enthusiasm to participants to vote and election. Even some studies have found that there is only a weak correlation between the villagers' trust in the village committee and the township government and their participation in the election behavior of the village committee, while the trust of the villagers to the township government is negatively related to their election behavior.

So in order to have a further study of political trust and civic engagement, to draw a conclusion about their relationship, we made some assumptions about them:

Hypothesis 1 Political trust has positive predictive effect on electoral participation.

Hypothesis 2 Political trust has positive predictive effect on political contact.

Hypothesis 3 Political trust has positive predictive effect on non-electoral participation.

2.2 Fairness perception, political trust and civic engagement

The fairness of society has a long history, involving social life, economic development, political stability and other aspects. From the micro perspective, the individual perception of justice can be divided into the results fair (distributive justice) and procedural fairness, which become one of the criteria for social justice.^[7] On the one hand, distributive fairness emphasizes the people's perception of fair distribution of economic development results; on the other hand, procedural justice emphasizes the people's control over people's economic rights. If the people have a direct sense of social fairness and justice, and have a high evaluation, this will inevitably promote individuals to actively participate in public management, and promote the construction of a harmonious society.

During the process of political trust predicts civic engagement, the high level of political trust, whether it indicates the high quality of the political participation, or also has to consider the influence of other social environment and individual psychological variables, such as personal interest reflection and emotional reactions caused by a sense of public social justice. Therefore, we choose fair perception as the moderating variable to further investigate the relationship between political trust and fair participation.^[8] In the field of social resources, the fairness of allocation can effectively protect and improve the social situation and the quality of life of the public, which makes the personal interests and public policy formation closely, and thus enhance the enthusiasm of the public to actively participate in the policy formulation and implementation process.

Due to different social resources, different social and economic conditions and different interests, these will affect the political trust of the people. We can infer that when people have different levels of perceived fairness, they have a corresponding impact on the extent of political trust.

Hypothesis 4 Perceived fairness is positively related to political trust.

In addition, the perceived experience of fairness, which reacts to the level of political trust, will

ultimately have an impact on the extent of civic engagement.^[9] When individuals feel the fairness of results and procedure, because they are treated fairly, they will actively participate in political activities, but if a person feels a long-term of injustice treatment, he/she would remain the dissatisfaction for a long time, which leads to political trust decline, and has a negative influence on civic engagement.^[10]

Based on the above analysis, this paper will include fair perception into the analysis of the relationship between political trust and citizen participation. Fairness perception plays a moderating role in political trust and citizen participation.

Hypothesis 5 Fair perception has a positive moderating effect on the relationship between political trust and electoral participation. Specifically, people have higher perceived justice, the effect of prediction that political trust predict electoral participation will be stronger.

Hypothesis 6 Fair perception has a positive moderating effect on the relationship between political trust and political contact.

Hypothesis 7 Fair perception has a positive moderating effect on the relationship between political trust and non-electoral participation.

3 Data, variables, and methods

3.1 Sample situation

According to the theme of this study, the author used the method of GPS sampling survey in several provinces and cities in China during the summer vacation of 2015, and in the form of face-to-face interview, we interviewed people who was be selected by our method and over 18 years old. During the period, we went to Yunnan, Guangzhou, Sichuan, Qinghai and many other provinces. In the northeast and north China, there were also corresponding university teams to participate in this surveys and data collections. Finally, 4068 samples were collected, the age of respondents ranged from 18~94 years old. The profession of respondents involved in various fields, the degree of education is different, so this data sample was diversity and comprehensiveness. This paper uses SPSS 24.0 as the method of data management and statistical analysis to do some other analyses.

3.2 Measuring independent variables

3.2.1 Political trust

We divide the political trust into organizational trust and institutional trust, as shown in Table 1. Among them, the organization trust chose the court, the central government, the National People's Congress, the general government officials, the PLA, the public security departments, and the local government, as an object, and there is a question to ask the public about the degree of confidence in these institutions. The degree of trust can be divided into six categories: full credible, fairly credible, somewhat believable, somewhat unreliable, fairly unreliable, totally unreliable. The encoding is from high to low, and the original data encoding is used in our statistics. The institutional trust, we select four questions to measure it: 1) In a long term, our political institutions can solve most problems we faced now. 2) Generally speaking, I am proud of our political system. 3) Although there are some problems in our political institutions, we should support them. 4) Compared with other countries, I would like to live in our political system instead of others. We asked respondents agree or disagree with these four questions. There are four level of the answers: strongly agree, agree, strongly disagree and disagree. We recode strongly agree and agree into the number 1, and recode the other answers into 0, and as a result those four questions had been recoded as (0,1) variable.

3.2.2 Fairness perception

We divide the measurement of fair perception into distributive justice perception and procedural fairness perception. About the distributive justice perception, we select the question: Do you think the income distribution in China at present is fair or not? There are four options: very fair, fair, unfair, and very unfair. We recode the options: very fair and fair into 1, and the options: unfair and very unfair into 0. So that this variable had been recoded as (0,1) variable.

As for the procedural fairness perception, we chose the question: Generally speaking, do you think the last election in your community/rural area is fair? There are four specific options: very fair, basic fair with small problems, fair with obvious problems, and not fair. We recode the formal two options into 1, and the later options into 0, so this question had been recoded as (0,1) variable.

3.3 Measuring dependent variables

There are many types of civic engagement, each of them could have a different nature, depending on its action, purpose or level of intensity. In this paper, we categorize civic engagement into three parts: electoral participation, political contacts, and non-electoral participation.

First, “electoral participation” includes: voting, joining campaign activities, persuading others to vote for some one, helping a party or candidate. The question of voting is that during election, some people do not vote because they are out of their homes, their lives, or their time. Do you vote in the community / village elections? There are two options: vote and not vote. So we also recoded it as (0,1) variable. As for the other three activities, we asked them have you ever participate in those following three activities, and there are two options: yes and no. We recode it as (0,1) variable.

Second, “political contact” refers to: trying to obtain contact with legislative representatives, higher-level officials, community leaders, influence people, media. We asked respondents, in the past three years, have you taken any measures to put forward your opinion or solve the problems you have encountered? There are four options: more than once, once, never do it but if it is needed, I will do, and never do it before and later. We recode the answer more than once and once into 1, and the other two into 0, make it as (0,1) variable.

Third, “non-electoral participants” contains: getting others to resolve problems, signing a petition, attending a demonstration, using violence for political cause. We asked four questions to measure non-electoral participation: 1) In the past three years, have you worked with everyone to find ways to solve local problems? 2) Have you made any requests or petitions together with other people over the past three years? 3) Have you ever been on a demonstration in the past three years? 4) Have you ever solved the problem by violence in the past three years? There are four options for each question: more than once, once, never do it but if it is needed, I will do, and never do it before and later. We recode the answer more than once and once into 1, and the other two into 0, make them as (0,1) variables.

3.4 Demographic variables

During the research process of statistical analysis, we also control some variables that may have influence on the relationship of political trust, citizen participation and fair perception, including sex, age, education level, and income. Among them, gender and education are classified variables, we recode them as (0,1) variables, and the remaining variables are fixed distance variables, which can be directly brought into the statistical analysis, as shown in Table 1.

Table 1 Construction of variables and exact wording of questionnaire items

Variables	Question	Scale	Coding method
Independent variables: political trust			
Organizational trust:	What’s your level of trust in the following organizations?		
	Court	(1,6)	Original coding
	central government	(1,6)	Original coding
	National People’s Congress	(1,6)	Original coding
	General government official	(1,6)	Original coding
	People’s Liberation Army	(1,6)	Original coding
	Public security bureau local government	(1,6)	Original coding
Institutional trust:	We would like to know what you think of the following statements, do you agree or disagree		
	In the long run, our political system can solve the major problems facing our country	(0,1)	Coded as “1” if choosing “very agree” and “agree”
	On the whole, I am proud of our political system.	(0,1)	Coded as “1” if choosing “very agree” and “agree”

Variables	Question	Scale	Coding method
	Even if our political system has such a problem, people should support it	(0,1)	Coded as “1” if choosing “very agree” and “agree”
	Compared with the political system of other countries, I prefer to live under the political system of our country	(0,1)	Coded as “1” if choosing “very agree” and “agree”
Justice perception:			
Result fairness perception:			
Distributive justice	Do you think our current income distribution is very fair, fair, unfair, or very unfair?	(0,1)	Coded as “1” if choosing “very fair” or “fair”
Perceived procedural justice:			
Election equity	Overall, do you think that your community / village in the last election was fair?	(0,1)	Coded as “1” if choosing “very fair” or “fair”
Control variables: demographic information			
Male	SE2. GENDER		
Age	SE3. BRITH YEAR	(0,1)	Dummy, male=1
Education	SE5. What is your highest level of education	17_94	Survey year-se3
Income	SE13. HOUSHOLD INCOME	(1,10)	Original coding
Dependent variable: civic engagement		(1,5)	Original coding
Electoral participation			
Voting	Did you vote in the most recent national election?	(0,1)	No/yes
Campaign activities	Thinking about the national election in [year], did you attend a campaign meeting or rally?	(0,1)	No/yes
Persuading others	Thinking about the national election in [year], did you try to persuade others to vote for a certain candidate or party?	(0,1)	No/yes
Helping out a party/candidate	Thinking about the national election in [year], did you do anything else to help out or work for a party or candidate running in the election?	(0,1)	No/yes
Political contacts			
Representative	In the past 3 years, have you never, once, or more than once contacted elected official or legislative representatives at any level?	(0,1)	Never/at least once

Variables	Question	Scale	Coding method
Higher-level officials	In the past 3 years, have you never, once, or more than once contacted officials at higher level?	(0,1)	Never/at least once
Community leader	In the past 3 years, have you never, once, or more than once contacted traditional leaders/community leaders?	(0,1)	Never/at least once
Influential people	In the past 3 years, have you never, once, or more than once contacted other influential people outside the government?	(0,1)	Never/at least once
Media	In the past 3 years, have you never, once, or more than once contacted news media?		
Non-electoral participation			
Solving local problems with others	Have you never, once, or more than once together with others to try to resolve local problems?	(0,1)	Never/at least once
Signing a petition	Have you never, once, or more than once gotten together with others to raise an issue or sign a petition?	(0,1)	Never/at least once
Attending a demonstration	Have you never, once, or more than once attended a demonstration or protest March ?	(0,1)	Never/at least once
Using violence for a political cause	Have you never, once, or more than once	(0,1)	Never/at least once

4 Conclusions

4.1 The relationship between fairness perception and political trust

We used correlation analysis to analyze the relationship between political trust and fairness perception. From the result of correlation, we can see that political trust is positively related to fairness perception. Fairness perception is positively related to all government agencies except courts, and is positively related to all of the institutional trust, and there is no negative correlation between political trust and fairness perception. It can prove that hypothesis 4, a positive correlation between political trust and fairness perception, is right.

Table 2 Correlation analysis of justice perception and political trust

Measure of justice perception		Correlation(overall)	Political trust		
			Positive	Non-significate	Negative
Fairness of outcome	Q1	0.093	10	1	0
Fairness of process	Q2	0.102	10	1	0

4.2 Electoral participation

4.2.1 Political trust and electoral participation

We used regression analysis to analyze the relationship between political trust and electoral participation. From the result of regression in Table 3, we find that the degree of trust between the

people and the central government is significantly related to the voting activities of citizens and the behavior of mobilizing others to vote, but it's a negative relationship, which indicates that the more people trust the central government, the lower their willingness to vote. What's more, there is a significant positive correlation between the degree of trust of local government and the mobilization of other people's votes and the election of candidates, and there is a significant positive correlation between the trust of government officials and the behavior of others, and the degree of confidence of the people in the system is positively related to the meeting of the participants in the election and the presentation of the candidates. Besides, age, education and citizen participation have significant positive correlation. It shows that the older people, the more educated people are more willing to participate in political activities, and the degree of participation in income and activities is significantly negative correlation. As to the hypothesis1, we can say that trust in the central government has a negative predictive effect on electoral participation, and the trust in the local government has a positive predictive effect on electoral participation, and institutional trust has a positive predictive effect on electoral participation.

Table 3 Regression analysis of political trust and electoral participation

	Voting	Campaign activities	Persuade others	Help for a party/candidate
Court	-0.008	-0.008	-0.015	-0.014
Central government	-0.060**	0.022	0.061**	0.035
National people's congress	-0.006	0.004	-0.035	-0.025
General government official	-0.026	0.013	0.052**	0.058
People's liberation army	-0.006	-0.005	-0.003	-0.004
Public security bureau	0.007	-0.03	-0.008	-0.003
Local government	0.013	0.024	0.078**	0.080*
Institutional trust 1	0.029	0.079**	0.001	0.028
Institutional trust 2	0.047*	0.035	0.002	0.014
Institutional trust 3	0.021	0.014	0.043*	0.019
Institutional trust 4	0.039*	0.039*	-0.016	-0.004
Male	-0.014	0.007	-0.029	-0.024
Age	0.141**	0.118**	0.021	0.002
Education	-0.108**	0.004	-0.01	-0.02
Income	-0.008	-0.012	0.003	0.011
R2	0.056	0.028	0.006	0.005
Sig	0.121	0.373	0.001	0.004

*: p<0.05, **: p<0.01

4.2.2 Political trust, fairness perception and civic engagement

We used regression analysis to analyze the relationship between political trust, fairness perception, and civic engagement. As we can see from the Table 4, after adding fairness perception as a moderating variable, showing in the Table 4, we find that organizational trust is still significantly related to electoral participation, just the correlation is strengthened and the correlation coefficient becomes larger. What's more, the perception of procedural justice is positively related to electoral participation except persuading others. After the addition of fair perception, the significant of overall regression model is largely improved, and the degree of explanation to dependent variable is obviously enhanced either. So hypothesis 5 can be proved that fair perception have a positive moderating effect on political trust and electoral politics.

Table 4 Regression analysis of political trust, fairness perception and electoral participation

	Voting	Campaign activities	Persuade others	Help for a party/candidate
Court	-0.015	-0.013	-0.016	-0.015
Central government	0.052**	0.017	0.061**	0.034
National people's congress	-0.001	0.007	-0.035	-0.025
General government official	-0.028	0.012	0.052**	0.058
People's liberation army	0.013	0.008	-0.001	-0.002
Public security bureau	0.022	-0.02	-0.007	-0.004
Local government	0.067**	-0.028	0.086*	0.086**
Institutional trust 1	0.005	0.064**	-0.001*	0.025
Institutional trust 2	0.012	0.012	-0.001*	0.011
Institutional trust 3	0.012	0.008	0.042*	0.018
Institutional trust 4	-0.003	0.011	-0.02	-0.007
Male	-0.010	0.01	-0.028	-0.023
Age	0.113**	0.099**	0.018	0.001
Education	-0.067**	0.031	-0.006	-0.016
Income	-0.004	-0.01	0.003	0.011
Fairness of outcome	-0.025	-0.018	0.004	0.017
Fairness of process	0.476**	0.313**	0.044**	0.028
R2	0.209	0.118	0.007	0.005
Sig	0.00	0.00	0.00	0.003

*: p<0.05, **: p<0.01

4.3 Political contact

4.3.1 Political trust and political contact

We used regression analysis to analyze the relationship between political trust and political contact. From the result of regression in Table 5, we find that there are significantly negative relationships between the confidence in the court and the contact with deputies to the NPC, leadership at higher levels, and media, and the more trust the local government has, the less contact with higher-level leader and influential people will be. What's more, institutional trust is significantly positive related to political contact except media. Besides, male, elder, and more educated people would like to be more active in political contact, and income also has negative relationship with political contact. So, we can answer the hypothesis 2 that organizational trust has positive relationship with political contact and institutional trust has negative relationship with political contact.

Table 5 Regression analysis of political trust and political contact

	Representatives	Higher-level officials	influential people	media
Court	-0.066**	-0.079**	-0.006	-0.052**
Central government	0.009	0.014	0.015	0.034
National people's congress	0.007	0.008	-0.024	-0.009
General government official	0.003	0.022	0.012	-0.014
People's liberation army	0.004	-0.012	0.007	-0.022
Public security bureau	-0.019	-0.01	-0.045*	-0.014
Local government	-0.02	-0.079**	-0.057*	-0.006
Institutional trust 1	0.045*	0.074**	0.055	-0.002
Institutional trust 2	0.036	-0.004	-0.031	-0.004
Institutional trust 3	0.002	0.021	0.038*	0.027
Institutional trust 4	-0.026	-0.018	0.006	-0.025

	Representatives	Higher-level officials	influential people	media
Male	-0.03	-0.056**	-0.049**	-0.045**
Age	0.03	0.036*	-0.043*	-0.03
Education	0.001	0.043*	0.043*	0.056**
Income	0.00	-0.034*	-0.02	-0.005
R2	0.009	0.029	0.023	0.012
Sig	0.000	0.000	0.000	0.000

*: p<0.05, **: p<0.01

4.3.2 Political trust, fairness perception, and political contact

We used regression analysis to analyze the relationship between political trust, fairness perception and political contact. As we can see from the Table 6, after adding fairness perception as a moderating variable, the significant relationship has been enhanced by fairness perception. Though compared to the Table 4 the significant of this model is not changed, the explanation of dependent variable becomes higher. So hypothesis 6 can be proved that fair perception has a positive moderating effect on political trust and political contact.

Table 6 Regression analysis of political trust, fairness perception and political contact

	Representatives	Higher-level officials	influential people	media
Court	-0.068**	-0.079**	-0.006	-0.052**
Central government	0.008	0.014	0.015	0.034
National people's congress	0.008	0.008	-0.024	-0.009
General government official	0.002	0.021	0.012	-0.014
People's liberation army	0.006	-0.011	0.006	-0.022
Public security bureau	-0.019	-0.011	-0.046*	-0.014
Local government	-0.029	-0.081**	-0.053*	-0.004
Institutional trust 1	0.041*	0.072**	0.056**	-0.001
Institutional trust 2	0.032	-0.005	-0.029	-0.003
Institutional trust 3	0.000	0.02	0.038*	0.027
Institutional trust 4	-0.03	-0.019	0.009	-0.024
Male	-0.029	-0.056*	-0.05**	-0.045**
Age	0.027	0.036*	-0.042*	-0.03
Education	0.006	0.045**	0.041*	0.055**
Income	0.000	-0.034*	-0.02	-0.005
Fairness of outcome	0.014	0.009	0.002	-0.004
Fairness of process	0.045	0.008	-0.026	-0.01
R2	0.011	0.028	0.023	0.012
Sig	0.000	0.000	0.000	0.000

*: p<0.05, **: p<0.01

4.4 Non-electoral participation

4.4.1 Political trust and non-electoral participation

We used regression analysis to analyze the relationship between political trust and non-electoral participation. From the result of regression in Table 7, we find that the higher degree of trust in organizational trust, the lower chance of non-electoral participation will be. Institutional trust is significantly negative related to non-participant participation, except the demonstration. What's more, the elder, more educated people seems have lower chance to take part in non-electoral participation especially the violence. As to the hypothesis 3, we can say that political trust has significantly negative relationship with non-electoral participation.

Table 7 Regression analysis of political trust and non-electoral participation

	Solve local problems	Petition	Demonstration	Violence
Court	-0.051**	-0.059**	0.007	-0.075**
Central government	-0.056*	0.007	0.036	-0.024*
National people's congress	-0.032	0.001	-0.056*	-0.043*
General government official	-0.025	-0.011	0.026	-0.042*
People's liberation army	0.037	0.016	0.015	0.049
Public security bureau	-0.031	0.002	-0.012	-0.006
Local government	-0.004	-0.082**	-0.062**	-0.128**
Institutional trust 1	0.044*	0.038*	0.018	-0.047**
Institutional trust 2	0.05*	0.024	-0.036	-0.031
Institutional trust 3	0.021	0.023	0.017	-0.089**
Institutional trust 4	0.016	-0.017	0.009	-0.019
Male	-0.064**	-0.04*	-0.031	0.00
Age	0.028	0.014	-0.057**	0.002
Education	-0.023	-0.041*	-0.004	-0.104**
Income	0.012	-0.031*	-0.02	-0.016
R2	0.022	0.018	0.007	0.053
Sig	0.000	0.000	0.000	0.000

*: p<0.05, **: p<0.01

4.4.2 Political trust, fairness perception and non-electoral participation

We used regression analysis to analyze the relationship between political trust and non-electoral participation. From the result of regression in Table 8, the negative prediction of political trust to non-electoral participation has been improved. The higher the perceived level of justice, it is the more likely that people will work together to address local problems, but the risk of violent events decreases. Besides, after the variable of fairness perception was added, the significance of the model remained unchanged, but the explanatory degree of dependent variable was increased. So we can say hypothesis 7 that fairness perception has positive moderating to the relationship between political trust and non-electoral participation is true.

Table 8 Regression analysis of political trust and fairness perception and non-electoral participation

	Solve local problems	Petition	Demonstration	Violence
Court	-0.053**	-0.06**	0.007	-0.075**
Central government	-0.055*	0.007	0.037	-0.024*
National people's congress	-0.031	0.001	-0.055**	-0.043**
General government official	-0.026	-0.012	0.026	-0.042
People's liberation army	0.042**	0.019	0.016	0.049
Public security bureau	-0.03	0.00	-0.016	-0.006
Local government	-0.02	-0.086**	-0.06**	-0.127**
Institutional trust 1	0.037*	0.034	0.017	-0.047*
Institutional trust 2	0.042*	0.021	-0.036	-0.031
Institutional trust 3	0.019	0.022	0.016	-0.089**
Institutional trust 4	0.009	-0.019	0.01	-0.019
Male	-0.063**	-0.039*	-0.03	0.00
Age	0.023	0.014	-0.056**	0.002
Education	-0.014	-0.038	-0.004	-0.104
Income	0.012	-0.031	-0.02	-0.016
Fairness of outcome	0.021*	0.03	-0.033	-0.001*
Fairness of process	0.082**	0.014	-0.023	-0.007*
R2	0.029	0.019	0.008	0.052
Sig	0.000	0.000	0.000	0.000

*: p<0.05, **: p<0.01

5 Enlightenments and deficiencies

5.1 Enlightenments

On the whole, the institution of government trust, especially trust in local government has significant positive correlation with the political activities, except the violence; the trust of institutional, especially the confidence on the political system will reduce people's willingness of contact with political officers, which reflects that the people fully trust in government. Therefore, improving people's political trust will help people to participate in the country's political life, and maintain political stability, legitimacy and scientific.

In demographic variables, men are more active than women in political participation, and the more educated people are more frequently associated with political activities. We should notice that the level of income is negatively related to the degree of political participation, indicating that people have a certain measure of economic and political activities.

There is a significant correlation between perceived fairness and political trust, and perceived fairness for political trust on the prediction of citizen participation strengthen the role of the positive, and can change more comprehensive explanation of citizen participation. From the result of data, we can conclude that process perception is positively related to all of the political participation, expect the violence, suggesting that the sense of fairness will have an impact on the enthusiasm of citizen participation.

5.2 Deficiencies

The full text of the theoretical framework is not strong enough, there are still many deficiencies in the literature, and there are still some deficiencies in the collection of information. In this paper, election participation, political connections and non voting participation are chosen as dependent variables, but they can not be guaranteed in the activities of each dimension. And in the measurement and statistics of the data, there is a certain generality, and can not pick out the extreme value, which has certain influence on the accuracy of the final structure. The selection of the control variables is not comprehensive enough to join the regional, occupational and other demographic variables, which has a certain impact on the authenticity of the final data. The selected data are cross-sectional data at a point in time, and therefore insufficient evidence of causality has yet to be added to the intergenerational analysis and other variables to be explain. Finally, there is a lack of statistical data, which may have influence on the final conclusions.

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The Evaluation of Regulation Performance in Chinese Urban Water Public and Private Partnership Projects in China *

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Abstract In recent years, the public has increased their attention on the regulatory responsibility of the government due to a series of severe water pollution accidents, the loss control of investment and operation risks of water sector Public-Private Partnership companies and contractual disputes. In the course of the privatization of Chinese water utility industry, the effective government regulation has become an indispensable tool of governance. The evaluation of government regulatory performance is an essential method of improving the level of regulation and service quality of water sector PPP projects. This article aims at developing evaluation indicators to measure government regulatory performance from the perspective of public accountability and oriented by efficient value and public value, with the target of maximizing the government regulatory performance in the process of privatizing public utilities.

Key words Urban water PPP projects, Government regulatory performance, Public accountability, Evaluation indicators

In recent years, the activities of water sector privatization tend to shrink in an increasing number of countries and international development agencies, while China is actively promoting private sector involvement in urban water governance (Zhong and Arthur, 2008^[1]), using various forms of Public-Private Partnerships (PPPs) with the aim of achieving more efficient and effective governance in the water sector. Since China embraced the water utility privatization reform and established the concession system in 2003, the world's three leading water private companies Suez, Veolia and RWE have entered into Chinese water industry in the formation of BOT, TOT, joint venture and other PPP models.

Urban water sector is a natural monopolized and capital-intensive industry, which is related to water resources development, utilization as well as protection of all urban water resources, including water supply, water saving, water draining and water sewage treatment. The privatization of the water sector is the marketization of the water supply mechanism and government regulatory responsibility of the water sector is crucial to privatization. The privatized water companies which lack the external regulation are easily damaging water environments and public interest, resulting in government regulation failure. In recent times, public attentions have concentrated on regulatory accountability of government due to a series of severe water pollution, the increasing investment and operational risk of water PPP companies and PPP contract disputes. As a defender of public interest and a regulator of public utility, the government should consider how to bear its own responsibility and improve the regulatory performance. Based on the analysis of practical cases and regulatory experience, this paper aims to develop regulatory performance indicators of urban water sector PPP projects from the perspective of public accountability in China.

1 The background of water sector reform

After experiencing durative prosperous development during 1995-2002 and followed by the plummet of global financial crisis between 2008 and 2012, the public-private partnership model in the

* Financed by Key Project Program of the National Social Science Foundation of China "The Legislation Research on Public and Private Partnership"(Project No.: 15ZDB174); Graduate Student Innovative Research Project of Chongqing Municipality "The Building of Regulatory Performance Indicators in Chinese Urban Water Sector PPP Projects" (Project No.: CYS16108); and by Key program of Graduate Student Innovative Research of Southwest University of Political Science and Law "PPP Projects Regulation in Foreign Countries and the enlightenment to China"(Project No.: XZYJS2015060).

water sector has enjoyed flourish in a new round. According to the PPPs Comprehensive Information Platform of the Ministry of Finance, the total number of PPP projects for sewage treatment, water supply and environmental protection was 1257 by the end of 2016, accounting for 11.58% of total projects. In accordance with the estimation of “Economic Daily”, the national sewage treatment capacity will reach to 67.4 billion tons by 2018 and water supply will rise to 72.4 million tons, the average annual growth rate is 8.7% and 2.4% respectively, which shows that the water PPP project scale has a huge growth potential. The widespread of the PPP models is due to the nourishment of the private sector’s participation in the public sector, embracing market-oriented reform of public service supply in the background of the new public management movement.

In the water sector, privatization encourages private companies to participate in the public utility supply, endorsing competition among the public and private water suppliers by breaking the monopoly of governments, thus achieving an efficient allocation of water resources. It covers types from service outsourcing, concession to privatization, characterized with the gradual deepening in the degree of private participation. Currently, China’s urban water privatized models are mainly contract management, delegated operation, lease management, concession, joint venture and overall transfer¹. This article integrates all of privatized models into PPP models.

In April 2015, the State Council formally enacted the “Water Pollution Prevention Action Plan”, proposing to take environmental contract services and PPP models to encourage private participation in water environmental protection investment. In the same year, the Ministry of Environmental Protection issued “Promotion of Public-Private Partnerships in the Water Pollution Governance”, stressing the establishment of PPP projects regulatory mechanisms. In November 2016, the National Development and Reform Commission together with the Ministry of Housing and Urban Development released the “The 13th Five-Year of National Urban Sewage Treatment and Recycling Facilities Construction Planning (Draft)”, underlining that it is very important to establish a scientific, comprehensive and strict performance evaluation system, concentrating on a reasonable evaluation indicators and standards. The following question is how to build reasonable regulatory evaluation indicators?

2 Policy consideration and literature review

In the early twentieth century, American scholar Guernsey pointed out that the public welfare of public utilities requires that public interest needs to be protected and if the government regulation is successful, it will enhance the overall welfare of the public (Guernsey, 1915^[2]). In 2015, the “Regulation Policy Outlook” published by OECD stated that “Regulation is one of the three core levers for governments to manage the economy and strengthen the well-being of citizens. But, when poorly conceived, regulation can become irritating. Worse, they can become ineffective in achieving their objectives and fail to protect us and we lose trust in our institutions” (OECD, 2015^[3]).

Later around 1980s when the new public management movement prevailed, de-regulation was a dominant social thought. However, with the increasing complexity of economic and social life, government regulation in some areas has not been removed, yet showing a certain degree of strengthening, resulting in the re-regulation phenomenon. In modern society, there is a great possibility that people are exposed to unknown risk situations, but people have limited awareness and resistance to risk, therefore government should maintain social regulation with regards to health, security and Environment protection, also known as HSE regulation (Gu, 2016^[4]). In the background of neoliberal deregulation, the status of social regulation, both from the number of policies enacted by government and the effectiveness of policy enforcements, has transcended economic regulation (Eisner, 2000^[5]).

Water sector regulation is one of typical examples, covering economic regulation as well as social regulation. In the process of privatization, the way to compromise profit-making purpose mechanisms with high quality public services provision and public interest protection is an essential concern for

1 We undertake the generalized concept of PPPs defined by the World Bank, meaning that public sectors and private sectors build partnerships with each other, in order to better provide public products and services, including types of outsourcing, concession and privatization, in the form of TOT、ROT、BOT、BOO models. For more details, please refer to “The Development Report of World Bank (1999-2000)”.

most PPPs legislators and government regulators. The regulation of water sector PPP projects in our article means that in accordance with relevant laws and regulations, government water regulatory agencies directly or indirectly interfere with the operation of PPP projects in the water sector, including economic regulation, social regulation and administrative regulation. Specifically this includes the regulation of market access and exit, water prices and quality, water and environmental security.

Some research results show that water regulation promotes the efficiency of the water industry, and the development of water regulation indicators is the core of water regulation. After studying the water sector privatization in UK, Saal and Parker argue that the economic regulation has led directly to an increase in the efficiency of the water industry (Saal and Parker, 2001^[6]). Laetitia indicates that developing evaluation indicators for regulatory performance is an effective tool for French local governments to enhance water utilities management. She believes that indicators should be able to effectively meet the water quality demands, promote communication with consumers and enhance service transparency. There are four groups of indicators: network governance and service sustainability, quantity and quality of resource management, complaint analysis, and consumer service (Laetitia, 2005^[7]). Stern and Holder explored factors influencing the regulation governance of infrastructures and public utilities, proposing six indicators involved with the role, objectives, autonomy, accountability and transparency of regulatory agencies, and multi-participation in regulation process, they also applied indicators to analyze six developing countries (Stern and Holder, 1998^[8]).

Up to now, international organizations have published many influential research reports on regulatory performance indicators and assessment of infrastructure regulation systems. OECD once issued a series of expert reports to assess the performance of regulatory agencies and regulatory policies, which divide regulation performance indicators into input indicators, process indicators, output indicators and performance indicators (OECD, 2012^[9]). The World Bank released “Handbook for Evaluating Infrastructure Regulatory Systems”, arguing that any evaluation of regulatory effectiveness must examine the entire regulatory system which consists of regulatory governance and regulatory substance. There are three meta-principles for all infrastructure regulatory systems, namely credibility, legitimacy and transparency (World Bank, 2016^[10]). European Environment Agency provided guidance to EU member states on the performance management of water utilities. They raise the structure of wastewater treatment performance indicators including environmental, physical, personnel, operational, quality of service, economic and financial indicators (EEA, 2014^[11]).

In China, there are also relevant research achievements in the development of regulatory performance indicators. Li divides performance evaluation indicators of US public utility regulators into “internal performance” and “external accountability”. The former includes the performance of regulatory agencies itself, the administrative performance of regulatory agencies and the economics of internal management; the latter includes external economic performance and social responsibility performance (Li, 2014^[12]). Scholar Xiao performed empirical analysis towards Chinese water sector regulatory performance from the perspective of economics, putting forward three general regulatory performance indicators, namely optimization efficiency of resource allocation, improvement efficiency of enterprise operation and extension of water service (Xiao, 2010^[13]). Su and Liu analyzed the time series data of urban water supply from 1992 to 2009 using the VAR model to investigate the impact of government regulatory reform to water sector efficiency and total level. They selected indicators from the view of government regulatory behavior and regulation targets (Su and Liu, 2012^[14]).

From the literature review, we know that international organizations and developed countries have set relatively sound performance indicators of infrastructures and public utilities regulation, but they lack research on performance indicators of public utilities privatization process, especially in the water sector. In Chinese academic research, there are very few studies on the effectiveness of improving the water PPP projects regulation and overall performance evaluations of government regulation. The indicators created in existing literatures have put too much attention on values such as efficiency and effectiveness, and there is little research from the perspective of public accountability. This paper argues that the efficiency-oriented privatization reform paths not only cannot fully realize the public accountability, but also erodes the public accountability undertaken by governments. Therefore, we believe that in order to maximize the benefits public utility regulation holds to public interests, it is

worthy of trying to develop regulatory performance indicators of public utilities PPP projects from the aspect of public accountability theory. Public utilities have significant characteristics of public welfare, and the government regulation of public utilities is also regarded as a special public goods. Hence, building regulatory indicators should be directed by public interest.

The existing public accountability theory models have dual value orientations: One is the efficiency value, emphasizing the procedural and the economic index; the other is the public value that concentrates on quality, representativeness, customer satisfaction and so on. The public accountability should not only focus on efficiency responsibilities, but also underline public value responsibility, especially for the protection of public interest. On the basis of analyzing defects of existing regulatory performance indicators, this paper aims to explore the establishment of indicators from the equilibrium perspective of efficiency value and public value.

3 Defects in the current regulatory performance indicators of the water sector PPP projects

The purpose of regulatory performance indicators is to evaluate whether the government regulatory result approaches the regulatory objective. Therefore, it is essential to inspect the existing government regulatory institutions. At present, regulatory assessment indicators of domestic water sector PPP projects are incorporated into the whole water sector performance evaluation. In 2010, the Ministry of Housing and Urban-rural Construction issued the policy of “The Temporary Assessment Measures of Urban Sewage Treatment” to assess urban sewage treatment facilities construction, operation and management, setting the relevant regulatory assessment indicators. In 2013, it enacted “The Assessment Methods of Urban Water Supply Standardization Management” to guide and regulate urban sewage treatments and water supply standardization management (MHURC, 2013^[15]). The key indicators are summarized as follows:

Table 1 The assessment indicators of urban water supply standardization management

Assessment item		Assessment content
Departmental responsibilities	Management responsibility	Set the management responsibility of urban water supply regulatory sector according to the rules of local government
	Management personnel	Equip with proper management personnel of urban water supply regulatory sector
Institutional building	Comprehensive rules and regulations	Review the rules, regulations and related normative documents formulated by local governments on the management of urban water supply
	Water resource protection system	Establish a strict protection system of drinking water sources
	Management and evaluation system of water supply enterprises	Inspect institutions for the management and examination of water supply enterprises formulated by local authorities. Pay attention to regulation institutions if governments delegate the operation to another entity; if governments privatize water utilities, pay attention to the bidding process and contract signing to check whether they are implemented in accordance with “the Measures For the Management of Public Utilities Concession”
	Regulation system of service and complaint	Inspect institutions about the development of local urban water supply service regulation and complaints treatment
	Regulation of water quality and information release system	Check institutions and reports of local water quality inspection or regulation management system
Institutional implementing	Monitoring of water quality system	Check water quality inspection systems of water supply enterprises and relevant original account records
	Implementing of water quality monitoring system	Access to water supply enterprises laboratory for nearly one year of water quality inspection records, reports and inspection quality control records
	Information report and release of water quality	Check reports issued by water supply enterprises and water quality information released to the public
	Equipment maintenance of water supply	Check mechanisms of daily maintenance, regular maintenance as well as reparation of water supply facilities and equipment

Assessment item		Assessment content
Institutional implementing	Safety production	Check water plant safety production system; carry out on-site assessment of staff safety production operation skills
	Leakage of pipe network	Inspect relevant materials and reports of water supply network leakage event
	Service window	View conditions of service windows, hot lines, etc.
	Repair and water failure	Check the pipe leakage treatment records and water supply announcement records
	Complain treatment and service satisfaction	Check service and complaint records of the water supply enterprises and assess the service skills of service personnel
	Emergency response plan	Inspect the emergency response plan, exercise records and other sources of relevant management measures of water supply entity
	Emergency treatment and material reserve	On-site inspection of water emergency response team, facilities, equipment and materials reserves

Source : Indicators selected from “Evaluation Indicators and Methods of Urban Water Supply”

“The Assessment Methods of Urban Water Supply Standardization Management” was formulated according to the “Environmental Protection Law”, “Water Pollution Control Law”, “Water Law”, “Urban Water Supply Regulations” and other laws and regulations. The assessment is targeted at the local departments who are in charge of the urban water sector and assessment contents are focused on departmental responsibility, the formation and implementation of relevant policies and institutions. However, the current regulatory performance indicators are imperfect; many regulatory indicators cannot reflect the current problems of urban water PPP projects. In summary, existing assessment indicators have the following shortcomings:

First, the regulatory performance of urban water PPP projects is not regarded as the target of assessment. The existing indicators are designed to evaluate water companies while less involved in regulatory agencies who are in charge of the urban water sector PPP projects. Second, indicators such as operation regulation or water quality management are mostly external performance indicators, not internal performance indicators from the perspective of public accountability. Furthermore, the current indicators lack necessary social regulatory indicators such as environment, health and fairness. Thirdly, due to the lack of reference from the international comparative perspective, the current indicators are absent from relevant international standards.

4 Development of regulatory performance indicators in water PPP projects based on the perspective of public accountability

Based on definitions for the connotation and extension of public accountability from different scholars, the public accountability contains two important values and measurement criteria, one is the efficiency value, which is embodied in procedural and economic indicators. The other one is the public value, reflected in quality, environment, representation and customer satisfaction indicators. The regulatory indicators underpinned by public accountability pay more attention to public value than efficiency value.

4.1 The theory of public accountability

Most scholars in China often apply the research results of Savas’s privatization theory into analyzing privatization practice of the urban water sector in China. Few scholars have developed indicators to evaluate the performance of water PPP projects from the perspective of the public accountability theory. Romzek’s definition of public accountability has become a consensus standard in the field of public theory, which presents four different types of public accountability: hierarchical, legal, political and professional. There are significant differences between core values and behavioral expectations highlighted by different types of accountability: Hierarchical accountability emphasizes the efficiency value of organizations and the underlying relationship is supervisor-subordinate, expectations are articulated in supervisory directives and rules; legal accountability stresses the value of the rule of law and the principal-agent is the underlying relationship, the actions should be fair and reasonable, obeying the external rules; professional accountability underlines tool value, showing respect for individual specialized knowledge and skills; political accountability emphasizes the value

of responsiveness, the relationship afford managers the choice of being responsive to the concerns of key stakeholders, such as elected officials (Romzek, 2000^[16]). Scott points out three sets of public accountability questions, “who is accountable?”, “to whom?” and “for what?”. He believes that the range of values for which accountability is rendered can be placed in three categories: Economic values, social and procedural values, continuity and security values (Scott, 2000^[17]).

The above description of the multiple connotations of public accountability can be summed up as two dimensions: The efficiency value dimension contains hierarchical accountability and legal responsibility, considering the economic and procedural nature of the regulatory agency operation; the public value dimension contains professional responsibility and political accountability considering that it is professional and consistent with the public interest. The specific meaning is shown in Table 2:

Table 2 Indicators of water regulatory performance indicators from the perspective of public accountability

Regulatory performance indicators of urban water PPP projects	Evaluative dimension	Primary targets
	Efficiency value	
Public value		Regulation of water price
		Regulation of water quality
		Regulation of water environment
		Regulation of water service

Source: The above is summarized by the author on the basis of research results from scholar Barbara S. Romzek, Colin Scott and Li Le.

4.2 Regulatory performance indicator development in Chinese urban water PPP projects

The master of management Peter Drucker once said “If you can’t measure it, you can’t manage it.” At present, performance evaluation has become a critical tool for government governance. The performance indicator system is a subsystem of performance evaluation. The development of the indicator system is a systematic process, involving the analysis of performance factors, characteristics of the assessment, decomposition of performance evaluation objectives, selection of the performance evaluation indicators and determination the weight of indicators (Ni, 2007^[18]). Based on the theory of public accountability, this paper focuses on the development of effective performance evaluation indicators from aspects of efficiency value and public value. Efficiency value measures performance indicators within the organization, from dimensions of water regulatory agencies operating efficiency and the compliance with law. We use qualitative and quantitative assessment methods to measure operation efficiency of the water regulatory agencies; use the number of complaints from water companies and consumers to regulatory agencies, the regulation of market access and process from regulatory agencies to measure whether or not the agencies comply with laws.

When regulating the market access, in order to avoid the dilemma of information asymmetry, it is necessary to use “Peer Evaluation” or “Benchmark Competition” to compare prices provided by different suppliers for the sake of avoiding the “short-term price competition” evolving into “long-term price monopoly”. French Scholars Laffont and Tirole explore the possibility of optimal regulation, using “Benchmark Competition” and other stimulation methods to reduce the negative impact of information asymmetry on regulatory effects (Laffont and Tirole, 1998^[19]). In China, current regulatory tools still remain in command-based tools; market-oriented incentive tools have not been widely used.

Public value is reflected in external performance indicators of government regulation, focusing on responsiveness of public organizations, measuring whether they make timely response to external stakeholders and effectively safeguard the public interest. Government regulatory indicators include not only economic indicators, but also social and environmental standards such as social acceptability of prices and contracts, ecological security of products and etc. The performance indicators of water marketization regulation are classified into water economic, water quality, and water environmental regulatory performance indicators in the annual performance reports of many water regulatory agencies in UK, such as the Environment Agency, OFWAT and The Drinking Water Inspectorate. The development of indicators has followed assessment concepts of “citizen-oriented, results-oriented”, focusing on the combination of subjective and objective indicators. Drawing on UK’s experience,

China's regulatory performance indicators can be selected from water prices, water quality, water environment and consumer services.

In the process of water privatization, the water pricing-set process often leads to conflicts between the overall economic standard of pricing and social tolerance together with acceptability. Therefore, the water price regulation indicator should effectively reflect the scientific, rational and flexible controls of prices. The performance indicators should contain water price adjustment frequency and water price adjustment mechanisms. Water quality control indicators can be subdivided into five secondary indicators. And water environmental regulation indicators are concerned with the number of pollution incidents related to water supply events, the number of sewage treatment-related sewage incidents and urban sewage treatment rate etc. The indicators of the water consumption service can be divided into eight secondary indicators, involving the water price adjustment, the number of consumer complaints, the number of water public hearings, water service satisfaction surveys etc. Besides, since public services have principles of "universal service" and "mandatory extension service", requiring the fulfillment of service obligations to new populations, covering the indicators such as satisfaction indicators of new population and water supply coverage. The newly developed indicators system are shown in Table 3:

Table 3 Regulatory performance indicators framework in Chinese urban water PPP projects from the perspective of public accountability

Evaluation dimension	First-class indicators	Second-class indicators	Indicators explanation (Measurement methods)
Efficiency value	Operational efficiency of regulatory institutions	Internal economic management of water regulatory agencies	Investigate financial expenditure of regulatory agencies (Through observation or investigation)
		The capacity of water regulatory agencies to perform their duties	Qualitative description of regulatory bodies members, responsibilities, regulatory methods and institutions towards enterprises (Through investigation)
		Risk assessment and control of water regulatory agencies	Examine emergency management mechanisms of regulatory agencies for water enterprise accidents; evaluate and control mechanisms for their economic risks, social risks and operational risks (Through investigation)
	The degree of regulatory agency compliance with law and regulations	The number of complaints received by the regulatory agencies to water companies	Ration scale (Through second- hand statistics)
		The number of complaints from consumers received by the regulatory agencies	Ration scale (Through second- hand statistics)
		Supervision to policies set by regulatory agencies	Qualitative evaluation (Through investigation)
		The number of hearings held in the formulation and revision of price control policies	Ration scale (Through investigation)
		The number of administrative litigation and administrative reconsideration of regulatory agencies by water companies	Ration scale (Through second- hand statistics or investigation)
		Market access and procedure regulation	Examine whether the acquisition, alteration and termination of the concession comply with laws and regulations, and whether the choice of concession enterprises was assessed by peer reviews or "benchmark competition" (Through investigation)

Evaluation dimension	First-class indicators	Second-class indicators	Indicators explanation (Measurement methods)
Public Value	Regulation of water price	The number of water price adjustments and the specific circumstances of disposals	Measure annual average change rate of water prices; ration scale (Through second-hand statistics)
		Urban water price adjustment and control mechanisms	Examine whether regulatory agencies have a reasonable water cost measurement and water price adjustment mechanism (Through investigation)
		Water supply price	Ration scale (Through second-hand statistics or investigation)
		Water supply price growth rate	Ration scale (Through second-hand statistics or investigation)
		Sewage treatment price	Ration scale (Through second-hand statistics or investigation)
		The growth rate of sewage treatment price	Ration scale (Through second-hand statistics or investigation)
	Regulation of water quality	Detailed scientific water quality standards	Nominal scale (Through observation and investigation)
		Target rate of water quality standards	Ration scale (Through second-hand statistics)
		Number of water quality sampling inspections in urban water supply enterprises (annual)	Ration scale (Through second-hand statistics)
	Regulation of water environment	Number of pollution incidents associated with water supply events	Ration scale (Through second-hand statistics)
		Number of pollution incidents associated with sewage treatment	Leakage accidents and fracture accidents of sewage pipes; ration scale (Through second-hand statistics)
		Domestic sewage treatment rate	Ration scale (Through second-hand statistics)
		Leakage of water supply pipe	Ration scale (Through second-hand statistics)
		The number of urban waterlogging	Ration scale (Through second-hand statistics)
	Regulation of water service	The number of public hearings held due to Water price adjustment and other regulatory contents	Ration scale (Through second-hand statistics)
		The number of complaints from consumers in the water service area	Ration scale (Through second-hand statistics)
		Satisfaction surveys of regulatory agencies from customers in the service areas	Ordinal scale (From 5 points to 1 point, range from Very Satisfied to Very Unsatisfied)
		Satisfaction surveys of water services from customers in the service areas	Ordinal scale (From 5 points to 1 point, range from Very Satisfied to Very Unsatisfied)
		Satisfaction surveys of water services among new population area (once per year)	Ordinal scale (From 5 points to 1 point, range from Very Satisfied to Very Unsatisfied)

Evaluation dimension	First-class indicators	Second-class indicators	Indicators explanation (Measurement methods)
Public Value	Regulation of water service	The water coverage area in new development area	Ration scale (Through second-hand statistics)
		Hours of water interruption	Ration scale (Through second-hand statistics)
		Target rates of handling the consumer complaints within the require time	Ration scale (Through second-hand statistics)
		Subsidies for vulnerable groups	Ration scale (Through second-hand statistics)
		Popularity rate of water supply	Ration scale (Through second-hand statistics)

Source: The above indicator framework is summarized by the author, drawing on UK's experience and research results from Chinese scholar Li Le.

5 Conclusions and outlook

At the moment, there are few researches on government regulatory performance of water PPP projects. The outcome of this study may provide regulatory indicators for assessing local government regulation of urban water PPP projects. Compared to the analysis of privatization performance of public utilities or regulatory performance of public utilities, the innovation of our research lies on the regulatory performance assessment indicators after applied PPP models in water sector from the perspective of public accountability.

There are three creative aspects: The first one is that the target of evaluation indicators is expanded, the performance of regulatory agencies is also evaluated. New indicators not only reflect regulation and management of water enterprises, but also pay special attention to the regulation of regulators, focused on operation efficiency, accountability as well as the legal compliance of regulators; the second is the expansion of regulation content. New indicators are related to the regulation of market access and privatization process, that is, whether the access, alteration and termination of the concessions of water companies are in compliance with laws and regulations, and whether the concession enterprises have passed "peer evaluation" or "benchmark competition"; the third one is that new indicators have drawn on the experience of UK water sector and the research results of international organizations, enlarging values from efficiency and other economic indicators to equity, environment, health and other social indicators change. From the perspective of public accountability, there are some newly-added water environment indicators, such as water supply, sewage incidents related to the number of pollution incidents and customers service indicators, such as customer satisfaction with the regulatory agencies of new populations, subsidies for vulnerable groups and etc.

Applying regulatory performance indicators into assessing and standardizing government regulation is an effective way to improve government's regulatory activities and enhance governance ability. There is no denying the fact that indicators developed in this paper are theoretical and ideal indicators and are applicable to the urban water sector, including urban water supply and sewage treatment. When conducting empirical analysis of regulatory performance in PPP models, the indicators should be further selected and simplified due to the diversification of PPP models and the different of cities. The indicators should also be formed with a sound combination of efficiency value and public value, with the purpose of improving the performance of regulators and promoting the development of urban water PPP projects.

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Development of Smart City in Macau SAR of China

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Abstract Smart city is the new trend to transform a country or a city to be more efficient, transparent, convenient, sustainable development, comfortable environment and information sharing between public entities, private entities and citizens. In a certain degree, the process of transforming smart city needs various factors, such as mutual network, Information, Communication, Technology (ICT), also, needs to collect datas from real practices in order to form such as smart transportation, smart tourism, smart education, etc. This paper will state out the smart city planning situation implemented in Macau SAR of China currently. It will state out the cooperation channel between government and private sectors. This paper will provide successful examples implemented in other country or city. It will explain what factors and measures should be input to form a smart city and will explain why it is vital to transform into a smart city. Finally, this paper will make use of the successful examples to integrate the useful factors for Macau SAR of China to follow and implement.

Key words Smart city, ICT, IoT, Proprietary cloud, Smart transportation

Introduction

Macau SAR of China is a small city with only 30.5 square kilometers (Macau Statistics Bureau data of 2016) located in the southern part of China. The total land area allocated in three different parts of the peninsula—Macau SAR of China occupies 9.3 square kilometers, Taipa occupies 7.6 square kilometers, Coloane occupies 7.6 square kilometers while the reclamation land occupies 6.0 square kilometers and the length of the coastline is 50.39 kilometers. Population in the first quarter of year 2017 showed by Macau Statistics Bureau is 648.3 thousands of numbers. The tourist number registered by Macau Statistics Bureau in May 2017 is around 2.57 million of people. According from the figures show above, we can understand what a big challenge we face in this small city.

Features of Macau SAR of China

Macau SAR of China is the only city in China permitted by the Central Government of People's Republic of China to continue the operation of casinos (gaming industries) after Macau returns to China in December 20, 1999. In order to break the gambling monopoly of the gaming industries, Macau SAR of China government opens three gaming industries licenses in February 2002, in December of the same year, these three companies split the gaming industries licenses into six licenses.

Besides the opening of the gaming industries licenses, China also opens new policy of allowing tourists of some cities in China to travel to Macau SAR of China. Due to these new policies and new changes, Macau SAR of China economic grows rapidly and this small city shows vitality.

While the city develops during this decade, it also creates many other problems such as the rising price of the houses, increasing of the life index, pressure of the transportation, pressure of the health care, etc., as a result, it reduces the life quality of the citizens. While the tourists numbers continuous increase, strong demand from the citizens also increase to request the government to improve the traffic congestion (in 2015, there was an average of 540,000 passengers travelling by bus every day),¹ to control the house price of which people is difficult to buy a house, to reduce the queueing time in government health care center and in government hospital, etc.

Government has tried many measures to respond the demands of the citizens, however, it is difficult to solve all the existing problems especially in this small area to solve the sudden traffic congestion problem in which the small city has to receive more than thirty millions of tourists coming to Macau SAR of China every year. In order to respond to the rapid growth of the economic and to face the future economic opportunities, government needs to rethink the direction of the city being

¹ The first Five-Year Development Plan of Macao Special Administrative Region (2016-2020), September 2016, p34 (in English)

planned and to achieve this, Macau SAR of China needs a long term framework, i.e. to have a Smart City Plan.

National 13th Five-Year Plan connects with Macau SAR of China

China had launched the National 13th Five-Year Plan in 2016¹ and stated out that will support Macau SAR of China to build World Tourism and Leisure Centre, enhance the commercial and trade co-operation services platform between Macau SAR of China and Portuguese speaking countries, develop commercial and trade event industries and accelerate diversification economic and sustainably development. Support Hong Kong P.R.China and Macau P.R.China to participate in the establishment of “Belt and Road” plan, promote the co-operation platform of Great Bay Area within Guangdong, Hong Kong P.R.China and Macau P.R.China.

Following the 13th Five-Year Plan, Macau SAR of China government presented its first Five-Year Development Plan in 2016² for the 2016-2020 period of planning. The direction of the development plan has also been incorporated into the 12th and the 13th National Five-Year Plans.

Parts of the first Five-Year Development Plan states how Macau SAR of China achieve the strategic aims of being World Tourism and Leisure Centre and being a Commercial and Trade Co-operation Services Platform between Macau SAR of China and Portuguese speaking countries which are known as “One Centre and One Platform” policy. Macau SAR of China government tries to integrate its first Five-Year Development Plan with National 13th Five-Year Plan and participate in the National “Belt and Road” development strategy. In the first Five-Year Development Plan, Macau SAR of China government also addressed various major tasks for building a Smart City.

In early March of 2016, Macau SAR of China government established a working committee for city’s participation in Central Government’s Belt and Road plan, according to an announcement in the Official Gazette. One of the duties of the committee is to coordinate the planning for the city to participate, as well as contribute to the initiative. The committee will also promote studies to formulate respective policies.

The Belt and Road initiative is China’s state-level vision to promote common prosperity through regional co-operation. As an important member of this national effort, Macau SAR of China needs to participate and work hard to come up with its own regional vision based on the Belt and Road theme.

The Guangdong-Hong Kong-Macau Great Bay Area concept is a decision by the Central Government incorporate into the State Council’s guidelines concerning the deepening of co-operation within the Pan-Pearl River Delta region. It will take co-operation between nine provinces and two SARs (Hong Kong and Macau) that constitute the delta to a higher, deeper and wider development level. It will be an important gateway linking up to the Belt and Road route.

Macau SAR of China is an inseparable member of the Great Bay Area, it is linked to the Hong Kong-Zhuhai-Macau bridge, Xijiang (West River), the Shenzhen-Zhongshan bridge and the area that includes Zhongshan, Guangzhou, Shenzhen and Hong Kong, all these places complement each other economically. So, the location of Macau SAR of China is perfect because Macau SAR of China is a land and sea intersection unique culture that cannot be replaced by other Bay Area members. Therefore, taking the Great Bay Area as the center of Macau SAR of China brings it in line with both the Central Government’s and Macau’s own long-term planning and development needs.³

Founder of smart city

Smart city concept is originally raised by IBM in 2008. According to IBM, Smart city is designed to utilize information and telecommunications methods to sense, analyze and integrate various pieces of key information from core systems used in city operations, and to respond intelligently to a variety of needs, relating to the environment, public security, city services, commercial activities and citizens’

1 The 13th Five-Year Plan for Economic and Social Development of the People’s Republic of China (the 13th Five-Year Plan), Article 54 of Chapter 12 (in Chinese)

2 The first Five-Year Development Plan of Macao Special Administrative Region (2016-2020), September 2016 (in English)

3 Macao N.39 March 2017 magazine, p4-12 (in English)

livelihoods.¹

Dubuque City of United States cooperates with IBM in utilizing the Internet of Things (IoT) techniques to connect, monitor, analysis and integrate the city common resources of water, electricity, gasoline, gas, traffic, public services, etc., in a 60 thousand citizens' city. This is the earliest model of Smart City.

Definition of smart city

There is no standard definition of what constitutes a “Smart City”. But a common denominator is that a Smart City is when a city is in a develop process, it fully utilizes the techniques of Internet of Things (IoT), Internet, Cloud Computing, IT, Intelligence analysis in the areas of urban infrastructure, resources environment, social livelihood, economic industrial and municipal governance in order to provide a suitable and convenience living and working place to the citizens. It creates a more favorable business development environment and it constructs a high efficiency operational management environment for the government.²

The purposes of constructing a smart city

“People First” is the main purpose when construct a smart city. Smart city integrates the Information and Communication Technology (ICT), and make use of Internet of Things (IoT) technology in a secure condition to manage a city's assets. IoT technology development can greatly assist in smart city functions such as smart municipal management, smart medical, smart building, smart transportation, smart tourism and other smart application.

Smart city in a certain degree can create a comfortable and convenience environment, convenience health care, convenience transportation, renewable energy and water, education, participation of private sectors and citizens, etc. Smart city construction is a progressing process project and should be adapted to the characteristics of the development of a city in order to choose a suitable smart city model.

Before the smart city construction, government should deeply understand well the concepts, functions, models and elements of a smart city that they need. Mutual Network, Internet of Things (IoT), Information, Communication and Technology (ICT) are the most important elements when develop a smart city. It involves many different data issues, so as to allow opening and sharing of the data. At the part of government needs to update and promulgate the laws and regulations in order to allow the smart city construction runs legally, smoothly, without infringe the protection of personal data and legal allowing of the data opening and sharing. Smart city development needs the government to lead and provide information to the public, to encourage the citizens and the enterprises to participate. With the participation of the government, enterprises and the citizens, smart city can be successful moved forward.

Idea of transform Macau SAR of China into Smart City comes late, many of the cities have already started and developed smart cities for many years. However in another point of view, late develop can avoid commit the same and common mistakes that other cities have happened before when smart city is constructed.

Successful model of smart city – Hangzhou, China

In October 2011, Office of Zhejiang Provincial Government announced “Notice on Carrying out Pilot Project of Building Smart City”. This announcement puts Hangzhou to be listed as one of the pilot cities to construct Smart City in the whole Province.³

In September 2012, Hangzhou municipal government approved “Smart Hangzhou” Construction

1 Smart Cities in China, EUSME Centre, China-Britain Business Council, 2015, p5 (in English)

2 The Overall Planning of Smart City Construction in Hangzhou City, China Transportation Technology Network (in Chinese)

3 A Study on the Path of Intelligent City Construction and Smart Economy Development in Hangzhou – Based on the Perspective of the System Integration, Zhu Wenjing; Ruan Chonghui; Li Ming-chao, Urban Insight, No.2, 2015, p117 (in Chinese)

Overall Planning (2012-2015). This is a normative and guidance document, it clearly identifies various specific goals.¹

In August 1st of 2013, the Ministry of Housing and Urban-Rural Development (MOHURD) released an expanded list of 103 cities (districts, counties and towns) eligible for participation in China's 2013 Smart City Pilot Program.

This Pilot Program aims to promote the application of Internet of Things (IoT) technology and the development of information infrastructure systems to areas such as transportation and utilities.²

Since the end of 20th century, Hangzhou has always been the information city of the forefront of the country. Then, Hangzhou has carried out a lot of work regarding the city information and smart city construction areas while marching to a new century. These important moves make Hangzhou to maintain its city competitiveness.

Hangzhou has developed optical fiber communication, data communication, satellite communication, wireless communication and other various modern communication networks which form a cornerstone for Hangzhou to construct smart city. Information construction is complement to smart Hangzhou as well as to smart economy construction.

The State Council issued a guideline to speed up the work of "Internet + government services", and put forward the new ways of urban governance, such as urban population, construction, street, pipe network, environment, traffic and other data, and the establishment of big data to assist the decision-making.³

During the "New Type Smart City" summit held in 2016, China Internet Association had announced the internet social service index ranking of "Internet +", Hangzhou had won the first ranking of the country. Besides, the ranking in convenience services to citizens, the service quality of transportation and new model of online medical were the first ranking also. Hangzhou has worth the name of "The Most Smart City in China".

Operations of smart city in Hangzhou

Hangzhou government has launched the "City Brain" Smart City Construction Planning in Yunqi Conference of 2016. Then, City Brain firstly transforms the infrastructure of transportation, energy, water, etc., into data and connects every unit of those city data resources in order to open up the network. It allows the data to help the city to think and make decision and allow Hangzhou city to be self-adjusted.

Traffic light in Hangzhou city is no more in a fixed time model, it will automatically adjust the traffic light time according to the actual traffic flow in a real time adjustment so that it helps to solve the traffic congestion problems. Simple speaking, City Brain changes the video information into data and standardize the data format in order to use the digit structure to demonstrate the actual traffic environment.

The whole operation of the City Brain comes from the Apsara system of Ali Cloud of Alibaba Group and various platforms of the system rely on the artificial intelligence kernel. City Brain can analysis the city in a global real time and automatically arrange the public resources.

City Brain construction can solve the data island problem and integrate data of the dispersion in different departments so that it can be operated more effective, such as urban traffic management data, public service data, business data and internet data.⁴

Smart city features in Hangzhou

In tourism area, City Brain can adjust the millions of tourists into customers. As far as the tourist arrive Hangzhou, then the City Brain can immediately provide personalized service to the tourists.

In some parts of people's livelihood, such as City Brain can collect the big data from reservoir,

1 Research on the Development Strategy Model of Smart City Construction and Smart Economy in Hangzhou City, Hangzhou International Urban Studies Research Centre, Zhu Wen-jing (in Chinese)

2 <http://www.usito.org/news/mohurd-expands-smart-city-pilot-program-103-eligible-cities> (in English)

3 Hangzhou launched "City Brain" Smart City Planning, China Geographic Information Industry Network - Technology, 2016.10.14 (in Chinese)

4 City Brain was born, Artificial Intelligence began to replace the Urban Management?, Ma Ji-hua, 2016.10.15 (in Chinese)

river, pumps, etc., to analysis and integrate with the weather data, so that it can forecast in advance the flood and city waterlogging.¹

In Hangzhou, people can go everywhere without bringing any cash or credit cards for Hangzhou is widely used of Alibaba's Alipay service. Alipay is China's largest third-party online payment platform. Ant Financial, parent of Alipay, reported that more than 22,000 restaurants, 95 percent of convenience stores and 8 percent of taxis accept online payment. Even local wet markets, small fruit shops and nighttime food stalls have gone cashless.

Users of Alipay service can order takeaways, pay utility bills, book express delivery services, call taxis, buy train tickets, book outpatient hospital services and pay school tuition fee via the online platform. Zhejiang Library has become the first public library to offer services based on Alipay. Users can search for books, apply for a library card, and borrow and return books through the system. It brings convenience and multi functions to the citizens.

Alipay also links the online payment systems with public transportation. Passengers pay their fares by scanning QR codes when they board a bus. It makes Hangzhou first city in China to have this service on all its buses.

In addition, any Alipay user with a credit score above 600 can rent free umbrella or hand-held charge pals in public places for a week. In order to reduce the numbers of cars on road and to solve the traffic congestion problem, Zhima Credit (it belongs to Ant Financial also) applies to the publicly run rental bicycle program, allowing qualified users to pay digitally.²

Hangzhou Smart City helps to increase the city quality, however, it still has its deficiencies, such as the level of understanding of smart city and smart economy should be enhanced and improved. Lack of co-ordinate plans, information technique talents are not enough, so it caused the development of the information industrial difficult go further. Laws and regulations are not perfect and not adapted to the present situation. There are challenges regarding information network safety, also lack of unified scientific standard system and suitable mode of operation, etc.³

Macau SAR of China Smart City

Macau SAR of China government has just signed an Agreement with Alibaba group to help Macau SAR of China to construct Smart City, therefore, Macau SAR of China has just started a series of Smart City Plan. We can say Macau SAR of China now is in the preparation stage of constructing a Smart City. Smart Transportation, Smart Tourism, Smart Health care, Smart City Governance and Talent Development as well as Big Data application project are the major themes to construct according to the announcement by the government.

Macau SAR of China Smart City Institute has been established in 2016. This Institute is a new installment of Macau University of Science and Technology (MUST), which aims to reinforce research and industrialization of smart city, mainly focusing on the development of key technologies applied research, public platform research and services, talent training, and other work in relation to common problems faced by smart cities, in the hope of moving forward smart city research and applications in Macau SAR of China.⁴

Macau Science and Technology Development Fund (FDCT) had launched two research proposals in August 2016 and are planning to finish in November 2017, which are: (1) Macau Smart City Develop Direction and Strategy Research and (2) A Study on Feasibility of Smart Travel of the Development of Macau Smart City. The purposes of these two projects are to assist Macau SAR of China to transform and develop into a smart city through creating the framework for the development of a smart city. The FDCT hopes that an overall plan can be introduced by the end of 2017. Before the completion of these two proposals, Macau SAR of China government announces and plans to launch

1 Wang Jian: City development needs to construct Data Brain, 2016.10.14 (in Chinese)

2 No cash, no card? No problem with Alipay, ShanghaiDaily.com, Wu Huixin, 2016.09.13 (in English)

3 A Study on the Path of Intelligent City Construction and Smart Economy Development in Hangzhou – Based on the Perspective of the System Integration, Zhu Wen-jing; Ruan Chonghui; Li Ming-chao, Urban Insight, No.2, 2015, p118 (in Chinese)

4 <http://www.must.edu.mo/en/news-en/15460-article09260707-e> (in English)

some certain specific fields such as Smart Transport and Smart Tourism.

Smart City Develop Task Force Group is established in July 2017. There are 47 members from different government entities in this Group and it is considered as the top level coordination unit regarding smart city development. The Group will co-ordinate with relevant government entities such as the Transport Bureau for Smart Transport development, etc.

To develop smart city in Macau SAR of China is not merely solving the city problems, enhance the efficiency, improve public services, provide convenience to Macau SAR of China, but also allows a sustainable development in Macau SAR of China.

Macau SAR of China electricity operates in a new milestone

Electricity is an important basis in develop a smart city. In order to follow the overall social and economic develop blueprint of Macau SAR of China government, Macau Electric Company (CEM) has commenced to explore the development of smart power grid. The smart power grid can collect convenient the equipment's condition data with the application of the data analysis and technics of the communication and IT.

In order to enhance the reliable of the electricity and the customers' service standard, CEM has tried different channels to understand the characteristics and the advantages of install smart power grid as well as to search methods to reduce the usage of the electricity and the channels to save the energy. Smart power grid can grasp a comprehensive datas and to improve efficiency of the power grid.

CEM has already started to change the electric meters for all customers into smart electric meters. The smart electric meters can easily collect datas and bring convenience to the customers to understand the electric consume situation, can rapidly receive and response requirements by receiving and sending order to the machine building, no need to manually record down the electricity digits from the traditional electric meters monthly and also can make use of the collect big data in order to plan and to understand the maximize usage of the energy.

Electronic pay (E-pay) in Macau SAR of China

Electronic Pay (E-pay) in Macau SAR of China lags behind many cities. Unlike Hangzhou's Alipay, Hangzhou's Alipay can order public transportation, book out-patient hospital services, order takeaway services, etc., through mobile phone and finally place the payment also through mobile phone.

E-pay in Macau SAR of China has been worked through "Macau Pass" card and the card is just like a debit card. The card is not linking to the mobile phone and the places that accept Macau Pass payment is limited. In order to develop smart city and universal the E-pay tools, the related party should enrich the E-pay contents and expand the E-pay places.

Although Macau SAR of China government has nominated four departments from different bureaus to form a working group in order to promote and to improve the electronic commercial and trading environment, but government should put more efforts to introduce and promote to the private enterprises and citizens to understand, trust and use the E-pay system as E-pay is one of the important elements when constructing Smart City. Without E-pay development, Smart City cannot go further.

Application of Internet

Internet is the most important element to be used and be applied when develops a Smart City. As it is said to develop smart city, it would be better to say to develop and upgrade the internet at the same time. If the internet capacity and speed does not satisfy and support the operations of smart city, then smart city cannot be developed.

Before construct Smart City in Macau SAR of China, government should communicate with the telecom companies for them to upgrade the internet system, enhance the internet speed and to reduce the price of internet fees. At present, the fees are expensive and the internet speed in Macau SAR of China is very slow which cannot afford the operations when there are many people use the internet for transmission at the same time

Macau SAR of China government cooperates with Alibaba group to construct smart city

Macau SAR of China government has signed the “Construction of Smart City Strategic Cooperation Framework Agreement” with Alibaba group in August 4, 2017. By leveraging the technologies of Ali Cloud, the group’s cloud computing arm, the two parties will collaborate in upgrading the IT infrastructure in Macau SAR of China to foster digital developments in tourism, transportation, health care, governance and talent development. Alibaba group states that they are confident about making Macau’s transformation into a smart city as a demonstration project across Asia-Pacific region.

The Cooperation Agreement is for four years. In the first phase, from 2017 to 2019, it will focus on the construction of cloud computing center and the integration of government data. The group will transfer the advanced technology Apsara to Macau SAR of China to build a cloud computing platform. This Agreement will also focus on smart transportation, smart tourism, smart health care, smart city governance and talent development as well as Big Data application project. In the second phase, from 2019 to 2021, besides of continuous improve the infrastructure construction, they will carry out the cooperation on the environmental protection, customs clearance and the economic forecast projects as well.

Alibaba group will construct Proprietary Cloud for Macau SAR of China government and the right of ownership belongs to Macau SAR of China government. Proprietary Cloud platform is according to the data and needs to set up and expand in order to achieve the foundation of smart city.

Alibaba group will cooperate with Macau SAR of China government, universities of Macau and technology institutes to carry out training programs in order to build up a talented team of cloud computing, big-data, artificial intelligence, e-commerce B2B training and Ali Cloud IT technical certificate training for the sustainable development in Macau SAR of China.¹

Alibaba group states that Macau SAR of China has its advantages, serve as an important window and transaction platform with China, Portugal and the Portuguese-speaking countries. Hence, the group expects the expansion of the e-commerce training plan can allow the young people through Alibaba platform e-commerce enterprises to connect China with Brazil, Portugal and Africa together in the near future.

Recommendation

Macau SAR of China is starting to construct Smart City, there are various necessary elements that Macau SAR of China should prepare and organize according to the experiences of other countries or other cities especially can avoid to be happened of those mistakes that had happened before when other cities construct smart city.

—Establish the outline of Smart City Construction Plan to state out clearly the ideas, missions and the targets;

—Develop Special Planning and Action Plans—Action executed by related government departments to run Smart Industrial, Smart Environmental Protection, Smart Community, Smart Education, Smart Tourism, Smart Health Care, Smart Transportation, Smart Finance, etc.;

—Should establish top layer design and overall planning, and establish an unite management in order to allow the operations run correctly and smoothly;

—There are no laws and regulations directly governing Macau SAR of China Smart City. Macau SAR of China only has Personal Protection Law, hence, Macau SAR of China government should establish laws, regulations or guidance to regulate the operations of smart city in order not to infringe the personal data;

—Establish Standardization System and Evaluation Mechanism of Smart City;

—Establish City Brain and Information talents pool in order to allow the Smart City to have a sustainable development;

1 Macau Daily News, August 5, 2017 (in Chinese)

- Promote the shared bicycles program in order to decrease the number of cars on roads;
- Government should co-operate with universities to help training more information techniques talents in order to have a sustainable development on smart city;
- Government should try to continuous dig deeply the potential data that hasn't been used;
- Develop the cashless payment like Alipay in order to give convenience to the citizens and enhance the usage of the network;
- Government should require the telecom companies to improve and upgrade the speed of the network. They should provide and ensure more Wi-Fi coverage in public places;
- Macau SAR of China government should learn the experience from Hangzhou city especially the Smart Transportation. The Smart Transportation emphasizes the data process and how it will be effectively utilized to support real-time operations and provide immediate decision making guidance;
- Enhance the public participation in Smart City network;
- Make full use of the Internet of Things (IoT) and Big Data such as the latest hardware and software technology to achieve the city operation system of monitoring, integration and analysis, to provide smart city support on cooperation and innovation.

Since Smart City is a new strategy in Macau SAR of China, most of the civil servants and citizens have not so much understanding and knowledge regarding smart city construction and the related information, so, government should put more effort on them because they are the one to carry out the work as well as they are the users also.

Government should think thoroughly to transform the city management more shrewd, residents' livelihood more convenience, allocation of resources more appropriate, public services more convenience, smart infrastructure, safety network be more careful and information be more transparent.

Although Macau SAR of China has set up a responsibility group to co-ordinate the transformation of Macau SAR of China into a smart city, however, datas as the most important elements in smart city are not shared between government entities. The datas are just shared in a vertical direction but not as required in smart city in a horizontal direction. Hence, government should share the datas between government and enterprises, government with government, government with citizens. Government should take the responsibility to encourage the citizens to participate and to learn smart city.

With the technology of Ali Cloud, Macau SAR of China government can rapidly deal with mass of data and according to the real time situation to provide efficiency public services to the people. This technology can satisfy the demands and solve problems of transportation, logistics, city management, tourism, security, emergency, etc. and can push the smart city to have further development and improvement.

Conclusions

There are many reasons or targets for a country or a city to develop smart city such as Smart Ecological, Smart Water, Smart Energy, Smart Transportation, Smart Tourism, Smart Healthcare, Low-Carbon Smart City, etc., in order to modernize the city, to solve the existing problems and allow the city to have a favorable, convenience and efficiency environment as well as to provide sustainable development.

Macau SAR of China is not an exceptional, it needs to improve the public services, efficiency, traffic congestion, environment protection, bring happiness to the citizens, etc., and therefore Macau SAR of China government with the assistance of Alibaba Group starts to construct Smart City in order to construct Smart Transportation, Smart Tourism, Smart Education and Smart Healthcare.

Although Smart City is a new concept in Macau SAR of China, however, we hope that with great effort in establishing smart city guidelines, awareness of cyber security, makes good use of Big Data, Cloud Computing, training high-end talents to run the smart city systems, etc., Macau SAR of China will gradually become a favorable and convenience city for living, working and travelling.

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A New Model of Public-Private Partnerships: A Case Study of the Charity Shop in Shanghai, China

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Abstract Traditionally, the public and private sectors have worked separately in China. With the rise of new public management, there are more and more cooperation between public sector and private sector to improve efficiency, maintain fairness and maximize the social effect. Among various sorts of cooperation, charity shop is one typical model. In Shanghai, charity shops are operated by three main bodies respectively—local government, non-profit organizations or enterprise. The paper has a suggestion that the best way to run a charity shop is the enterprise serving as the leading operators with the support from non-profit organizations and government, which could not only help the target poor residents but also make a profit. The paper uses the methods of literature, case study and interview to conduct research in three districts of Shanghai to discuss about three models. The paper discusses the interactive cooperation between government, enterprises and non-profit organizations based on the three-circle theory of interaction. It concludes that both the charity character and profit making capability are important to charity shop and the maintenance of those two features relies on positive cooperation between the public and private sectors.

Key words Public-private partnership, Charity shop, Government dominated model, Social support model

1 Introduction

Charity shop is a traditional kind of philanthropic organization, compounding the traits of charities and retailers. In 1899, Wolvehampton Institute of Blind People was founded in Midland, England and it raised money by selling blind peoples' handicrafts, which was the early rudiment of charity shop.^[1] The esteemed American organization Goodwill is the origin of modern charity shop, which established more than 100 years ago and functions well up till now.^[2]

In China, charity shop has developed for 14 years. In July 2002, the first 'anti-poverty shop' founded in Liaoning Province.^[3] In May 2003, the first charity shop established in Shanghai.^[4] With the expanding of charity shop, China government began releasing relevant policies to ensure its development.

However, charity shops have not gain good effects in China. A large amount of charity shops ended up closing down, while most charity shops have problems of vague position, weak financing ability, high cost and weak management ability, which causes their limited influence nation-wide. To improve this situation, Ministry of Civil Affairs of China issued a regulation which claimed that charity shop should register as a legal entity, let social force play a major role in its management and improve its informatization level. Provincial and local governments also issued some policies about charity shop. Yet none of these policies have worked well.

Compared to other cities, Shanghai's charity shops are considered as a successful example in China. However, most researches of Shanghai charity shops were conducted between 2006 and 2008. After 2010, related research decreased remarkably. And most existed research focused on shops in certain district or one specific shop. So, it is necessary to carry out a research in the whole area of Shanghai to find out the current circumstance of its charity shops.

2 Literature review

In 1990s, charity shops expanded fast in England and it caught researchers' attention. In 1992, according to Corporate Intelligence's survey, there were more than 5000 charity shops in England and it increased to more than 6000 till middle 1990s. Based on the source of sold goods, Horne and Broadbridge firstly divided England charity shops into three types—only sell donation, sell donation

and new goods and only sell new goods.^[5] Besides, researchers were interested in the volunteer recruitment and management. Maddrel argued that with the development of England charity shops' scale, there were more and more paid employees. Students and prisoners joined the volunteers' team, which traditionally composed of retirees. And he explained that the reciprocal relationships between volunteers and shops was the main reason.^[6] Flores studied volunteers' psychological demand from sociological perspective and proposed that the volunteer service built a bridge filled with emotional communication and social sympathy to help damaged mental person to reestablish sense of security.^[7]

American researchers prefer to study it from cultural perspective. Ferrell named charity shops as 'second-hand popular culture'. Charity shops provide a place that people can pick freely among clothes, daily use, books, toys and other waste products.^[8] Larned regarded charity shops as a land that was independent of capitalist economy and customers could establish their own value system.^[9] Nickel pointed out that charity shop was a tool that government use to guide public to regain ascetic tradition in downward economic period.^[10]

In China, researchers prefer using case study to explore different models. Gao Gong-jing firstly concluded three Chinese charity shops' model. The first is one-time salvation model which prevailed in Guangzhou and Wuhan. The second is marketable operation model which is popular in Shanghai. The third is mixed model and the typical case is the charity shops in Jinan.^[11]

3 Research design

Researchers have conducted some studies on charity shops in China and Shanghai. However, most of those papers focus on one specific charity shop or a single district. And studies are scarcely detected after 2010. This paper tries to figure out Shanghai charity shops' current situation based on surveys that cover 59 charity shops and tries to conclude different operation models based on case studies.

According to Shanghai Municipal Bureau of Civil Affairs, till 2015, there are 152 charity shops and 28 caring houses in this metropolis. Among all districts, Pudong district owns most charity shops and 23 charity shops established after 2014. We choose 59 charity shops and caring house to carry out survey research. The survey is made up of operating situation, activities, revenue and expenses, legal status, human resource, promotion and difficulties.

3.1 Operating situation

56 out of 59 charity shops are running smoothly and most of them could open at least 5 days a week. When asked about founding time, 57 charity shops answered this question and there are 44 charity shops founded 5 years ago; only 13 charity shops were founded in 5 years. Figure 1 shows the site area of these shops. Generally, most charity shops' site is under 100 square meter.

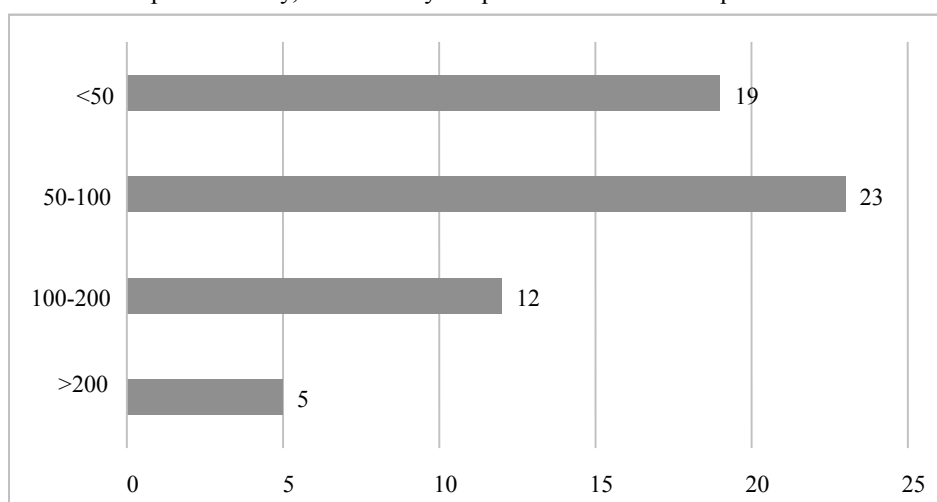


Figure 1 The charity shop number of different site area

3.2 Activities

We divide the activities of charity shops into five types—social aid, daily sale, big charity sale, charity fundraising and volunteer service. The survey shows that 22 charity shops are involved in all five activities; 11 charity shops carry out four activities; 44 charity shops conduct at least 3 activities. Figure 2 shows the number of charity shops that conduct these activities.

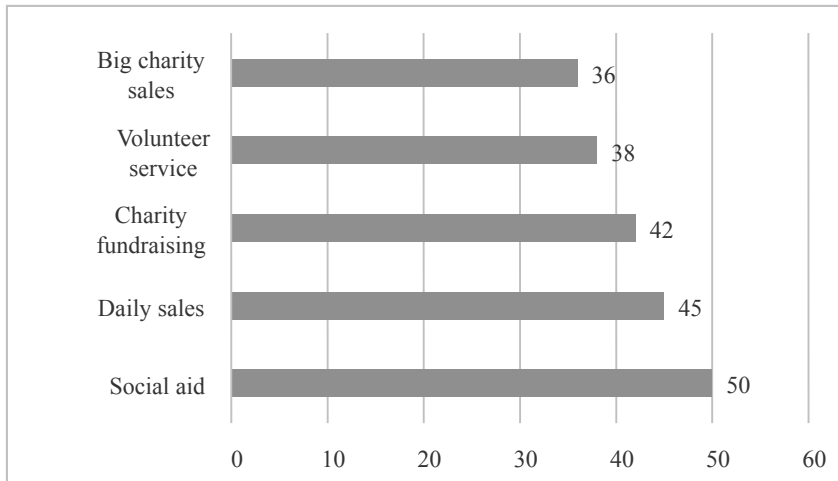


Figure 2 The charity shop number of different activities

Most charity shops choose to distribute goods directly or release salvation tickets. A few shops turn to provide voluntary service or grant cash to the recipients. The most common recipients of social aid are seniors above 60. Other target groups include the disabled and solitaires.

Regarding the daily retail, from the survey we find clothes and living goods are main commodities, while stationery, grain, cooking oil, toy and handcrafts are also commonly seen on the shelf. Generally, most charity shops receive goods through donation by residents and enterprise nearby.

3.3 Revenue and expenses

Income and expenses reflect the state of charity shops. Income here includes sales revenue, government support and donation, while expenses include human resource expenses and site rental.

Figure 3 shows the income scene. We can see that there is a large gap among those charity shops. 11 charity shops earn more than 200,000 RMB a year while 11 others earn less than 5,000 RMB a year.

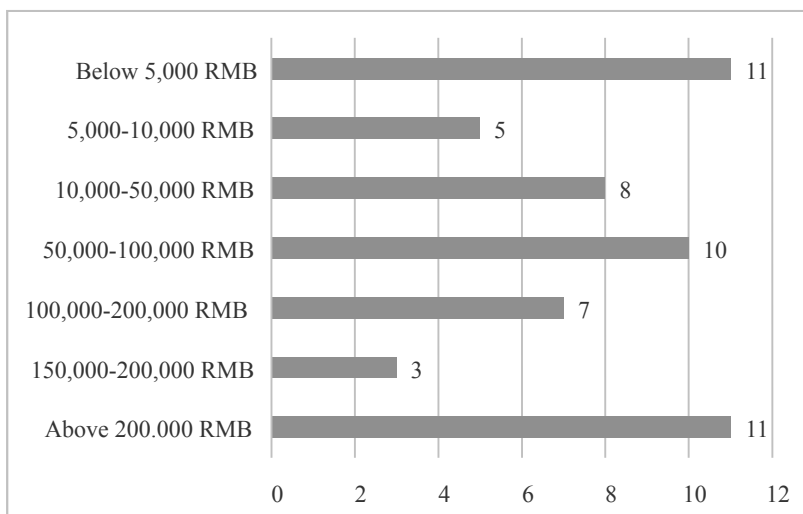


Figure 3 The charity shop number of different revenue

Expense of charity shops varies as well. Figure 4 shows the expenses situation. 45 charity shops have answered the question. We can see that 11 charity shops' expenses were less than 5,000 RMB a year; most charity shops' expenses were under 150,000 RMB.

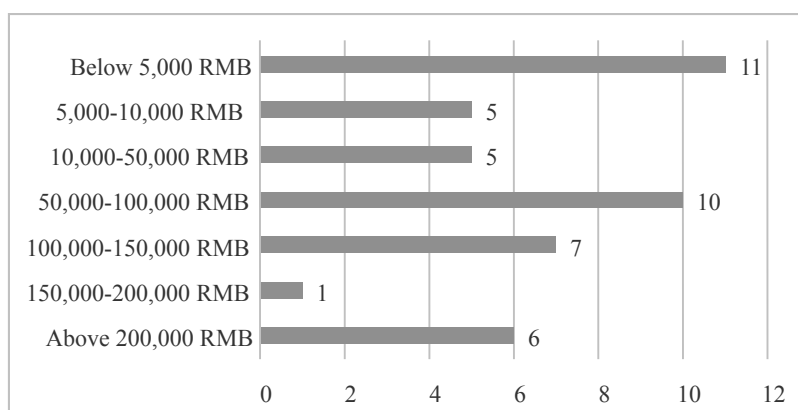


Figure 4 The charity shop number of different expenses

Regarding human resource expenses, 33 charity shops spent less than 100,000 RMB in 2015, while 45 charity shops' sites are provided by the street office and town government.

3.4 Legal status

This part investigates about registration form. 58 charity shops answered this question. Figure 5 reveals that 34 charity shops register as private non-enterprise entities; 12 charity shops register as labor organization.

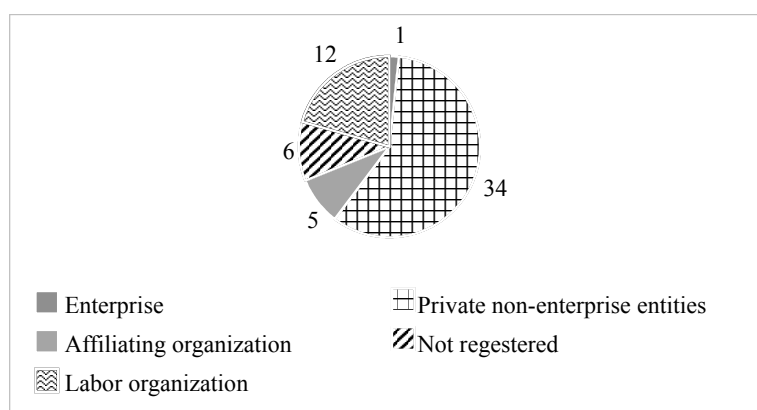


Figure 5 The charity shop number of different identity

Among those that register as private non-enterprise entities, only 19 establish council and supervisory board. On the other hand, nearly all charity shops have set up management system.

3.5 Human resource

Human resource includes the staff, manager and volunteer. Figure 6 reflects the situation of the staff. 28 charity shops own less than 2 employees; 10 charity shops own less than 5 employees.

Among all sample shops, 7 charity shops do not have full-time employee; only 4 charity shops have more than 5 full-time employees. 46 charity shops paid the employees; 20 charity shops hire retirees and 7 charity shops hire the disabled. Moreover, the average age of employees in charity shops are relatively high, as the number of 34 charity shops reach 40 to 50-year-old section, while only 3 charity shops have most of their employees at their twenties. All the employees are relatively underpaid.

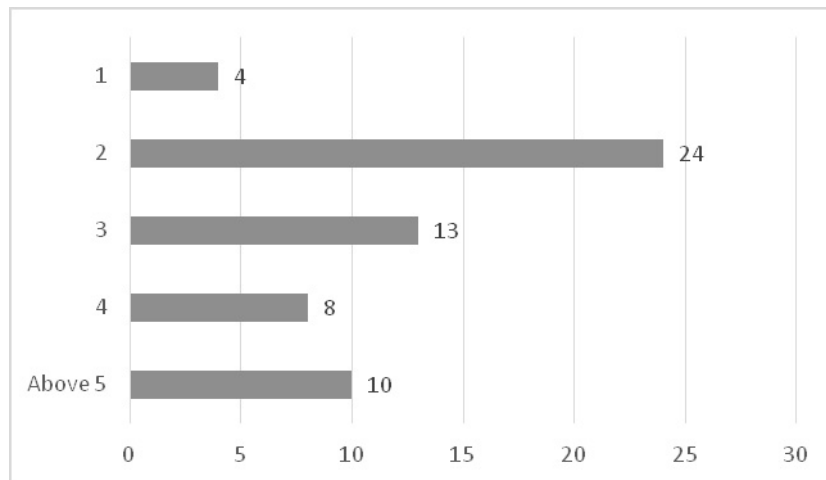


Figure 6 The charity shop number of different staff amount

About volunteer, 36 charity shops say that they have regular volunteer team and 17 charity shops do not use volunteers in daily work at all. And most shops have less than 10 volunteers.

3.6 Promotion

Promotion part includes the method, promotion resource and information openness.

Figure 7 shows the promotion methods. Traditional community activities and supermarket promotion are still popular and few charity shops use 'Internet+'.

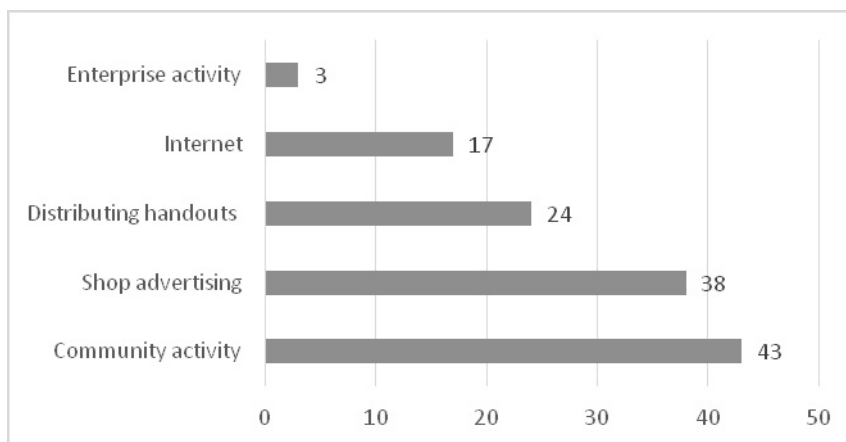


Figure 7 The charity shop number of different promotion methods

The research has further investigation the internet promotion and find out that it is still not prevail in them. Only 6 charity shops have their official website and 14 charity shops use social net tools such as Weibo and WeChat.

About information openness, 34 charity shops say that they release information to public regularly; 27 charity shops reflect information to the donators regularly and 24 regularly do both works.

3.7 Difficulties

Figure 8 shows the difficulties charity shops face. Two main difficulties are the lack of customers and goods. Meanwhile, many charity shops have the trouble of funding, site area and fundraising skills.

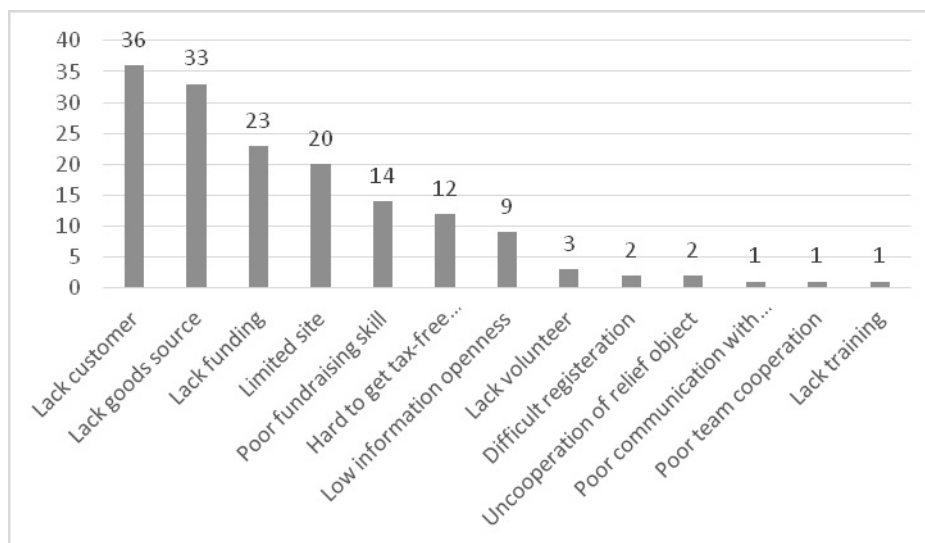


Figure 8 The charity shop number facing with different difficulties

4 Operating models of charity shops in Shanghai

Based on the degree of dependence on government, this paper classifies the charity shops in Shanghai into three models—government-dominated model, government-support model and social-support model. For government-dominated model, the charity shops hardly focus on retail work, and their main activities are releasing salvation tickets. For government-support model, charity shops receive contracting-out from government, shouldering both daily sales and social aid function. For social-support model, social organizations take part in the operation, have sales revenue and conduct a variety of activities. Following we present two typical case of charity shops in Shanghai.

4.1 Case 1—government-dominated model

Shanghai Changshou charity shop is a typical government-dominated case. It founded in February 2002, is one of the earliest charity shops in Shanghai. It has the largest amount of aid. Compared to its old operating pattern, it has make big difference because of the change of its identity. In 2011, it registered as independent legal entity and its business authority department is changed from Changshou Social Organization Administration Center to Changshou street office. And it directly improve its management structure. After registration, it established a council made up of 7 members and built five professional function groups.

Changshou street office has offered much help to Changshou charity shop, including working office, website and guidance of bidding in government purchasing service projects. In activity aspect, it continues its comprehensiveness and focus on supporting the poor, collecting cash donation and holding charity sales. And its annual sales reach 130,000 to 140,000 RMB at its peak. Besides, it owns a large volunteer team. From 2004 to 2016, 3500 volunteers have provided service for this shop.

Generally speaking, Changshou charity shop is a successful example of government-dominated model. Although it registered as independent organization, it still keeps close cooperation with government and gain lots of support from it. Besides, it also values business development and system construction. And it keeps a good relation with enterprise to expand money source.

4.2 Case 2—social-support model

Shanggang charity shop founded in 2006. It was managed by New Shanggang street at the beginning and the development was not good before 2010. In 2010, Wulixiang community service center took over its management and things began changing.

Wulixiang is an NGO incubator established by NPI development center of philanthropy organization. Its main business is providing consultant for social organizations on ability promotion. And charity shops have been its target objects.

To improve Shanggang charity shop's development, Wulixiang established a new organization called Sunshine House. Sunshine House provides projects of caring the intellectual disabled and recovering lessons for them. The Sunshine House and Shanggang charity shop build a perfect cooperation. The intellectual disabled could work in the shop as volunteers and they will be trained before work. In this way, charity shop get regular volunteer and the Sunshine House could help the intellectual disabled recover better.

Besides, Wulixiang has established a comprehensive WeChat service number to release information about Sunshine House, Center for the Disabled of Shanggang Street and Shanggang charity shop. And it also opened a WeChat store to display and sell goods in charity shop. With the innovation going, charity shop keeps its traditional activities. It continues to distribute caring tickets to the poor, the disabled and the old person above 90 years old.

However, although the innovation has energized the charity shop. It still faces fundraising problem. After registered as independent legal entity, it lost qualification purchasing goods and all goods are donated. And it is very difficult to get tax-free qualification.

5 Conclusions

In total, charity shops have not worked well in Shanghai. And many charity shop face difficulties of lacking customers, goods and money. Based on the degree of dependence on government, there are three models—government-dominated model, government-support model and social-support model. Traditionally, charity shops are government-dominated and some have registered as independent legal entity. Charity shops' development need support from government, enterprises and non-profit organizations. Government could provide offices, bidding guidance and human resources; enterprises could help raise funds; non-profit organizations could provide professional training and volunteers. Both the charitable and business characters are important to charity shop. So, a good network composed government, enterprise and non-profit organization is essential to charity shops.

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Local Management and Municipal Governance to Produce Grassroots Innovations after the Great East Japan Earthquake

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Abstract Effective municipal governance is predicated upon local management fully utilizing the local entities and networks to cause breakthroughs in the current situation by conducting strategic development and making grassroots innovations happen. Mutual efforts to create value are the real “collaborations.” Local development of this type of collaboration is “Local Management.” It is also necessary to promote innovation in which participating entities take responsibility for risk. Accumulating social capital is needed to support this effort. In order to cultivate social capital it is important to open and share information and to have cooperative experiences. Consensus on resource allocation makes risk sharing more acceptable to the participating entities.

Key words Local management, Municipal governance, Grassroots innovations

1 Issues and problems of local government’s “management system”

The management system in the Japanese municipality has both the administrative system of the chief executive and the municipal assembly system (discussion of parliament and the voting system). In other words, it is a unique system reflecting the characteristics of the local political administration which entrusted the great authority to the dual representative system and the head (mayor). Therefore, when considering management issues of local governments in Japan, it is necessary to keep the institutional characteristics and tasks of the binary representation system in mind.

In the case of Japanese municipalities that have the characteristics of a binary representation system, efforts are required to coordinate the administrative system and parliament system well, and to form a consensus on complex subjects under the participation of citizens. In other words, there are cases in which it may be difficult and require a lot of time to discuss. Democracy requires time as well, but in cases where it is urgent or when it is necessary to bring about innovation, we should manage the system on a case-by-case basis.

In local governance management in Japan, it is necessary to publicize information, share it, foster social capital, and actively face such tasks. In the era of decentralization, we should further decentralize central and regional financial aspects, and also decide intra-organizational decentralization cautiously. That leads to the delegation of authority to the site, and to develop high-quality services and business.

To that end, management that fulfills the responsibilities and duties required for decentralization, fostering social capital, and recruiting and utilizing highly skilled human resources is indispensable for sharing the excellent management philosophy and vision and establishing an organizational culture. Furthermore, it is necessary to review administrative evaluation and audit systems based on citizen autonomy as well.

2 Local management and municipal management

An important issue in municipal management is how to foster social capital and to deal with the global market as it interacts with local communities. For citizen autonomy and local society, it is important to foster social capital, with a philosophy centered on it, to deal with the movement of the market and incorporate this management philosophy in local management.

Thinking that way, this author, in September 2016, first established the “Society of Local Management” in Japan. Local management is a whole system of each company’s interrelationship on practice and thinking in a local society. This includes municipal management. Municipal management may lead the local management in some cases, but rather it is desirable to dynamically evolve as a collective system while respecting ideas and practices of various management entities.

Although the Great East Japan Earthquake of March 2011 had major impacts on Japanese society,

it could be said that it became a big trigger to deeply reflect on our way of existence. It gave us awareness of ideal and management philosophy. Why we were doing business, and what kind of business attitude should be embraced were deeply questioned. (Endo, 2015)

After the earthquake, there was an emergence of grassroots innovations. To address the radioactive contamination of agricultural lands, solar sharing has been proposed in Fukushima Prefecture that makes use of both agriculture and solar power generation (Endo, 2014), producing rapeseed oil and electrical generation from carefully placed solar panels. Kamaishi Kitchen Car Project in Iwate Prefecture is another example (Endo, 2014), which has been building a mobile food store system while receiving assistance from volunteer corporations and administrative offices when the stores were destroyed by the tsunami and no food was available.

There are many grassroots innovation cases. In both cases, in areas centered on the tsunami and Fukushima, in order to recover from the destruction accompanying the explosion of nuclear power plants, it can be said that these are excellent examples in which hope came through making local innovations happen by supporting of volunteers and collaborations of enterprises and municipalities.

After that, in the Kyushu Kumamoto earthquake of 2016, relief was provided to the victims of the earthquake while utilizing the information network technologies of ICT and SNS based on the model provided by the East Japan great earthquake disaster recovery and reconstruction (Endo, 2016). Through these disasters, the cases cited were thought to be spiritual developments that emanate from the deepest point of existence, as citizens awakened to the volunteer spirit and learned what is important as human beings (Endo · Mike, 2013, Endo, 2017). Collaboration with victims, NPOs, NGOs, and the government was shown to be essential for grassroots innovations at the time of catastrophe and its reconstruction processes.

In fact, in one of these cases, the NPOs and NGOs generated ideas and government support (Endo, 2013) and the central government promoted grassroots innovation in the form of grants in full based on the designation of reconstruction. In every situation, fostering of social capital and regional culture was the key to forming a mid- to long-term perspective in order to enable these for risky projects. Under that, legitimacy to government expenditure can be guaranteed.

3 A practical case from the viewpoint of the local management

After the disaster in 2011, the number of inbound tourists in Japan declined for a while but it has been steadily increasing since 2012 (Fig.1) especially in Tohoku area which was the center of the earthquake. More tourists are coming from Europe and it is even more remarkable to see the figures of those tourists coming from China.

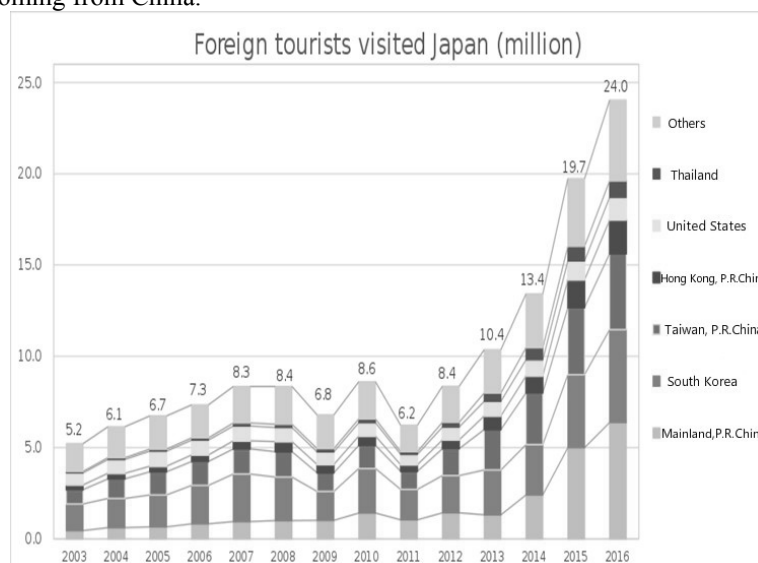


Figure 1 The number of international tourists to Japan

It has been proven that the utilization of technology such as peripheral equipment attracts more people to visit tourist spots. In Japan, the use of technology has been widespread for several years now. As a matter of fact, we can now use drones to shoot regional landscapes and make 360-degree videos and pictures as well. This makes it possible for people to capture images remotely. In addition, some workplaces already developed a system where one wears an equipment that allows them to see detailed commentaries while walking on different sites. This kind of technology is already being implemented in the Sakura Festival in Hirosaki.

Nowadays, tourists are deviating from group trips and going on solo/individual trips instead so the PR method must also contain a media mix wherein social media sites are added to the usual promotional methods such as TV advertisements and government tourism promotions. Pictures and videos can also be uploaded in YouTube, for example, so that a wider audience would be reached in spreading awareness of the different tourist spots in Japan.

4 New trends in municipal management

A new generation called 3.0 governance is being implemented. In this case, initiative learning from the staff and flexible government network management are important. It is especially important to accumulate social capital and the management philosophy should be positioned at the core of it.

4.1 CSV & CSP (CSB)

There are organizational practices at work which can be described and analyzed based on the Creating Shared Value (CSV) or Creating Shared Peace (CSP) models followed by the Corporate Social Responsibility (CSR) study movement. Michael Porter(2011) has created the concept of CSV which places importance on the creation of social value as the central business of the company.

The Creating Shared Value (CSV) model has been utilized in the Japanese tourism industry. While recognizing the importance of the concept of CSV, local societies need to identify the specific kinds of social value it seeks to create. This paper utilizes the Creating Shared Peace (CSP)¹ concept of peace as a universal value and a central principle of sustainable community management.

4.2 The Japanese tourism industry

An earlier international comparison study between Japan and the United States indicated that the power of ordinary people and network organizational strategies such as Public-Private Partnerships (PPPs) are effective in the time of major disasters (Endo & Paules, 2011). Unlike the innovation in business organizations, in grassroots innovations the actors are citizens with public service aspirations. In the case of the Great East Japan Earthquake, the actors are the victims themselves and the networks of people with aspirations.

Due to the tsunami and the nuclear power plant radioactivity risk, Minamisoma City (City of South Soma), Fukushima Prefecture was paralyzed. (Figure 2) Throughout the damage expansion, the city experienced administrative dysfunction. It became like a remote island for a period of time. However, based on the utilization of information networks, Non-Governmental Organizations, Non

¹ I have been using the word CSB (Creating Shared Beauty) (Endo,2016), however CSP (Creating Shared Peace) is more precise and accurate. This paper uses the concept of CSP. The concepts of CSB and CSP emphasize the philosophy and the content of values. CSV ultimately emphasizes corporate profits. But what matters most is the philosophy. It does not mean that we can't profit. It is an idea that philosophy is the most important and the next is profit. The same can be said for the government. Because of this public philosophy, the people also support the governments. Whitehead (1933) stated in the description of Peace, Chapter XX of his book, *Adventure of Ideas*, as follows. "What we are seeking in a certain way is to summarize the other four qualities (Truth, Beauty, Adventure, Art) and thus to exclude the uncomfortable egoism that has indeed come across those four qualities from the perspective of civilization. It is a concept of harmony of harmony, inhumanity is a dead language, and kindness is too narrow. I calm down destructive noises and select <Peace> for the harmony of harmony that completes civilization." In addition, the peace is also mentioned as follows. "<Peace> is a self-control in the extent that it has the broadest meaning, the ego disappears, and the interest is transferred to a wider variety of things than personality. <Peace> is to understand the tragedy and to hold it at the same time an internal feeling belonging to such grasp of the role of tragedy. <Peace> - It is the purification of emotions" By the thought of Whitehead, the meaning of the peace in this concept, including the altruistic spirit that the ego disappears, is the spirit with emotional purification which is self-control towards the realization of creative harmony.

Profits, and volunteers, supported by the aspirations of many people, the emergency was mitigated. The number of international tourists to Japan declined in the Great East Japan Earthquake in 2011. After the year, the number has increased. It means that to some extent main economic activities and social infrastructure rehabilitation have improved for six years since the huge disaster, even if there are many points to have to deal with.



Figure 2 Cities of Fukushima in restricted areas and areas to which evacuation orders have been issued

4.3 Keypersonship and CSP

We have referred the concept of Keypersonship. It is a very similar concept to servant leadership, whose model advocated by Greenleaf is the interaction which occurs among leaders and followers by serving an idea of spirituality (Greenleaf, 1977).

Spirituality refers to the spiritual aspect of the human condition and does not encompass the beliefs of any organized religions. It can be classified as a new dimension on the theory of Situational Leadership issued by Hersey & Blanchard (2007). Therefore, another dimension was applied to the three-dimensional model of Hersey & Blanchard and the model was constructed as a four-dimensional model.

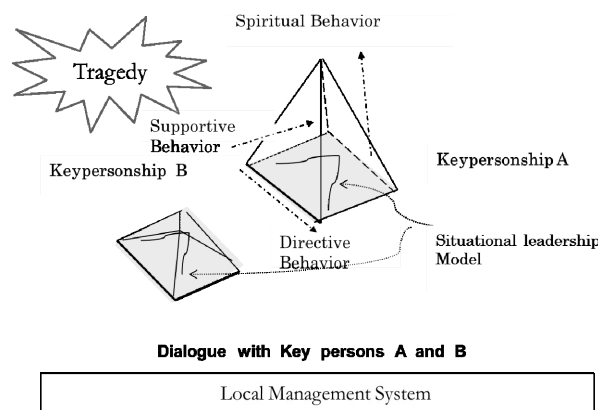


Figure 3 Keypersonship model

The new dimension of this model can be referred as whole-soul (spiritual) essence getting a suggestion from M. Fairholm of the Leadership Perspectives Model (LPM). LPM, based on the servant-first leadership theory, includes the perspective of contingency theory and integrates a variety

of leadership theories under a whole-soul (spiritual) essence which oversees the models (Fairholm · Fairholm, 2009). (Figure 3)

Previous research papers note that Keypersonship is a whole-soul (spiritual) essence, and refers to a new paradigm and a different narrative of reform (Gerry, 2006) used as collaborative strategy and as a narrative in a qualitative research case study.

The CSP management model facilitates such operations of Keypersonship. It means that executives can draw on staff's abilities and utilize their potential and strong points to realize their ideals and philosophy. (Figure 4) Many organizations have changed their values since the calamity and some of them have changed their minds and actions.



Figure 4 CSP and CSB model

5 Local government system encouraging local innovations after the Great East Japan Earthquake

In the comparison between Japan and the US, the institutional features of local administration of Japan have been reviewed. In Japan, there are great models to perform unified work, such as total quality management, however, creative ability needs further promotion.

Generally speaking, there is strength in terms of completion of routine tasks contributing to tangible reconstruction which can be evaluated, but there is a weakness in terms of the intangible—citizen participation and rural innovation.

Embracing new organizational models, such as Learning Organizations, and empowering staff with information and administrative discretion will maximize human resources and allow public agencies to be effective in addressing new and complex challenges. (Endo Paules, 2013)

But, it seems the disaster could give us awareness on beauty, human respect management and local innovation again. From April, 2015, in Fukushima, we can again the use highway between Namie through Tomioka (Figure 5), which was in the restricted area where nobody could previously travel without protective clothes. This means that nuclear substances have weakened so far in the impacted localities.

6 CSP tourism business practices

The company of “Nomaoui no Sato” operates in Minami Souma (South Soma) which is located in South Soma about 40km away from the Fukushima—Daiichi Nuclear Power plant. The mayor of the city is Mr. Katsuyoshi Sakurai who was reelected last year having addressed the respect for life and using recycled energy.

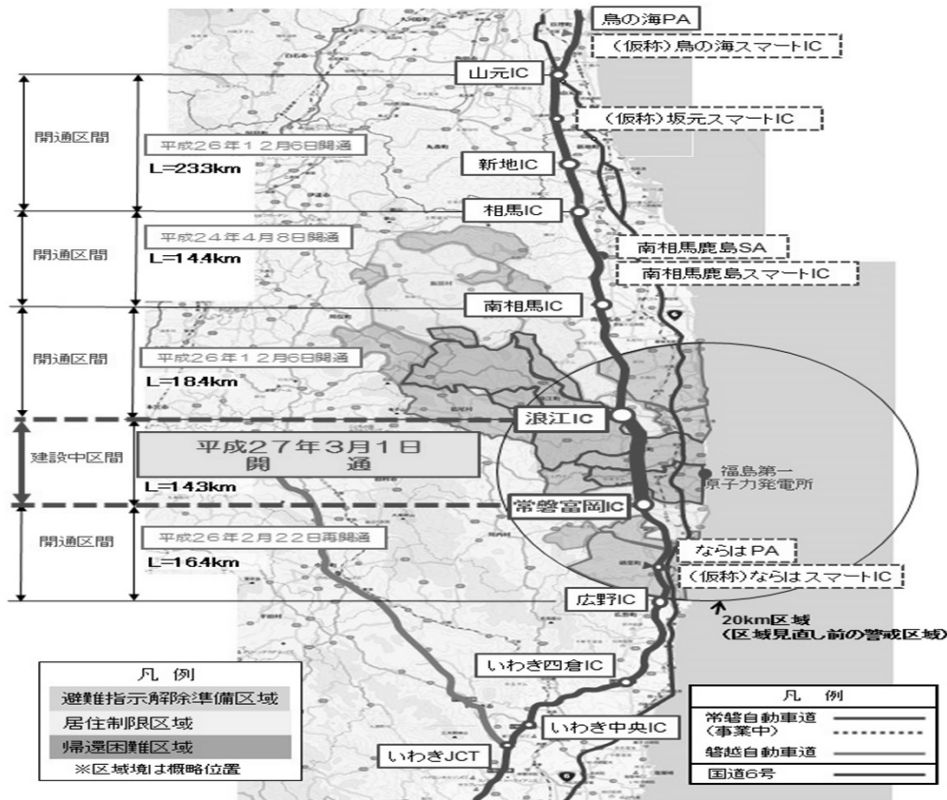


Figure 5 The Joban highway between Namie through Tomioka

The company runs the service station of the highway in South Soma. There are many tourists who come to stay here since the site open. A local nonprofit planted rapeseed to make and sell rapeseed oil and mayonnaise on the site. Many tours come to the site from Tokyo and Sendai area to use the highway.

The company also runs “the Station of Roads” in South Soma. The station had been one of excellent places to protect refugees and hold many lifesaving materials during the disaster period. Now, the station has come back to usual operations for many tourists and residents. Many local vegetables are sold. Compared to two or three years before, now many residents and tourists have bought and eaten local foods.

7 Case studies

7.1 City of Fukuoka helps the Kumamoto Earthquake

After the Great East Japan Earthquake in 2011, scholars have shown that risk management and innovative management practices, such as Creating Shared Peace (CSP) are very important. These ideas have been evolving through concrete experimentation, most recently in regard to the earthquake which happened in Kumamoto this year.

SNS was used to meet the needs of the survivors and to distribute materials for recovery and survival. In the case of Kumamoto, city officials believe that SNS was a very useful tool for dealing with each refugee’s needs.

Soichiro Takashima, Mayor of Fukuoka City which is 100km away from Kumamoto and Oita where the big earthquake hit has continued to actively support the recovery there. His Facebook page is shared with the tens of thousands of people gathered in Fukuoka to serve in distributing many supplies and provides a “support base.”

On April 17, Mayor Takashima of Fukuoka City called for a full-fledged support for providing or

donating goods for those who were affected by the calamity. Narrowing the relief supplies to the 6 items which are greatly needed in the city such as bottled water, toilet papers, diapers, sanitary napkins and unused towel and blankets, he asked the citizens bring these items to an old elementary school building through the SNS. Citizens who provided relief supplies formed a line and items were sorted by each classroom. This systematic process was made and implemented by the city staff. Under the command of the mayor, the municipal staff in the cases cited carried out much support works after the disaster by using their discretionary freedom and utilizing SNS.

Needs in disaster areas vary from moment to moment. Mayor of Kumamoto City, Kazufumi Onishi, telephoned to ask for local blankets, nutritional supplements and wet tissues. He asked manufactures to help those who were in needs, but he could not get help from them, so he used the power of the SNS to overcome the situation. Initially, the involvement of the private sector did not match the need, however, consensus-building efforts in Kumamoto later caused many companies, NPOs and NGOs to become involved and use SNS

As the damage expanded in the disaster areas, the mayor dispatched the professional staffs such as firemen and local officers wherein they provided frontline support in creating shelter. The mayor ensured the accommodation of all members of the staff in Kumamoto Prefecture. Also, the mayor required the staffs to bring mobile terminals so they could aggregate the demand needs through the SNS.

The staffs of the government and volunteer organizations operated in the disaster areas and helped the people that were affected by the earthquake through Facebook. The mobile terminals were useful because they could share information with everyone and with the headquarters which could see what was needed and deliver supplies rapidly and properly to the disaster areas in Kumamoto City. People said, “We could do a lot in this tragedy because of what we learned from the Great East Japan Earthquake in 2011.”

7.2 City of Mitaka in Tokyo

Mitaka City in Tokyo is very famous for employing excellent management practices in Japan. The city utilizes an open data strategy. The city’s Mayor, Kiyohara, has been sending and sharing information with citizens on governance since she was elected. She supports deliberative democracy and citizen participation. A key element of deliberative democracy in Mitaka has been to open communication using the results of citizen policy preference surveys.

In Mitaka City, in this way citizens were randomly selected to participate and express their opinions from which policies can be recommended. It has been determined that there is a high degree of participation and cooperation among the citizens compared to other research methods such as town meetings, world cafés, and discussions.

Mitaka City has been working on the open distribution of administrative information actively such as defining the “information disclosure” in the Ordinance Article 14 and the establishment of a “Municipal administration information digital site”.

As for famous municipal open data cities, there are Yokohama, Chiba, and Sabae. Each city has a strong local community; there key players and key members can take advantage of the open municipal data. The common characteristic of these cities is that the partnership is completed and open data initiatives are activated. The community has many joint events; the government issues data; citizens have the access to information in the application development and other areas. In addition, city officials not only participate in the city’s events but they have also attempted a variety of information-gatherings and have actively participated in outside study sessions. Mitaka City is currently active in front of the movement.

To improve the performance of local governance, municipal leaders need to take risks and utilize excellent management strategies, such as CSP—the concept of creating common value and pursuing government initiatives which have inward “peace” with citizens. The Great East Japan Earthquake demonstrated that every citizen has the ability to help others who need help which is consistent with the CSP approach. It seems that the Mitaka City’s Mayor, Kiyohara, has been governing the City with deliberative democracy though ICT strategy on the idea of CSP philosophy. Among them, grassroots innovations were also born. (Mitaka City’s Soho Movement)

8 Local government system encouraging local innovations after the Great East Japan Earthquake

In the comparison between Japan and the US, the institutional features of local administration of Japan have been reviewed. In Japan, there are great models to perform unified work, such as total quality management, however, creative ability needs further promotion. Generally speaking, there is strength in terms of completion of routine tasks contributing to tangible reconstruction which can be evaluated, but there is a weakness in terms of the intangible--citizen participation and rural innovation.

It is an important time to utilize the various management entities of the local society and to manage the area based on its vitality. In particular, the regional society in Japan is excellent in nature and traditional culture, and there are many places where food culture is also developed. It is required to enhance the local management that fully utilizes its goodness and to cause breakthroughs in the current situation by conducting strategic development. Each management entity in the community aims for superior management, while mutually recognizing the personality and strengths, while aiming for professional management, learning outstanding points, complementing the shortcomings, cooperating, and social meaningful superiority. As previously shown, mutual efforts to create value are the real "collaborations." "Local development of this collaboration is "Local Management." There is also a need for solid risk management.

Local management occupies most of the majority of small and medium-sized enterprises and NPO / NGO cases that do not have large capital strength in rural areas. It is appropriate to take a strategy of creating local value that is environmentally friendly, rather careful of nature and regional resources, drawing out its merits and utilizing local resources. Under the superior management philosophy, it is the municipal government which has to formulate the rules of competition in the economy, coordinate among various management entities, develop the foundation of local management, and promote efforts to aim for public good.

9 Summary: CSP as an excellent local management model to facilitate Key-personship

This paper is about Sustainable Local Management in the areas after the Great East Japan Earthquake by an extension of Keypersonship and excellent management study. It is important that the system of local government facilitate and foster good relationships with small and medium-sized businesses in local areas by using ICT (Information and Communication Technology) and making local innovations happen. Similar partnerships must be established with NGOs and NPOs.

Local management should be based on self-government along with the central government policies, and on the assumptions of networked governance which loosely links various governance entities. If there is insufficient cooperation between the management of the entities responsible for local governance, municipal public management cannot be made effective. Without meaningful partnerships, local management will be unable to deal with huge disasters like the ones discussed. Municipal management that covers risks is important. Credit creation and the fostering of social capital are extremely important in municipal management which is why they should be taken into account.

In Japan, municipal governments have faced many problems, such as an aging society, regional disparities and financial problems. This paper tries to discuss how these problems can be addressed using excellent municipal management and local strategies such as CSP to produce grassroots innovations after the great east Japan earthquake in smart city in conjunction with ICT movements.

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Study on the Interaction of Using Facebook—A Case Study of Mayor of Taipei, New North and Kaohsiung Cities

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Abstract With the rapid development of network technology, more and more government departments and public organizations have adopted social media. Previous research has been based on organizational or institutional perspectives to discuss public interaction on social media, and lacks depth discussion of how organizational or institutional leaders use social media to interact with the public online. From Obama, Trump and other successful users of social media in their interactions with the voters, we can see that in the Internet era, leaders' interaction with the public in social media is an important research topic. This study uses big data technology to analyze the contents of Facebook of three mayors in Taiwan P.R. China, to explore what kind of information and when and how to post them can get a better interactive effect.

Key words Taiwan P.R. China, Internet interaction, Social media, Facebook

1 Introduction

In Taiwan P.R. China, Facebook has nearly 16 million registered users, of which about 12 million active users, while the number of Taiwan P.R. China's total population of only 23.54 million people. The active users of Taiwan P.R. China's Facebook are accounted for 50% of the total population, which shows that Facebook can be described as Taiwan P.R. China's largest network interaction platform. So we choose Facebook as the social media strategy research platform, which also used by local government leaders, it can be more realistic reflection of the actual situation, also more convenient to make data retrieve. Considering Taiwan P.R. China's political and social situation, we choose three cities, New Taipei, Taipei and Kaohsiung. First of all, these three cities were lead by the KMT member (Zhu Li-lun), nonpartisan people (Ke Wen-zhe) and the DPP member (Chen Ju). Secondly, according to statistics, the new Taipei a population of 398 million, accounting for the "total population" of 16.90 percent, the highest in Taiwan P.R. China "municipalities" first place; Kaohsiung total population of 278 million, accounting 11.81%; Taipei is also one of the Top4 cities in Taiwan P.R. China's population. Finally, these three people's activity degree will not differ too much. This allows the selected data to be more fully studied and analyzed. Compared to the traditional media, leaders can be more convenient to have two-way interaction with followers, by use social media, which can't be achieved by traditional media. As early as 2009, some scholars were concerned about the frequent use of blogging in campaigns (Jackson and Lilleker, 2009^[1]; Kalnes, 2009^[2]). The study of President Obama's successful campaign in 2008 has further increased the interest of academic circles in social media (Wattal, Schuff, Mandviwalla, & Williams, 2010^[3]). Today's research shows that the use of social media for political exchange is considered the "most advanced" way of communication. (Koc-Michalska, Gibson, & Vedel, 2014^[4]; Marcinkowski & Metag, 2014^[5]).

So, this study attempts to solve the following question. That is, in social media platform, since political figures will publish lots of contents, what kinds of content can get more public interaction? Through all the Facebook posts, which posted by the mayor of three cities (new Taipei, Taipei and Kaohsiung) in two years (December 25, 2014 to December 31, 2016), in order to get the answer. The specific unit of analysis is the political figures posted on Facebook posts, the dependent variable is the interactive content obtained by the post, that is, the likes, comments and forwards. The number of posts,

release time, content topics (Including government information, social news, political legal system, etc.), and emotional characteristics (positive, neutral, negative) as independent variables.

This article will be in the following order. At first, we will introduce the research method and puts forward the relevant research hypothesis. Then is the descriptive and speculative analysis of the selected data. Finally, we will discuss the conclusion of the research, and summarized the research findings.

2 Research methods and hypotheses

Since the social media has become an important platform of people's interaction, both government departments and social organizations have been concerned about the important function of social media. In 2008, the United Nations e-Government Survey report has pointed out, that "government 2.0" can produce an effective role in the two-way communication between public institutions and civil. Research of government departments and social organizations using social media to interaction with audience, has been quite mature. But as previously mentioned, since Obama has set off a wave of Twitter during the 2008 US presidential election, politicians or political figures have been used social media as individuals, to make interaction with the public more frequent. But there are not too much researches of this phenomenon. In the web of science database to search "Obama + online communication / interaction" as a keywords, only get four literature, one of which is mainly on the fans of the overall classification of the study, and another is to research the user of YouTube which have watched Obama's speech on video, the other two researches are not belong to social media interaction areas. We can find that, on the political figures of the online exchange of interactive analysis, there are considerable blank for research.

The number of social media users' fans can be broadly represented the users' influence. The study of Micro-blog's influence of communication process shows that (Yu Jing, 2013^[6]), for those users who original have great influence, there is a certain degree of positive correlation between their Micro-blog's posts influence and the number of fans. In the study of enterprise's Micro-blog marketing effectiveness found that (Jin Yong-sheng, Wang Rui, Chen Xiang-bing, 2011^[7]), if companies posts more Micro-blog, it can get stronger interaction with their fans, and easier to attract the attention of new fans, with better influence. So, our question is, whether the number of posts that posted by political figures, will have an impact on the interactive effect? Here is the following hypothesis:

H1: The number of posts is significantly related to the interaction effect.

Early research has been analyzed the post time of social media information content. Shi Li-li's studies have demonstrated that the government social media is limited by its working time like "nine a.m. to five p.m.", so the vast majority of their social media content is posted on weekdays (Shi Li-li, Xie Mei, 2013^[8]). But just divided the post time into workdays and rest days seems slightly rough, it should be further divided, such as the day of some specific periods of time to divide. So we put the following hypothesis:

H2: The posted time of the information is significantly related to the interaction effect.

In general, the social media users can post the specific content such as text, pictures and video (or audio). Liu Xiao-juan and other studies have shown that (Liu Xiao-juan, Wang Hao-xian, Xiao Xue, Dong Xin-xin, 2013^[9]), the content type which users posted can affect its spread effect. The study of the specific content posted by social media users also includes its different content themes, previously studies has already research the different subject matter of social media content. Wang Yue's research found that (Wang Yue, Zheng Lei, 2014^[10]), the content of Chinese government WeChat could be divided into service information, government affairs, propaganda information, social news and comprehensive information. Therefore, it is necessary to consider, the impact of the interaction effect that caused by different subject matter. Here is the following hypothesis:

H3: Different content topics are significantly related to interactive effects.

In social media, people's preferences for emotional information have aroused the interest of academics. Research of the 2012 US presidential election showed that (Bronstein J, 2013^[11]), the two presidential candidates Mitt Romney and Barack Obama are both using social media posted emotional information, particular in posted the positive emotional information. Subsequent studies made by

Berger and other scholars also found that (Berger, J., & Milkman, K. L. 2010[12]; Stieglitz, S., & Dang-Xuan, L. 2013^[13]), information with plenty of emotions can get rapidly spread on social media. So, the emotional characteristics of posted content should also be considered. So the following hypothesis is:

H4: Different emotional characteristics of posts and the interaction effects were significantly related.

Based on the above hypothesis, we constructed the research model of this article (show in Figure 1):

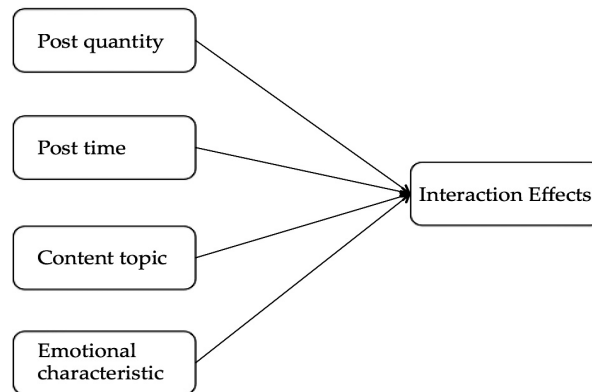


Figure 1 Factors of affecting interactive model

3 Data selection and analysis

3.1 Data selection

At November 29, 2014, Taiwan P.R. China’s “nine in one” election has finally ring down the curtain, the new leaders of local government will assume their post at December 25, 2014. We choose all the Facebook posts of three mayors (Zhu Li-lun, Ke Wen-zhe and Chen Ju) as research data, which from three main cities of Taiwan P.R. China (New Taipei City, Taipei City and Kaohsiung City). And the time period of data select is from 2014 December 31, 2014 to December 25 to 2016, in about two years. So that to analyze the correlational between the posts and it’s interaction effects.

3.2 Descriptive statistical analysis

The traditional concept of interaction does not suit for social media interactions like the Facebook category. In Facebook, user’s public postings can be seen by other users and respond if they are interesting with it. This means that, the number of interactive participants will be more and the scope will be wider—all the members of their network can participate in the interaction. So, the research question is, while political figures using social media to interact with people, what kind of posts can cause people’s interest in interaction?

Some studies believe that, the frequency of interaction and the frequency of the posts are positively related. That is, the more often the post been posted, the more the interactions get. However, we can see from Table 1, Ke Wen-zhe’s posts are less than Zhu Li-lun’s posts (507 vs. 862), also less than half of Chen Ju’s posts (1040). Each of his post, not only the average number of like, but also the average number of comments and share is far greater than the other two mayors’ post. So what are the factors that lead to the emergence of such a situation? Here we will follow the analysis framework, to find out the secret of all these posts.

Table 1 Overview of three mayors’ Facebook posts

Facebook Users	Num. of Posts	Num. of fans	Avg. Share of single post	Avg. Like of single post	Avg. Comments of single post
Chen Ju	1040	1055248	250.52	18147.62	321.30
Ke Wen-zhe	507	1538306	1101.14	33024.06	1195.42
Zhu Li-lun	862	876860	247.80	15316.50	1049.12

(1) The number of posts

According to the posts of month, divided the data in to 24 months, from January 2015 to December 2016. The post circumstance of three mayors is shown in Figure 2.

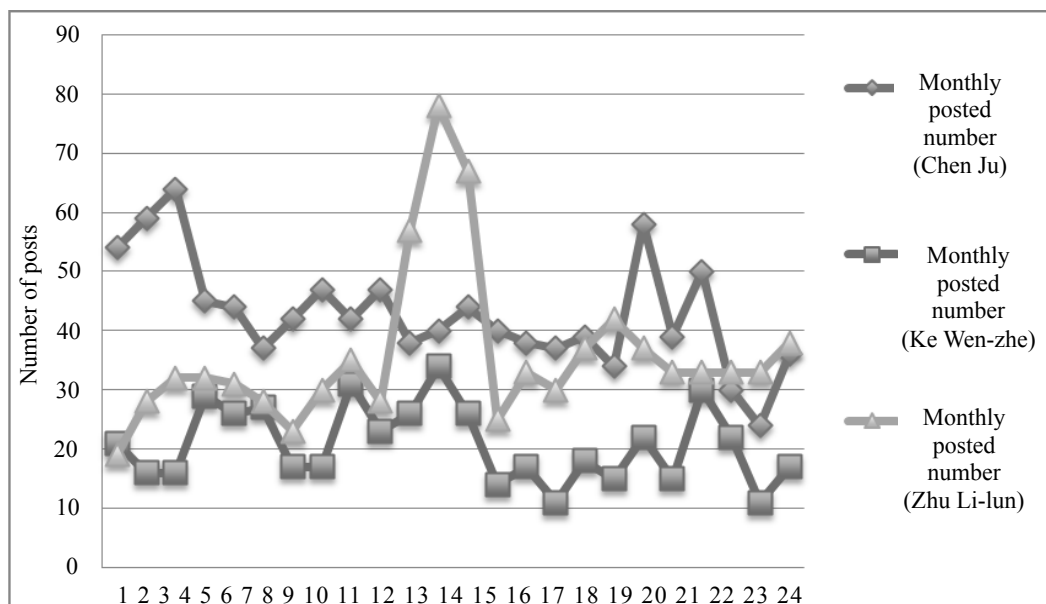


Figure 2 The monthly Facebook posts number of three mayors (2015-2016)

We can see from Figure 2. That is, the number of Chen Ju and Ke Wen-zhe’s posts does not have too much fluctuation from each month. Chen Ju’s monthly posts are about 40 to 50 pieces. She posted 64 posts in the maximum of one month, and the least one she posted 24 posts as well. Ke Wen-zhe posted about 10 to 30 posts per month. Which he has posted 34 posts in a month at most, at least two months, he only posted 11 posts. The number of Zhu Li-lun’s posts was significantly influenced by the 2016 “Provincial election” election in Taiwan P.R. China. As a candidate for the “provincial election” of the Kuomintang, Zhu Li-lun posted a increased number of posts during October 2015 to December 2015, as he post 78 posts in December 2015, which is the most of his monthly posts.

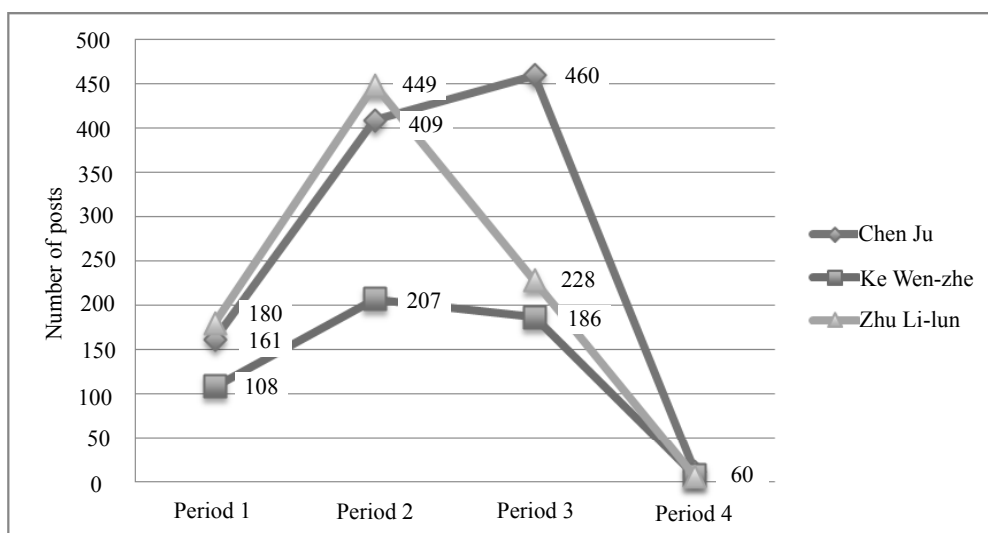


Figure 3 Time periods of three mayors' posts

(2) The time node of posts

We divided a whole day's time into four equal periods. The first period of time is from 6: 01 to 12: 00, then the second period is from 12: 01 to 18: 00, the third is from 18: 01 to 24: 00 and the forth is from 00: 01 to 6: 00. According to Figure 3, we can find, that the post habits of three mayors are in different periods. Zhu Li-lun and Ke Wen-zhe are more like to post at 12: 01 to 18: 00 (period 2), and Chen Ju post more posts at the third period (18: 01-24: 00).

Through further comparison we can find that, although about 80% of three mayors' are in 12: 01-24: 00 (period 2-3), but the number of Chen Ju and Ke Wen-zhe's posts in these periods are not much difference. Zhu Li-lun is more like to post in the second period of time, about 52.09% of his posts were posted in 12:01 to 18:00 (Table 2).

Table 2 Time periods divided of three mayors' posts

Facebook Users	Num.Of Posts	Period 1 (06:01-12:00)	Period 2 (12:01-18:00)	Period 3 (18:01-24:00)	Period 4 (00:01-6:00)
Chen Ju	1040	161(15.48%)	409(39.33%)	460(44.23%)	10(0.96%)
Ke Wen-zhe	507	108(21.30%)	207(40.83%)	186(36.69%)	6(1.18%)
Zhu Li-lun	862	180(20.88%)	449(52.09%)	228(26.45%)	5(0.58%)

(3) The different categories of posts

Use text analysis to analyzing all the Facebook posts. According to the different content, we classified all the posts into nine categories: government information and public service (Coded as 1); social news and social activities (Coded as 2); political, laws, election and communication (Coded as 3); economic and city development (Coded as 4); cultural and educational, historical and festivals (Coded as 5); sports, entertainment, and travel (Coded as 6); blessing, prayer and thanks (Coded as 7); personal perception, life shared (Coded as 8); others (Coded as 9).

Analyze with all the posts, we find that the category of government information and public services appear the most of the three mayors' Facebook posts, respectively. These posts accounted for about 33.85% of Chen Ju's posts, 50.10% of Ke Wenzhe's posts and 26.45% of Zhu Lilun's posts.

Table 3 The different categories of three mayors' posts

Facebook users	Chen Ju	Ke Wen-zhe	Zhu Li-lun
Num. of posts	1040(100%)	507(100%)	862(100%)
Category 1	352(33.85%)	254(50.10%)	228(26.45%)
Category 2	130(12.50%)	50(9.86%)	120(13.92%)
Category 3	152(14.62%)	34(6.71%)	109(12.65%)
Category 4	72(6.92%)	17(3.35%)	56(6.50%)
Category 5	78(7.50%)	16(3.16%)	76(8.82%)
Category 6	74(7.12%)	35(6.90%)	96(11.14%)
Category 7	72(6.92%)	17(3.35%)	82(9.51%)
Category 8	25(2.40%)	67(13.21%)	58(6.73%)
Category 9	85(8.17%)	17(3.35%)	37(4.29%)

In addition, in the Category 2, 3, 4, 5, 6, 7, and 9, Chen Ju and Zhu Li-lun's posts number are rather close. Which is far more than Ke Wen-zhe's posts in these categories. In contrast, Ke Wen-zhe has posted more posts in the category of personal perception and life shared, which is the second largest amount of his posts, and the proportion is reach to 13.21%. Unlike Ke Wen-zhe, Chen Ju and Zhu Li-lun do not post much posts of this category.

(4) The emotional characteristics of posts

According to the emotional characteristics, divided all the posts into three types: positive, neutral and negative emotions. Statistics find that, the vast majority of all the posts are the type of neutral emotional characteristics. More details show in Table 4.

Table 4 The emotional characteristics of three mayors' posts

Facebook users	Num. of posts	Positive	Neutral	Negative
Chen Ju	1040	212(20.38%)	792(76.15%)	36(3.46%)
Ke Wen-zhe	507	45(8.87%)	451(88.95%)	11(2.17%)
Zhu Li-lun	862	130(15.08%)	713(82.71%)	19(2.20%)

3.3 Speculative statistical analysis

(1) Correlation analysis

Using SPSS 22.0 software to analyze the monthly posts and the interactive effect (share, like and comment), the relevance is show in Table 5. It can be seen that Chen Ju's monthly posts is significantly related to the average number of its "like" received. Zhu Li-lun's monthly posts are significantly related to the average number of "share" and the average number of "comment". Ke Wen-zhe's monthly posts have no significant related with the interaction effects. In general, the number of posts is significantly related to the interaction effect.

Table 5 Correlation between the number of posts and interaction effects

Facebook users' monthly posts		Avg. Share number	Avg. Like number	Avg. Comment number
Chen Ju's monthly posts	Pearson relevance	.357	.128	.616**
	Significant (bilateral)	.087	.550	.001
	N	24	24	24
Ke Wen-zhe's monthly posts	Pearson relevance	.196	.036	.063
	Significant (bilateral)	.360	.868	.770
	N	24	24	24
Zhu Li-lun's monthly posts	Pearson relevance	.640**	.616**	.096
	Significant (bilateral)	.001	.001	.656
	N	24	24	24

** Significant correlation at 0.01 level (bilateral)

* Significant correlation at 0.05 level (bilateral)

To analysis all the posts with correlation analysis method, derived the result in Table 6. It can be found that, the number of "comments" received is significantly related to its post time. The number of "share" and the number of "like" received are significantly related to the categories of posts. The number of "like" and the number of "comments" are closely related to their emotional characteristics. Among them, the emotional characteristics of the posts and the number of "like" received are in negative correlation related. It can be interpreted that, the emotional attitude of political figures is not exactly same as the audience's emotional attitude. When facing the social events, audience's emotional attitude may more considered from their own point of view.

Table 6 Correlation between post characteristics and interaction effects

		Numbers of share	Numbers of comments	Numbers of like
Post time periods	Pearson relevance	.034	.040 *	.032
	Significant (bilateral)	.098	.049	.117
	N.	2409	2409	2409
Content categories	Pearson relevance	.062 **	.021	.206 **
	Significant (bilateral)	.002	.312	.000
	N.	2409	2409	2409
Emotional characteristics	Pearson relevance	.002	.064 **	-.052 *
	Significant (bilateral)	.915	.002	.011
	N.	2409	2409	2409

** Significant correlation at 0.01 level (bilateral)

* Significant correlation at 0.05 level (bilateral)

(2) T-test

Using SPSS 22.0 software to process the data, take T-test between the post characteristics (the time period of post, the content categories of posts, the emotional characteristics) and the interaction effects. The results were as follows:

1. To compare with the different time period of posts. We find that the posts that posted in the period 4 (24: 01-6: 00) were more interactive than the posts in other three periods. (See Table 7)

Table 7 Comparison of different time period

Periods comparison	Interactive	F.	Significant
Period 1 VS Period 2	Like	13.589	.000
	Share	.025	.874
	Comment	1.217	.270
Period 1 VS Period 3	Like	.014	.905
	Share	1.402	.237
	Comment	6.933	.009
Period 1 VS Period 4	Like	45.604	.000
	Share	60.720	.000
	Comment	19.966	.000
Period 2 VS Period 3	Like	14.065	.000
	Share	2.768	.096
	Comment	19.824	.000
Period 2 VS Period 4	Like	96.654	.000
	Share	52.342	.000
	Comment	18.355	.000
Period 3 VS Period 4	Like	39.453	.000
	Share	24.767	.000
	Comment	.431	.512

2. Table 8 is the result of a comparative between the different content categories of posts. It can be seen that, compare to the other content categories, the personal perception and life shared content can get more interaction. This shows that the public is more interested with the personal life of political figures. Compared with the government information and public service content category, the category 3 (political, laws, election and communication) and category 4 (economic and city development) are more interactive. This shows that the public has less response to the government's information and information services, but they are more concerned about the political and economic interests. Besides, compared with category 3 and category 4, we find that category 4 can get more interaction, which shows that the public is more concerned about their own interest and the socio-economic development.

Table 8 Comparison of different content categories

Category comparison	Interactive	F.	Significant	Category comparison	Interactive	F.	Significant
Category 1 VS Category 2	Like	6.234	.013	Category 1 VS Category 3	Like	4.245	.040
	Share	2.800	.095		Share	8.880	.003
	Comment	.585	.444		Comment	21.181	.000
Category 1 VS Category 4	Like	14.067	.000	Category 1 VS Category 5	Like	10.216	.001
	Share	13.141	.000		Share	.354	.552
	Comment	1.620	.203		Comment	4.147	.042
Category 1 VS Category 6	Like	.484	.487	Category 1 VS Category 7	Like	62.249	.000
	Share	.335	.563		Share	1.539	.215
	Comment	3.445	.064		Comment	.197	.657
Category 1 VS Category 8	Like	210.811	.000	Category 1 VS Category 9	Like	18.253	.000
	Share	54.489	.000		Share	.277	.599
	Comment	33.615	.000		Comment	3.171	.000
Category 2 VS Category 3	Like	.072	.788	Category 2 VS Category 4	Like	18.586	.000
	Share	1.528	.217		Share	6.858	.009
	Comment	3.604	.058		Comment	1.125	.290

Category comparison	Interactive	F.	Significant	Category comparison	Interactive	F.	Significant
Category2 VS Category5	Like	.781	.377	Category2 VS Category6	Like	.952	.330
	Share	.398	.528		Share	1.080	.299
	Comment	2.198	.139		Comment	2.056	.152
Category2 VS Category7	Like	16.618	.000	Category2 VS Category8	Like	70.685	.000
	Share	.005	.943		Share	25.726	.000
	Comment	.451	.502		Comment	7.331	.007
Category2 VS Category9	Like	2.747	.098	Category3 VS Category4	Like	15.708	.000
	Share	2.858	.092		Share	11.552	.001
	Comment	1.715	.191		Comment	23.055	.000
Category3 VS Category5	Like	1.150	.284	Category3 VS Category6	Like	.530	.467
	Share	3.223	.073		Share	2.285	.131
	Comment	33.693	.000		Comment	34.139	.000
Category3 VS Category7	Like	17.573	.000	Category3 VS Category8	Like	71.206	.000
	Share	1.463	.227		Share	28.774	.000
	Comment	17.545	.000		Comment	4.223	.040
Category3 VS Category9	Like	3.369	.067	Category4 VS Category5	Like	16.742	.000
	Share	11.701	.001		Share	7.396	.007
	Comment	27.556	.000		Comment	1.797	.181
Category4 VS Category6	Like	8.436	.004	Category4 VS Category7	Like	35.224	.000
	Share	2.594	.108		Share	6.390	.012
	Comment	.348	.556		Comment	2.385	.124
Category4 VS Category8	Like	70.816	.000	Category4 VS Category9	Like	32.341	.000
	Share	16.485	.000		Share	18.109	.000
	Comment	25.143	.000		Comment	1.502	.221
Category5 VS Category6	Like	2.244	.135	Category5 VS Category7	Like	6.286	.013
	Share	.280	.597		Share	.224	.637
	Comment	.359	.549		Comment	7.726	.006
Category5 VS Category8	Like	34.748	.000	Category5 VS Category9	Like	.317	.574
	Share	13.578	.000		Share	.691	.406
	Comment	33.847	.000		Comment	.027	.869
Category6 VS Category7	Like	16.705	.000	Category6 VS Category8	Like	57.163	.000
	Share	.600	.439		Share	10.565	.001
	Comment	4.254	.040		Comment	36.067	.000
Category6 VS Category9	Like	4.914	.027	Category7 VS Category8	Like	13.169	.000
	Share	.007	.933		Share	14.805	.000
	Comment	.198	.656		Comment	22.492	.000
Category7 VS Category9	Like	4.095	.044	Category8 VS Category9	Like	28.249	.000
	Share	1.948	.164		Share	9.865	.002
	Comment	6.718	.010		Comment	27.798	.000

3. To compare with the different emotional characteristics of the post, we find that the post with neutral emotional characteristics can get more “like” and “comment”. In contrast to the positive emotions posts, the negative emotions posts can get more “comment”. This is consistent with Bene’s findings in 2016.

Based on the above analysis results, we can find:

(1) The number of posts and the interactive effect are significantly related. The hypothesis (H1) was established.

(2) The posts that posted in the period 4 (24: 01-6: 00) can get more interactive. The time period of posts is significantly related to the interaction effect, so hypothesis (H2) was established.

(3) The Category 8 (personal perception and life shared) can get the most interactive. As the Category 1 (government information and public service), Category 3 (political, laws, election and communication) and Category 4 (economic and city development) also get more interactive. The content category and the interaction effect are significantly related. Hypothesis (H3) was established.

(4) The posts with neutral emotional characteristics get more “like” and “comment”. As the neutral emotional posts get more interactive effects, the hypothesis (H4) cannot be established.

Table 9 Comparison of different emotional characteristics

Category comparison	Interactive	F.	Significant
Positive VS Neutral	Like	17.690	.000
	Share	.005	.946
	Comment	5.564	.018
Negative VS Neutral	Like	8.980	.003
	Share	.294	.588
	Comment	7.560	.006
Positive VS Negative	Like	.582	.446
	Share	.326	.568
	Comment	19.833	.000

4 Conclusions

This research tries to answer a question. That is, what kind of content does political figures post in social media can get better reactions from the public? We choose “like”, “share” and “comment” of the Facebook posts as the interaction effect. If some kind of posts can have better interaction effect, that means this kind of posts makes the public have interest to respond it. First, the results show that the number of monthly posts has a certain correlation with the interactive effect of these posts. But it is not means that the more the posts been posted, the better the interaction effect it can get. Sometimes it will have the opposite effect, which is not consistent with the previous study. Second, the time period of posts cause a strong influence of the interaction effect. The posts which posted at period 4 (24: 01-6: 00) received the largest amount of “like”, “comments” and “share”, and posts been posted at period 1 (6: 01-12: 00) received less interaction effect, which may be related to the modern way of people living. Previous studies shows that the post of government micro-blog is limited by the working day time (9:00-17:00). In a certain extent, this discovery fills the research blanks of the time period of posts. Third, the different category of content has a significant impact the interactive effect. Some of the previous research also proved this point, but it did not discuss which kind of content could get more interaction. Compared with other content categories, political figures post personal feelings and there life-related posts can get more interaction, which means that the public is curious about the personal life of political figures. Political figures interact with the public through social media, which makes them close to life, society and the public, rather than as a symbol high above. Finally, the emotional characteristics did not have large impact of interactive effects. As the neutral posts take the largest amount of all the post, it might have impact of the result. But compare the negative posts with the positive posts, we find that the public is more willing to comment on the negative post. Previous research also finds that, people are more willing to interact with the post full of emotions.

The earlier research takes Eliasoph’s finding as representative (Eliasoph, N. 1998^[14]). They think that the impact of citizens in their private sphere of individual response to the political is generally not critical, the reaction of mass media and social elites is the real need to consider. But today, the interaction between politicians and the public has changed markedly. From the early one-way publicity to now multi-way interactive communication, this change is closely linked with the rapid development of the network information technology. Since social media represented by Facebook and Twitter has become a platform for people to social and interactive, politicians, political organizations and governments have become increasingly aware of the great potential and important role of social media. Facebook and other social media has a strong ability to disseminate information, through the Internet it has significantly expanded the public’s opinion and the impact of the scope of speech. The emergence of this phenomenon means that, the individual’s attitude to the political issues has also become another important factor that should be considered. Bene’s research thinks that (Bene, Marton. 2017^[15]), if we assume that the individual’s reaction of politics are more pronounced than the mass media and social elite, the nature of political interaction will change, and the political interaction based on social media platforms will become more and more important. Because of this, to analysis the political interaction

of using social media also has some practical significance.

The limitations of this research are mainly in the follows. Firstly, to categorize the classification of data, the classification standard could be further improved. Which means this classification has a certain amount of subjectivity. Seconded, because we only captured the original posts data which the political figures posted, so the interaction after the post be spread cannot be analyzed. Finally, our research only statistics the number of “comment” but ignored the quality of it. In general, different interactive responses caused by the different comments are not same. These above issues can be discussed as a further study of the future.

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Effective Implementation of Corporate Social Responsibility in Rural Development: A Study in India

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Abstract Sustainable rural development is the need of the hour in all the developing countries across the world today with particular reference to India. Growing population and limited capacity of Government to reach out for the poor is the main cause for the rural-urban and also the rich-poor divide. There is a need for private sector in this context, to share the burden of Government in the upliftment of rural poor. Hence Corporates need to consider themselves as integral part of the society and accordingly act in a socially responsible way that goes beyond economic performance. (KPMG & ASSOCHAM, 2008)

CSR is regarded as a vehicle through which corporates give something back to the society as a price for the profits they made by using natural and human resources of the country. The recent Companies Act 2013 made it mandatory for every company fulfilling the basic criteria to contribute for development of rural India. India is the only country wherein CSR has been enforced by legislation as a result the listed profit making companies are required to contribute a certain percentage of average profit after tax for social development activities. Education & healthcare are the areas where largest CSR spending is done till date.

This present study focuses on CSR activities under taken in India for rural development and also analyse the impact of CSR activities on the rural people. Case studies were done to analyse the performance of two corporate sectors, ICICI & NALCO Foundations in rural areas of Rajasthan and Orissa.

Key words Corporate, Social service, Rural development, Industrial credit and infrastructural Corporation of India (ICICI), National Aluminium Company Limited (NALCO)

1 Background

Corporate Social Responsibility (CSR) is one of the core functions of all the reputed industries and business organizations, all over the world today. This is the consequence of gradual social awareness by the consumer-common man about his or her rights and on the flip side, realization by the rich and affluent that they can no more deceive the public and make profits without contributing anything towards their well-being. CSR is thus a part of corporate culture where businesses or companies decide voluntarily to contribute to a better society and cleaner environment.

World Business Council for Sustainable Development defined, 'Corporate Social Responsibility is the continuing commitment by business to contribute to economic development while improving the quality of life of the workforce and their families as well as of the community and society at large.' (WSCB, 1999)

- Stakeholders are expected to show continued commitment and behave ethically
- Business needs to contribute to economic development
- Business needs to improve quality of life of work force and their families
- Take active part in improvement of quality of life of local society and society at large

A widely circulated definition of European Union describes CSR as, the concept that an enterprise is accountable for its impact on all the relevant stake holders. It is continuing commitment by business to behave fairly, responsibly and contribute to economic development while improving the quality of life of the workforce and their families as well as the local community at large (Global CSR Summit, 2013).

Since no business can exist in isolation, CSR creates a long term value to business enterprise and a general good will which helps in popularity of the organization as well. Corporate social responsibility is a commitment to improve community well-being through discretionary business

practises and contributions of corporate resources (Kotler & Lee, 2005).

2 Meaning of CSR is twofold

On one hand it exhibits ethical behaviour that an organization has towards its internal and external stakeholders. On the other hand it denotes the responsibility of an organization towards the environment and society in which it operates. CSR is regarded as a vehicle through which companies give something back to the society. It involves providing innovative solutions to the societal and environmental challenges. But the challenge for development professional and business community is to identify CSR priorities and areas of interventions which are meaningful in the context of rural development sector.(Kumar, 2008) There is no business which can exist in isolation. Even though business is meant for making money, a lot many factors depend upon its sustainability. It is about the way we understand and build our social network that lot more things. CSR helps an entrepreneur to build long lasting good will in the public.

In 2005,360 different CSR related shareholders resolutions were filed on issues ranging from labour conditions to global warming and Government regulations increasingly mandate social responsibility reporting. While businesses are awakened to these risks they are not much clear on what to do. While businesses are awakened to these risks they are not much clear on what to do. In fact most common CSR has been nether strategic nor operational but cosmetic, public relations, media campaigns etc. (Michel e. Portar. 2006).

CSR became important because of the several factors as briefly mentioned (Janalakshmi foundation, 2014).

- Helps in strengthening the relations between companies and Stakeholders.
- It enables continuous improvement and encourages innovations.
- It attracts the best industry talent as a socially responsible company.
- Provides additional motivation to employees
- Mitigates risk as a result of effective corporate Governance framework
- Enhances ability to manage stakeholder expectations.

3 CSR around the world

Many countries all over the world initiated CSR policies with twin objectives- one, to make private companies contribute for social development and at the same time keep a check on their wealth accumulation in order to reduce the rich-poor divide. For example—in the year 2007, Malaysian Government passed a regulation mandating all the publicly listed companies to publish their CSR initiatives on ‘Comply or Explain basis’. Accordingly all public limited companies should either provide details about CSR spending or explain why they should be exempted. In 2009, Denmark made it compulsory for all public limited companies with a total assets more than 19 million \$, to report on their social initiatives in their annual financial reports. However there are some countries like UK where though CSR activities reporting is not mandatory. Currently, emerging markets like China, Brazil and South Africa have become forerunners in CSR reporting in the developing world in terms of their involvement in CSR activities (Report on Global CSR Summit, 2013 etal)

4 CSR in India

CSR as a concept is not new for Indians, roots are found in Indian culture. Kautilya emphasised ethical principles and practises while conducting business. Hindu merchants gave alms to the poor constructed temples, also night shelters to the poor. Hindus followed ‘Dharmada’ where the manufacturer or the seller charged a specific amount from the purchaser which was used for charity.

Islam also had a law called ‘zakaat’ which ruled that a portion of one’s earnings must be shared with the poor in the form of donation.

Evolution of CSR in India can be conveniently described in four phases:

a) 1850 to 1914. This phase is for charity and philanthropic nature. Influenced by family values tradition and culture wealth of businessmen were spent on society welfare. In times of drought and

famine these businessmen opened up their granaries for poor and hungry. During this period, Tatas, Birlas, Godrej & Bajaj promoted the concept of CSR by setting up charitable foundations, educational, health care institutions for community development.

b) 1910 to 1960: Industries were motivated by Gandhiji to share their wealth and benefit with the poor and marginalized in the society. According to Gandhiji companies and industries were temples of modern India. Hence during this period, trusts were setup to establish and run colleges, libraries, and research and training institutions.

c) 1950 to 1990: Emergence of PSUs to ensure better distribution of wealth in social policy on industrial licencing and taxes and restrictions on private sector resulted in corporate malpractices which finally led to corporate governance and environmental issues. In the year 1965 academicians, politicians and businessmen conducted a nationwide workshop on CSR where major emphasis was given to social accountability & transparency.

d) 1990 onwards: In this phase CSR became characterised as a sustainable business strategy. The wave of Liberalization, globalization and Privatization together with a comparatively relaxed licensing system led to a boom in company's economic growth. This further led to increased momentum in industrial growth making it possible for companies to contribute towards industrial growth (Janalakshmi foundation, et al).

Bidut Chakraborty (2011) stated that though CSR is not a new concept in India, historically, the Tatas and Birlas have been generously donating for social causes for decades long before CSR became a popular cause. Despite these examples however, CSR is still at a very nascent stage and has least contributed towards development sector. Practices by few public and private sectors, CSR in India is more a policy initiative rather than outcome of business concern for public wellbeing.

5 CSR in rural India development

More than 60% of Indian population live in villages and are heavily dependent on agriculture for their livelihood. Whatever small scale industries are present example; cottage industry, rice mill, sugar processing unit all are agro-based. But agriculture depends upon vagaries of monsoons- droughts, insufficient rainfall or floods and soil erosion are a common phenomenon among villages. Hence poverty illiteracy, unemployment or seasonal employment, ignorance, falling easy prey to diseases, distress migration all form causes and effects of poverty in rural areas.

Government of India initiated several programmes for the welfare of rural people in order to develop self-sufficiency and reduce or perhaps, prevent forced migration. This is in accordance with the popular saying of Mahatma Gandhiji, "India's true development lies in development of its villages". Currently there are 30 and more development programmes being implemented in rural areas for infrastructure development, social and economic development of people residing in rural areas.

Under CSR initiative, many companies adopted villages for their comprehensive development- eradicate poverty encourage skills for job markets, self-employment and pursuing modern agriculture. CSR initiatives may include area development programmes like construction of rural roads, extension of electricity lines to villages, construction and operation of schools, health sub-centre, hospitals, piped water supply to rural households, total sanitation facilities, housing for all, midday meals for poor children in schools, livelihoods in agriculture, horticulture, animal husbandry, dairy development, poultry, handicrafts, handlooms, and skills leading to various services like electrician plumber, tailoring and so on. Practically the entire centrally sponsored schemes meant for rural infrastructure and social development programmes implemented in rural areas can be taken up under CSR.

6 CSR Law—Uniqueness

The much discussed and awaited CSR law and its provisions came into effect from 2014 April onwards. CSR will be applicable to companies with annual turnover of INR 10 billion and more or a net worth of 5 billion and more or a net profit of 0.05 billion or more during any financial year. Companies that fall under any of the above category must spend 2% of their average net profits made during the 3 immediately preceding financial years on CSR activities and or report the reason for

non-expenditure. The companies were expected to prepare their CSR policy in accordance with the provisions of this new law and revised list of activities enlisted under the amended Schedule VII and the CSR rules.

- Institutional coverage of CSR: Section 135 of the companies act brings under its purview every company which would mean a company incorporated in India i.e. a foreign company having a branch or a project office here. This is a overreaching provision as foreign companies might perceive it a additional tax or burden for doing business in India

- Computation of Net Profit: For an Indian company, 2% CSR contribution is computed as 2% of the average net profits made by the company during the preceding three financial years. However her profits from branches in other countries are excluded. Whereas for a foreign company having a branch office in India, balance sheet, profit and loss account of that company will be prepared in accordance with section 381(1) (A). Hence it is not clear as to how the computation of net worth or the turnover would be arrived in case of a branch or a foreign office. Expenditure incurred by foreign holding company for CSR activities in India will qualify as CSR spend of Indian subsidiary, if CSR expenditures are routed through Indian subsidiaries

- Appointment of independent Directors on board: CSR rules have dispensed with the requirement of appointing independent director on the CSR Committee of the Board of an unlisted company as well as a private company. Further CSR committee of a foreign company must have 2 or more directors one, an Indian and other foreigner nominated by the company.

7 Modalities of undertaking CSR activities

1. Conducting CSR through a Third Party: CSR activity can be undertaken through a registered society or trust or section 8 company under the companies act. In this regard, the CSR rules have liberalized the participation of a third party to undertake CSR activities on behalf of the spending company provided it fulfils the relevant track record of three years in undertaking similar projects or programmes.

2. Companies permitted to undertake CSR activities along with another company/its group companies: The new CSR rules allow companies to permit board of directors of a company to undertake CSR activities of other companies complying with provisions of section 8 of the companies act.

3. Conducting CSR through group Entities: Autonomy to the companies to carry out their CSR activities through their own or holding, subsidiary or companies registered under section 8 have been provided.

4. Collaborating or pooling resources: Collaboration with other companies for undertaking CSR projects or programmes is also permitted subject to the condition that collaborating companies are in a position to report separately as per the reporting requirements under companies act.

8 Companies under CSR

Once a company is covered under the ambit of the CSR, it shall be required to comply with the provisions of the CSR. The companies covered under the Sub section 1 of Section 135 shall be required to do the following activities:

- As provided under Section 135(1) itself, the companies shall be required to Constitute Corporate Social Responsibility Committee of the Board “hereinafter CSR Committee”. The CSR Committee shall be comprised of 3 or more directors, out of which at least one director shall be an independent director.

- The Board’s report shall disclose the compositions of the CSR Committee.

- All such companies shall spend, in every financial year, at least two per cent of the average net profits of the company made during the three immediately preceding financial years, in pursuance of its Corporate Social Responsibility Policy. It has been clarified that the average net profits shall be calculated in accordance with the provisions of Section 198 of the Companies Act, 2013. Also, proviso to the Rule provide 3(1) of the CSR Rules that the net worth, turnover or net profit of a foreign

company of the Act shall be computed in accordance with balance sheet and profit and loss account of such company prepared in accordance with the provisions of clause (a) of sub-section (1) of section 381 and section 198 of the Companies Act, 2013. (csrpolicy.pdf, 2013)

9 CSR expenditure

Nature of CSR expenditure and geographic limitations

Expenditure incurred on specified activities that are carried out in India will qualify as CSR expenditure. Such expenditure includes contribution to the corpus or on projects or programs relating to CSR activities. Any activity undertaken solely for the benefits of employees and their families will remain outside the purview of CSR activity.

Expenditure incurred in undertaking normal course of business will not form a part of the CSR expenditure. Companies would need to clearly distinguish those activities which are undertaken specifically in pursuance of normal course of business and those that are done incrementally as part of the CSR initiatives.

Any surplus arising out of CSR activities will not be considered as business profit for the spending company. It is unclear whether the surplus will form part of the CSR Fund for the next financial year.

The CSR Rules are unequivocal in stating that any form of direct or indirect contribution made to any political party by company cannot be counted towards CSR activity.

10 Employees' contribution towards CSR

Companies are permitted to train their employees and/or personnel of their implementing agencies to build CSR capabilities. Any expenditure incurred in providing such training up to a ceiling of five percent in one financial year is permitted under the CSR budget. However, owing to a ceiling on the percentage of amount that can be spent for training purposes, the idea of including and computing employees' time-value contribution towards CSR has not been factored at all. Allowing companies to train employees subject to a pre-fixed budget while excluding employees' time-contribution will create a dichotomy in allocation of CSR expenditure.

11 CSR reporting

It is mandatory for companies to disclose their CSR Policy, programs/projects undertaken and amount spent in their report and the CSR Rules provide for a separate format. The report containing details of such activities and CSR policies have to be made available on the company's website for informational purposes.

Provision for cease of applicability of CSR provision

The requirement and compliance under the CSR provision will cease to be applicable to a company which for the three consecutive years falls outside the purview of the threshold requirement of annual turnover or net worth or net profit as envisaged under Section 135(1) of the Companies Act (Rahul Rishi, Ankita Srivastava & Dr.Milind Antani, 2013).

12 CSR activities

The Policy recognizes that corporate social responsibility is not merely compliance; it is a commitment to support initiatives that measurably improve the lives of underprivileged by one or more of the following focus areas as notified under Section 135 of the Companies Act 2013 and Companies (Corporate Social Responsibility Policy) Rules 2014:

- i. Eradicating hunger, poverty & malnutrition, promoting preventive health care & sanitation & making available safe drinking water;
- ii. Promoting education, including special education & employment enhancing vocation skills especially among children, women, elderly & the differently unable & livelihood enhancement projects;

- iii. Promoting gender equality, empowering women, setting up homes & hostels for women & orphans, setting up old age homes, day care centres & such other facilities for senior citizens & measures for reducing inequalities faced by socially & economically backward groups;
- iv. Reducing child mortality and improving maternal health by providing good hospital Facilities and low cost medicines;
- v. Providing with hospital and dispensary facilities with more focus on clean and good sanitation so as to combat human immunodeficiency virus, acquired immune deficiency syndrome, malaria and other diseases;
- vi. Ensuring environmental sustainability, ecological balance, protection of flora & fauna, animal welfare, agro forestry, conservation of natural resources & maintaining quality of soil, air & water;
- vii. Employment enhancing vocational skills.
- viii. Protection of national heritage, art & culture including restoration of buildings & sites of historical importance & works of art; setting up public libraries; promotion & development of traditional arts & handicrafts;
- ix. Measures for the benefit of armed forces veterans, war widows & their dependents;
- x. Training to promote rural sports, nationally recognized sports, sports & Olympic sports;
- xi. Contribution to the Prime Minister's National Relief Fund or any other fund set up by the Central Government for socio-economic development & relief & welfare of the Scheduled Castes, the Scheduled Tribes, other backward classes, minorities & women;
- xii. Contributions or funds provided to technology incubators located within academic Institutions, which are approved by the Central Government;
- xiii. Rural development projects,
- xiv. Slum area development.

The Above list is illustrative not exhaustive. All activities under the CSR activities should be environment friendly and socially acceptable to the local people and Society. Contribution towards C.M relief fund shall be a part of CSR activities above 2% of Net profit other than the activities mentioned above. Further Ministry of Corporate Affairs vide Notification dated 24.10.2014 increased the scope of contribution made towards Corporate Social Responsibility (csrpolicy.pdf, 2013 et.al).

13 Controversial provisions of CSR act

With effect from April 1st 2014, CSR has become mandatory for Indian companies and foreign companies working in India. The law relating to CSR in India is provided in section 135 of the companies act 2013 read with schedule VII of the act and the CSR rules 2014. The CSR laws are new and still evolving hence there are many debatable areas which lack clarity, some of them are discussed as under:

a) Independence of CSR committee and Trusts promoted by the company: Under the rule 4(2), a company can implement CSR activity through trust or society. A company can promote a trust and immediately start working through such trust. Management of the trust can be taken care of by the company, hence no separate managing directors are needed. But section 135(1) requires that a CSR committee should be formed. There should be one independent director in such CSR committee. Moreover CSR law does not recognize trust or society promoted by the company.

b) CSR expenditure whether charge against income or Appropriation: CSR is a charge to income or appropriation of income has not yet been clarified. Expenditures of various natures are allowed as permissible under CSR eg direct expenditure on charitable activities, direct expenditure on capacity building of persons appointed to implement CSR activities- all these require separate accounting and tax treatment. CSR law allows all these types of applications as CSR expenditure but there is no clarity with regard to accounting and legal treatment.

c) Fundamental difference between sections 181 & 135; Section 181 of the company's act allows all companies to make voluntary contribution to charitable funds up to 5% of profits even without the approval of general body. Hence the fundamental difference between section 181 and 135 has not been clarified

d) Accounting and utilization issues in CSR When CSR funds are utilized through charitable

trusts accounting issues arise. However under schedule VII a company has to be given restricted grant as legal obligation for specific purposes, therefore it is not clear whether CSR grant can or cannot be voluntary contribution or should they be restricted grant only.

e) Companies facing conflict with FCRA laws: FCRA laws 2010 needs to be amended corresponding to changes in CSR law. This is because under FCRA neither foreign company nor Indian company are allowed to provide grant to other trusts unless they have FCRA prior permission or registration. Indian companies like ICICI bank, HDFC are having 50% shareholding in foreign companies cannot give grant to their own trusts. A corresponding amendment in FCRA act is needed.

f) Reporting requirement of CSR: Reporting format under Companies (CSR) Rule is broad guideline. It should have been linked with the schedule III of the companies act in order to create formal responsibility of the auditor. Currently there is no formal linkage of CSR reporting with audited financial statement except as notes to be accounts.

g) No clarity regarding administrative expenses:

There is no structured accounting standard to maintain administrative expenses. Judicial precedence is confusing and most of the administrative expenses have been treated as program expenses. This results in use of discretionary norms in determining administrative expenses effecting the uniformity in reporting CSR

h) CSR expenditure before or after determining net income: Computation of average net income shall be made under section 198. For the purpose of CSR irrespective of the nature of expenditure the company has to apply 2% of the net profit computed. From finance point of view the company may distinguish between chargeable expenditure and voluntary expenditure because chargeable expenditures can be deducted during computation of net profit under section 198. There is no clarity how to deal with overlapping expenditures.

i) Treatment of shortfall or excess in CSR Expenditure: A shortfall in CSR expenditure is a financial issue with a legal accountability on board. Such shortfall should be formally computed in the audited statement and company can take care not to have such shortfalls in future. Similarly there is lack of clarity in responding and off setting of surplus in CSR expenditures.

In fact without coercive mechanisms, it is unlikely that the law will yield effective results. CSR in India is viewed as more or less 2% tax spent by the firm rather than given to the government. Already corporate tax in India is 34.6%, one of the highest in the world when compared to global average which is 24.09%.

Among the prescribed CSR activities, for eradication of extreme poverty 6% of CSR spending was reported, two others- combating various diseases & promotion of education accounts for 44% of CSR spending and expenditure on reduction of child mortality rate did not receive any funding. However in India 50% of children are malnourished due to pervasive poverty and it is unlikely that the above allocation of resources reflect the political will of Indian public.

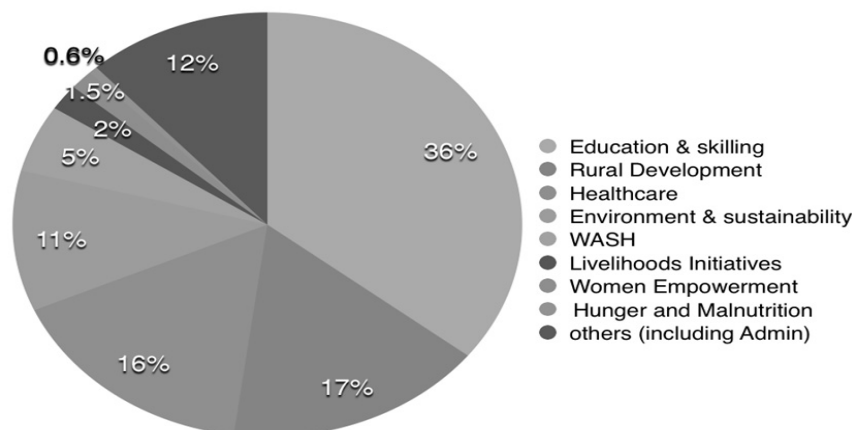
CSR is fundamentally an inspirational exercise and it is very difficult to legislate aspirations. Laws can only set minimum standards but fail to create impetus for positive action. Inequality is already on the rise in India. Unless there is some coercive mechanism it is unlikely that the law will result in widespread compliance and real effectiveness (Aneel Karnani, 2017).

14 CSR spending in India

When corporates come forward to drive programme for community welfare, it is essential to get support from all sectors. When it comes to community service or popularly known as 'social responsibility', it has always been seen as responsibility of Government. For example when Panchayati Raj was introduced it brought in rural independence in India. Top companies spending on CSR in India include Reliance, Tata Consultancy, HDFC, ITC, Wipro, ICICI, Axis bank & Hindustan Uniliver.

Economic times partnered with Future Scape & IIM Udaipur and conducted the first Best companies of CSR study in 2015-2016 companies participated but out of them only 18% met the mandatory 2% spending norm. (Economic times, 2015)

**Thematic Distribution of CSR fund
(FY 2017)**



Source: http://ngobox.org/full-news_CSR-Spend-in-India-in-FY-2017

The above figure indicates that most of the CSR spending of Corporates is on education and skilling.

15 Statement of problem

With the above stated background for CSR as study was conducted in rural India to identify the impact of CSR spending on the beneficiary villages.

Objective of study: Analyse the impact of Corporate CSR activities linked to rural development.

Area of research: Case studies on two corporate sectors, ICICI and NALCO conducting CSR activities in remote villages of Orissa and Rajasthan were made in this context. Studies were conducted on impact assessment of ICICI RSETI CSR activities like dairy, goat rearing at Malwa and Girwar blocks of Udaipur district in Rajasthan and on Mobile Health Units, CSR initiative of NALCO in Damanjodi of Orissa.

Research methodology: While secondary data formed all the information collected from the field offices research reports, primary data was collected from suitable sample of 325 beneficiaries of ICICI foundation from Udaipur district using simple random technique and in Damanjodi, MHU beneficiaries from 53 out of 163 interconnected villages were chosen based on multistage random sampling techniques. Open ended Interview method was used to gather information in both the cases.

Results and analysis:

Udaipur study

ICICI foundation for inclusive growth was established in the year 2008. It works in partnership with Government, leverages capacities of local NGOs for implementation of its CSR initiatives and adopts a direct intervention model for skill development. Currently ICICI manages Rural self-employment training institutes (RSETI)s at Udaipur and Jodhpur districts of Rajasthan. They provide demand based training for local youth from marginalised communities.

Training is provided at easily accessible local areas for the rural youth. At present training is provided in 23 trades like Electrician, plumbing, carpentry, motor winding and so on. Training is also provided for cattle rearing, dairy development etc.

Since 2013 RSETIs are driving major community level initiatives aimed at economic empowerment of the community. Hence launched micro enterprise development programme (MEDP) for SHGs in alignment with NRLM. This SHG project aimed at providing training in enterprise development followed by customised skill training to SHGs

In Udaipur district impact assessment study was undertaken for those villagers who received training in dairy, vermicomposting and goat rearing in Sakroda and Malwa blocks. Goal was to identify best possible modifications with ongoing training and to improve efficiency. In depth interview method was used to collect primary data from a sample of 325 candidates of Sakroda and Malwa i.e. through random sampling method. All these 325 candidates were ex-trainees. 87 among

them were farm women and SHG members. They were poor prior to training and are now having better economic position. 86 % of the respondents were found to be strongly in favour of training. They were feeling secured and empowered, enjoying increased income, improved social status and overall change in life. However when a comparative study was done, training in dairy production rather than goat rearing caused a remarkable increase in the average income of the respondents. Finally there is a need to adapt scientific methods of training in order to achieve further development. Training is thus playing a key role in benefiting the rural youth. ICICI under CSR is therefore providing valuable service to the rural youth in guiding them to achieve gainful employment.

Damanjodi study:

NALCO CSR: NALCO as a part of its CSR activities is operating a Mobile Health Unit (MHU) health project in collaboration with Wockhardt foundation aiming to serve the primary health care needs of 163 peripheral villages of Damanjodi M&R complex, Orissa. A dynamic and door step health care delivery system, the MHU initiative undertaken by NALCO foundation is today a full-fledged program.

Initially started in 2009 by NALCO, the project currently operates 4 MHU in Damanjodi catering to all the peripheral villages in the block. Purpose of the study was to assess the impact of the MHUs on medical care deprived populace in the villages and provide requisite input to help facilitate the growth of MHU and based on findings of the study make recommendations to increase operational efficiency of MHUs.

Each MHU consisted of a doctor, a pharmacist, driver as well as van coordinator an ANM apart from the project co-ordinator in charge of monitoring and control aspects. These MHUs provide services like treatment to minor illness, ailments, referral of cases, awareness regarding sanitation, medical issues like TB, cancer, HIV AIDS, Blood Pressure and Diabetes Mellitus.

Scope of the study is limited to reviewing the delivery of services to doorsteps by MHUs in the study sample. An exploratory study design was adopted in order to assess the impact of various services being provided by MHUs in those villages. Multistage random sampling technique was used in selection of 56 villages out of the 163 interconnected villages in the block. 25% of the total population of the villages was taken as sample size and interview open ended were the tool adopted.

Discussion: As per the results of the research 97% of the villagers interviewed there were not availing any sort of medical facilities and very few people 2.4% had access to government and private hospitals. However 79% of the people are aware of the MHU services. Among the beneficiaries of MHU services almost 90% are satisfied. Women and old age people seem to have more benefited by MHUs. More than 70% were satisfied with interacting with the doctor, treatment provided, paramedical staff and also the flexible timings of MHU. Thus out of the 56 villages visited large number of respondents expressed satisfactions regarding the functioning of MHUs and thus there was found to be a positive impact of MHUs in the peripheral villages.

However certain shortcomings like need for rapid diagnostic kit, dedicated hospitals for patients from these villages, frequent trips of MHUs i.e. twice or thrice in a week, field screening camps to detect chronic diseases like Hypertension, Diabetes and last but most important is campaigning for cleanliness, sanitation and hygiene maintenance needs to be fulfilled. All these can happen if CSR under NALCO caters some more time, infrastructure and money for people at Damanjodi M&R in Orissa.

Based on the above case studies it can be inferred that CSR interventions have been very useful and necessary to narrow down the rich-poor divide and at the same time compel the corporates to spend for the society. Development of the country is possible only when all sections of the society work together in coordination with each other.

16 Companies Evading CSR

There are however some companies which sort for avoidance techniques. A survey of an accountancy firm KPMG confirmed that 52 out of the country's largest 100 companies failed to spend the required 2% last financial year. (Guardian, 2016)

According to Economic time's investigation, if a company is obligated to spend, say Rs. 10 crore

on CSR, it writes out a cheque in favour of a trust that works in education, healthcare, environment protection or any of the activities specified by the government. The trust, after deducting its commission, discreetly returns the money in cash to the officials or promoters, instantly turning Rs. 10 crore of white money into black. The middleman gets a cut as well (ET, 21st OCT 2015).

Avoidance techniques used by Corporates: Corporates all over the world including India adopt different techniques to record low net profits and hence evade high rate of taxation. Eventually when the recorded profits are low, money catered for CSR activities also become less. There is ample evidence that firms (Legally) avoid taxes for example by appropriate transfer pricing policies, making suitable location choices or exploiting loopholes in tax laws. More specifically, socially responsible firm behaviour and tax avoidance compliments or substitutes. In the former case more socially responsible firms will avoid taxes to a greater degree, in the latter they will avoid fewer and pay more taxes (Laszlo Goerke, (2017).

John Christensen & Richard Murphy stated more than a decade ago that, strict policy measures are required to reduce the distortions that have arisen as a result of globalized companies leaving the nations based tax regimes floundering. Businesses should adopt CSR standards on taxation, including requirements to publish all necessary accounting information and to refrain from use of profit laundering vehicles created without substantial economic purpose. John Christensen & Richard Murphy (2004).

According to another study published by UN University World Institute for Development Economics Research (UNU-WIDER) Multinational corporations (MNC)s across the world are evading taxes to the tune of 500 billion dollars annually. MNCs generally shift their profits to low tax jurisdictions or tax havens to reduce tax liability using a variety of methods from transfer pricing, transferring royalty generating patents to allocating more debt to high tax jurisdictions. Realization of Taxes from such shifted profits can increase aggregate revenues of the affected governments across the world by around 4.5% approximately.

Further tax evasions by MNCs are hurting the poor countries relatively more. A 2010 piece of study in a monthly review journal noted how developing countries lose out on tax revenue due to 'profit shifting' by the MNCs. International centre for Tax Development (ICTD) shows that US headquartered multinational firms in general book too much of profits in emerging market economies like India & China. Thus profit shifting behaviour of MNCs is induced by huge tax arbitrage. In India 18% of all Foreign Direct Investment (FDI) equity inflows from tax havens represents 'round tripping'. Hence India adopted country by country reporting norm which means MNCs will be mandated to disclose information and cannot evade tax payment. (Lutz and Preuss

(2010) seeks to examine whether companies that engage in tax avoidance through locating their headquarters in tax havens-or Off Shore Finance Centres (OFC)s make any claim to act socially responsible. Study was made on the sample OFC firms and found that these firms do indeed make claims that they are engaged in responsible business practises that includes CSR as well.

17 Conclusions

CSR despite the avoidance techniques adopted by some companies, has the potential to bring a revolution in development. Rising fiscal deficit and loopholes in implementation of welfare schemes CSR seems to be a ray of hope. The concept of CSR has the potential to generate Rs. 20 to Rs. 25 crores every year which can give a boost to investments in human and physical capital. Recent commitment of 100 crores each by two leading companies TCS and Bharati Airtel as a part of CSR to build toilets for girls in schools under Swatch Bharat Abhyaan is one such example (www.epw.in). Effective implementation of CSR in India requires refining the legislation thereby reducing the chances for corporates to evade taxation and CSR subsequently. This can be possible only when the Government draws lessons from the variety of tax avoidance schemes adopted by the Corporates to escape social responsibility.

Suggestions to improve effectiveness of CSR law

- Trusts or societies promoted by the company to implement CSR activities should mandatorily disclose their accounts.

- Transparency should be ensured at every level of CSR activity
- Corporates under CSR come into direct contact with communities. Hence they need to play an active role in community development activities
- Corporates should support the local merchants or suppliers and encourage them to increase their market access
- Corporates should be ready for innovation in any kind of social development activity involving the community.
- Corporates should be made accountable to the public for their performance under CSR.
- A separate account need to be maintained with regard to allotment and spending of corporates on CSR.
- Corporate spending on social development must be made public in every country.
- An officer from UNO should be appointed to assess the profit, countries gain as contribution from companies as a part of implementing their CSR activities.

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Inter-governmental Cooperation in the Process of Waste Disposal Policy: A Case Study of Waste Disposal Mutual Aid between Taipei City and Keelung City

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Abstract The formulation and implementation of the waste disposal policy has become an effective means for governments to build a circular economy and solve the social conflict induced by the “NIMBYs” (not in my backyard) against. Among them, the inter-governmental cooperation has become an important way to solve the practical operation of single function issues such as garbage disposal. “Taipei City and Keelung City garbage disposal mutual aid case” creatively integrates the inter-governmental cooperation into the whole process of the garbage disposal policy, which also through the cross-city cooperation in the operation of waste incineration plant management model to successfully ease the plight of garbage disposal. This paper constructs the analytical framework in three dimensions: policy making, policy implementation and policy feedback. At the same time, combined with the carrying out and the implementing whole process of the “Taipei City and Keelung City garbage disposal mutual aid case”, and summarizes the inter-governmental cooperation characteristics and model of the Taiwan P.R.China’s garbage disposal policy by theoretical analysis and empirical case analysis. On this basis, so as to provide an important reference for inter-regional urban waste disposal and mutual assistance in mainland China.

Key words Garbage disposal, Inter-governmental cooperation, Taiwan P.R.China

1 Introduction

Whether garbage can be properly handled is one of the important indicators to test the effectiveness of environmental policy. But at the same time, environmental policy is expensive and risky, the rational way of the government is to calculate the different costs of dealing with different types and different levels of risk (comparative risk assessment). This result is that excessive bureaucratic cost calculation to make government policy tend to be conservative, and the treatment of the garbage and other environmental issues will be imposed on the unilateral rigid control with the exclusion of cooperation. On the other hand, “not in my back yard” brings the fight against action by the residents because of the residents’ fear which also force the timid politicians to shunt the nimby facility and turn to other ways to solve environmental problems such as garbage disposal problem. And the form of the inter-governmental cooperation relations such as the leagues of Local Government Units (LGUs) and administrative contracts has been increasing has increasingly effective in solving the above-mentioned public issues. Today, land resources are becoming increasingly tense, waste disposal often involves cross-regional affairs. Local governments should break the regional concept and take inter-governmental cooperation action through cross-regional cooperation mode to deal with garbage problems. Taiwan P.R.China and the mainland with the same root which both in the public opinion and the government set up a great similarity. Therefore, the inter- governmental cooperation model of Taiwan P.R.China in environmental issues has a more suitable reference value for the mainland.

Taiwan P.R.China’s garbage disposal model is most typical in Taipei. Taipei City waste disposal has gone through five stages, early treatment is mainly garbage accumulation. Over the next 10 years, in order to respond public demand, Taipei City government changed the garbage accumulation into landfill. Although, people need the buried plant but they don’t want to set up near their house. Taipei City then went into dilemma of living garbage nowhere to deal with after only two landfill built. During this period, the construction of the third phase of the waste incineration plant in Taipei was carried out to alleviate the problem of garbage disposal. At the same time, Taipei City also vigorously

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promoted “one country, one incineration” policy. But because of the same problem, only three garbage incineration plant were built then was stopped. With “Keep Trash off the Ground”(KTOG) measure, the “per-bag trash collection fee” policies are implemented one after another, waste disposal goes to the fourth stage. Resource garbage collection increased significantly, general into the factory burned garbage drastically reduced. In the end, the three waste incineration plant don’t have enough trash to burn. They start to dig up the past buried garbage in rubbish mountain and buried land to burn and then to reuse or bury burnt ash. To continue this benign development, then enter the fifth stage, that is the stage of the cooperation model called “Taipei City and Keelung City garbage disposal mutual aid case”. Looking forward to complementary and from local governments “win-win” or “win-win” situation.

2 Inter-government cooperation experience in policy-making of garbage disposal

Policy-making requires the establishment of a legitimacy basis, the establishment and regulation of the relevant legal system is the prerequisite guarantee for the smooth implementation of the policy. March 14, 1996 Taiwan P.R.China Environmental Protection Department of the Executive Yuan in Taiwan P.R. China formally implemented the principle of regional cooperation waste disposal in the form of Governor No. 0960019359. In 1998, Taiwan P.R.China amended the Waste Disposal Laws which clearly stipulates that the county authorities may formulate management measures for joint disposal of waste disposal sites and to handle waste removal. And finally in the form of legal instruments in the process of policy formulation of the inter-governmental cooperation model to be established.

The subject matter of the policy issue identified is rarely carried out in a purely and step-by-step manner, these processes often occur at the same time, and each stage is alternately replaced. The final determination of policy issues is often derived from public opinion-based elite preferences, and the formation of the policies is more occurring in the government bureaucracy, interest group office, policy planning organization (think tank), etc. Among them, the policy proposal based on the needs of the public opinion groups plays an important role in the bargaining, competition, persuasion and compromise with the government. Back in 1998, when the waste cleaning law was corrected, the mayor of Keelung, Li Jing-yong, began to work with the Taipei city on the feasibility of cross-domain cooperation to deal with garbage problems, who also proposed the idea of Taipei City instead of Keelung burned garbage and discussed to build the common life circle of Taipei City and Keelung City. The real fermentation of the problem is in the following year that “Tianwaitian garbage dump” will be buried by the City’s garbage due to capacity saturation in 2003. Its incineration plant also stop midway due to contractors unable to build, leaving Keelung in an unmanageable mess. At that time the situation in Taipei City is that the “incineration surplus” of the three incineration plants under the jurisdiction of Taipei City has been greatly enhanced by the success of the policy of “per-bag trash collection fee”. At the same time, the incineration of the three incinerators is insufficient and the temperature can not be raised, which may result in more “dioxin” and may also cause the incinerator to be shortened. Based on this, when Ma Ying-jiu was mayor of Taipei, Taipei City and Keelung City together sign the “Taipei City and Keelung City garbage disposal mutual aid case” by consulting. On the basis of the desired benefits, two cities try to save transaction costs and create basis of two-City waste disposal cross-domain cooperation, plus the provides considerable co-operation incentive and guarantee which contributed to the cooperation of the case.

As early as before signing the cooperation, in order to facilitate the views, Taipei City (Environmental Protection Agency) has been active to accept parliamentary questions. And the results of the Council published in the sixty-fourth volume of the 17th Taipei City Council Bulletin to facilitate the public proposal. The following is the content of the question raised by Members of the Council:

“I am holding a mixed attitude towards this proposal. The favorable side is the first step in the cooperation between Taipei City and neighboring counties. The worry is that Taipei City that assisted Keelung City to dispose of waste incineration will certainly increase the burden of incinerators, and also deepen the environmental burden of incinerators around. In my request, the city should carefully

assess the impact on the ecological environment, living environment and health of the surrounding residents in dealing with this cooperation plan. In addition, this mat requires the Environmental Protection Agency to review its own waste disposal problems before seeking out the cooperation in the City and to put forward the long-term plan for waste disposal.”

Response unit: Taipei City (Environmental Protection Agency)

“1.The agreement between Taipei City and Keelung City to be signed by the Urban Waste Disposal Emergency Mutual Assistance Agreement and the implementation of the agreement was approved by the first 115th council on February 19 this year. And this case will be considered by Parliament in the near future.2. The City currently has three garbage incineration plant, at the same time normal operation, there are surplus on behalf of the incineration of other cities and towns of combustible general waste.3.Our City and the Keelung City emergency mutual assistance agreement can make mutual benefit, to solve the two sides of the garbage disposal crisis, the city will also be compared with the Keelung mutual cooperation case model and actively seek cooperation with other neighboring counties and cities to deal with garbage in the future. We hope to actively promote the implementation of ‘zero buried’ and ‘all recycling’ in the direction of resource and diversification.”

—Taipei City Council Bulletin

It is not difficult to see that the construction of proximity facilities involves not only professional knowledge but also the well-being of the community. Professional knowledge of science and technology involves knowledge and expertise (Walsh et al., 1993), but public decision-making is related to the value of the public to judge (Cerrell, 1984; Konheim, 1986). There are some gaps between technical experts and the views of the public to determine the value of the public, if the decision-making units ignore the concept of the gap, it will inevitably conflict with the people outbreak (Slovic et al., 1979; Fischhoff et al., 1983). At the same time, because of the “Malignant” nature of the “trash”, the backlash of the public opinion will not be small. The performance is more obvious, although the county has to pay garbage charges, but residents near the incineration plant in Taipei City, still do not want to incineration plant burned outside the City garbage. Taipei City and the people after several coordination stipulate how much tons of garbage to be burned in Taipei City, Keelung City need to provide the same tons of incineration after the ash buried space to the Taipei city buried which digest the confrontation of the people. The two cities based on cooperation “incentives”, widely adopted public opinion, multi-coordinated final introduction of the “Taipei City and Keelung City garbage disposal mutual aid case” that laid the foundation for intergovernmental cooperation in cross-domain environmental problems.

3 Inter-government cooperation experience in policy implementation of garbage disposal

Policy enforcement is another way for politics to continue (Donald S. Van Meter & Carl E. Vanlton, 1975). The introduction of the cooperation case gave the two cities “Take what you need” political legitimacy. The key to the implementation of the policy is whether to establish an effective mechanism to leverage the inter-governmental cooperation as a policy executive. Taipei City and Keelung City have constructed equal rate departments to dock the waste disposal mechanism which also broke the traditional model of relying on the centralized and unified control of the unilateral bureaucracy, so that the policies and activities of the two cities under the administrative contract are more flexible. And because the implementation of the main policy is a complex network composed of a variety of intergovernmental relations, it must be through the exchange of interests, resource allocation and other policy tools to achieve the entire policy network interaction, and ultimately achieve the smooth implementation of the policy. The inter-governmental cooperation model between Taipei City and Keelung City has weakened the bureaucratic prejudice brought by the budget of the government in the course of implementation through the “economic development incentive” which has greatly broken the traditional bureaucratic conservative and inter-governmental barriers, also greatly improving the efficiency of policy implementation. According to the “Taipei City and Keelung City garbage disposal mutual aid case” and based on the principle of reciprocity, the two cities will carry out the implementation of waste disposal policy through information symmetry, department docking and equal

exchange.

Taipei and the Keelung first through the environmental protection departments to fully match each other information to maintain the amount of information on each others' symmetry. In the actual operation process, Taipei City charged Keelung City with no more than 500 metric tons of equivalent incineration per day and collected the ash from the incineration until Keelung City had built the landfill. And Keelung City also cooperates with the need of the Taipei City, handling the general waste (including general waste, huge litter and incineration ash) on behalf of the Taipei city with the landfill and uses the independent sub-zone as a temporary fly ash solidified body. After the completion of the new landfill site in Taipei City, the Taipei city will be shipped back to the fly ash solidified body temporarily in Keelung City. And after the completion of the new landfill in the City of Keelung, the city received the weight of incineration ash from the Taipei city. Under the premise of fully satisfying the economic interests of the two cities and solving the requirements of the people, the amount of waste that is burned and buried in the two cities is balanced with each other which can be adjusted in a timely manner. The administrative contract is more flexible. The two cities have also established close interdependence through this policy interest and resource exchange. "Taipei City and Keelung City garbage disposal mutual aid case" since trial run, at the beginning, the Keelung City's rubbish was first transported to Taipei City's lake waste incineration plant, total 328 times, 2169.86 metric tons. Later, rubbish of Keelung City officially entered the Lake waste incineration plant, Wood gate incineration plant, Beitou incineration plant of Taipei City. Three plants in turn incineration, a total of 15,531 trips, 97,393.07 metric tons. Taipei City, three garbage incineration plant bottom slag has also begun to transport to Tianwaitian garbage dump of Keelung City. As of the end of 2004, the internal and external incineration plant in the Inner Mongolia Incinerator transported to Keelung City, 1784 trips, 14,730.15 metric tons, wooden gate factory 4019 trips, 32277.90 metric tons, Beitou plant 5150 trips, 48,275.88 tons; total 10,953 trips, 95,283.93 mt. As of 2005, a total of 200,000 tons of household rubbish was burned in Taipei City (Taipei City Environmental Protection Agency). It is precisely because of the timely communication and docking between the two cities in the implementation of the waste disposal policy, the whole area of garbage transport, incineration, landfill is orderly and efficient which also strength the Taipei City as the center of the urban area of radiation and lead role.

4 Inter-government cooperation experience in policy feedback of garbage disposal

Policy assessment and feedback is the last stage of the policy process. It implies that policy makers (interest groups, bureaucrats, think tanks) try to understand whether the policy achieves the goals they have stated, how much the cost is, and what is the appetite or unwitting effect of society. And these tendencies are often successful in stimulating reforms to make policy changes to correct errors, wasted, and other deficiencies that are perceived by existing policies. Resource and environment policy feedback mechanism mainly through resource information flow agency including committees, enterprises, residents, environmental protection departments to evaluate the effective of the original resources and environmental policies. For the construction of resource and environment policy feedback mechanism, first of all, we should grasp the resources and environment policy as a relatively open and independent large system which is an organic complex composed of several subsystems including environmental protection departments and residents etc associated with each other. Among them, the reaction to popular opposition involves the direction of general public opinion and affects the length of time, expenditure and final results of the inter-government cooperation to a large extent. Secondly, in order to ensure the continuity of intergovernmental cooperation, the main body of cooperation still need to provide reliable and reliable feedback. Finally, the sustainability of policy feedback is of concern. Resources and environment policy should be fully aware of the development of resources and environment on the basis of the mobilization of all relevant departments to participate in the initiative to obtain their evaluation information, taking into account the decision-making.

The primary target of policy feedback for Taipei City and Keelung City garbage disposal intergovernmental cooperation case effect is the public and the media. In the early days, the residents of Taipei who had been coordinated by the two cities and had agreed to burn the Keelung City's rubbish,

but the majority of the people were still skeptical and resistant to it. So that, To this end, the Taipei city and the Keelung city through the “joint reporting” model regularly held a forum for public representatives, reporting the situation and effectiveness of garbage disposal to the public representatives and media personnel and adopting the views of the public and the media, while accepting its supervision. In order to reduce the people’s resistance, ease the contradictions, and ensure the smooth implementation of the policy. In the upward feedback process, the organizational structure of policy feedback has a significant impact on the effectiveness of policy feedback. There is a reverse relationship between the number of management levels and the feedback time. The more management levels, the more feedback programs to go through, the longer the feedback is generated. Feedback from the results of waste disposal in the City of Taipei and Keelung is still in the form of a “joint reporting” model to avoid the layers of upload management level feedback defects and to ensure the authentic City of the feedback information. It is also easier for the two cities in the “joint reporting” in the process to fight for local construction of resources and funding and establish the incident for the emergency in the process of garbage disposal in the future. From the point of view of the distribution of rights, the two cities also strive to the higher authorities for greater discretion in the waste disposal and cooperation in the process. At the same time, the Taipei city and the Keelung city make full use of new mass media technology, through the network and other new media technology development to establish a real-time information feedback network to protect the sustainability of policy feedback.

In summary, the “Taipei City and Keelung City garbage disposal mutual aid case” policy implementation of the whole process and the inter-governmental cooperation model is sorted as follows Figure 1:

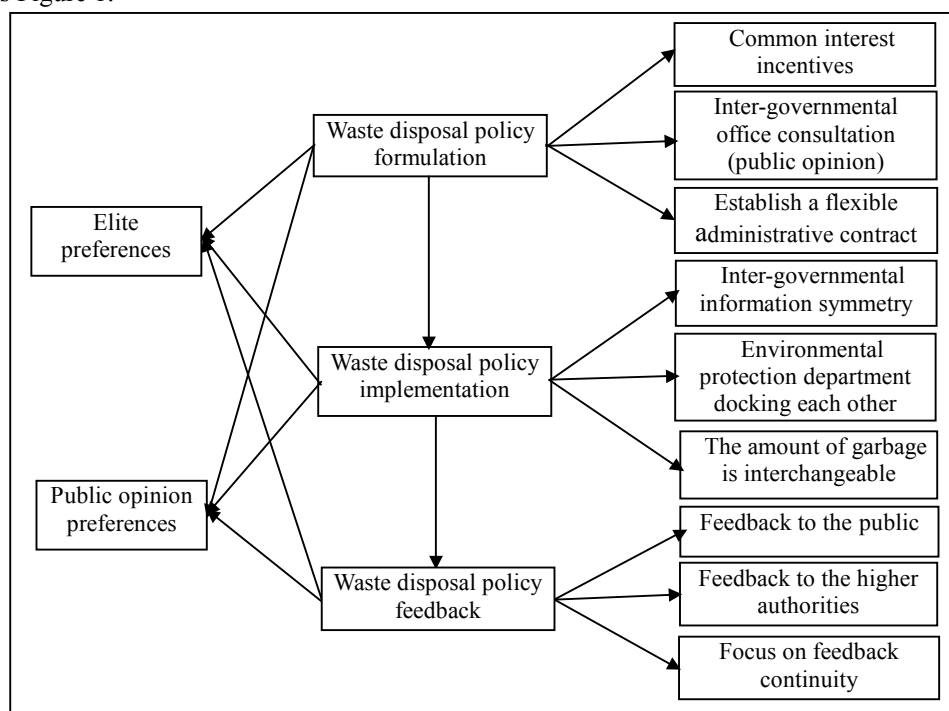


Figure 1 the “Taipei City and Keelung City garbage disposal mutual aid case” policy implementation of the whole process and the inter-governmental cooperation model

5 Conclusions

5.1 Shape the effective government co-operation mode

For such issues as garbage disposal and other environmental issues, the inter-governmental cooperation in policy formulation needs to be grasped. The first, abandon the traditional decision-

making thinking, that is, to the department or organization within the jurisdiction of the decision-making instead of using the “co-operation”, “global” mode of operation, emphasizing the coordination and integration of local government policies. The second, focus on the social efficiency of policy output rather than the efficiency of policy inputs and processes, that is, at the beginning of policy development to establish a public opinion as the basis, combined with the upper elite preferences of a wide range of sources. The third, policy should be based on facts and focus on the core of the proposed program which means that it should take more time to invest in policy incentives, especially the common economic development interests of the inter-governmental cooperation in waste disposal issues. The fourth need to pay attention to the strong and weak cooperation of inter-governmental cooperation in the impact of policy development. Which means that the two sides of the intergovernmental cooperation should maintain a more equal “political status” to avoid the situation in “Taipei City and Keelung City garbage disposal mutual aid case”, that is Taipei City, due to the inherent advantages to impose a certain pressure on the City of Keelung in the waste incineration and the amount of buried in the discussion.

5.2 Establish flexible administrative contracts

The signing of the administrative contract between the intergovernmental cooperation on the issue of garbage in the mainland is often more rigid and difficult to maintain for a long time which also form a deep gap between the local governments. And more conducive to the follow-up of other cross-regional issues of intergovernmental cooperation. Among them, the flexibility of administrative contract has a more critical impact. First of all, the signing of the administrative contract is based on the principle of reciprocity and voluntary. Enid Slack (2007) describes voluntary cooperation from a coordinated management point of view, which refers to an alternative to providing services between regions without the use of a merger. “Voluntary” is gradual, no threat, with difficulties and erroneous grow. Secondly, the democratic legitimacy of administrative contract flexibility should be based on the real garbage disposal performance and public satisfaction. Finally, the administrative contract should be flexible, but “the nature of a regular contract” can not be violated, if necessary, the two sides also need to agree on behalf of the resolution to adjust the length of time.

5.3 Optimize the feedback form and feedback channels

Policy feedback is mainly about information feedback. Whether the feedback channel is smooth, the feedback form is diverse will affect the feedback effect. The form of information feedback from inter-governmental information is mainly in writing. Although the feedback content is more accurate, formal norms, but the feedback flow of information is slow, because of management level restrictions, lack of timeliness. Therefore, inter-governmental cooperation, such as the convening of the “federation newspaper” forum, video feedback mode and other forms can greatly shorten the feedback time, and larger for the international cooperation between the two sides for freedom and discretion. The richness of the feedback channel is an important way for the city to provide effective feedback to the public and the media. Government and the public share information between each other, so that people can keep abreast of the progress of environmental policy such as waste disposal and achieve results. On the one hand it can be timely release of guidance information to guide the public behavior. On the other hand, it can avoid the conflict due to improper handling of garbage between the government and the public and the media. Finally, we should make full use of the inter-governmental cooperation platform to build data and technical feedback system, specialized organization and technical support can greatly reduce the resistance of information flow during policy feedback and improve the quality of feedback.

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People's Psychological Contract with the Government in China: An Empirical Analysis

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Abstract With the rapidly development of the Internet, people become more and more sensitive to deal with anything, especially for the public affairs, which leads to the decrease of the government trust. Psychological contract, widely exists in social relations, is totally important for the currently government trust, due to its' reciprocity and dynamics. Based on 2015 China Social Governance Survey and relevant macro data, this paper tries to explore the psychological contract's structure in our country, concluded by the people to the government, considered our specific cultural. Results indicate that the psychological contract, concluded by the people to the government, includes three dimensions, which are trade-model psychological contract, relation-model psychological contract and development-model psychological contract. There are some differences between the trade-model psychological contract of central government and the trade-model psychological contract of local government, due to the differential public goods and services. The relation-model psychological contract mainly refers to democracy and freedom, while, the development-model psychological contract primarily involves in the opportunity of equitable development.

Key words Trade-model psychological contract, Relation-model psychological contract, Development-model psychological contract, Central government, Local government

1 Introduction

With the development of diversity and heterogeneity people, plus the News Media,^[1] there is a growing tendency that a temporary and tiny error of government's information can be amplified infinitely, which arouses the people's suspicion and leads to the government trust in decline^[2]. In fact, there is a descending trend that the people trust in the government in China, not only for central government decreased by 8% from 1990 to 2009, local government also decreased by 4% from 2002 to 2009.^[3]

The psychological contract takes social exchange theory as basis^[4], its' reciprocity, dynamics and uncertainty^[5] are totally important for the development of society. The reciprocity contributes the government to emphasis the homemade mechanism, in a huge inequality between people and government, which promotes both of them to adjust and fulfill the contract by themselves^[6]. The psychological contract reflects on the expect quality^[7], it also includes the promises and reciprocal fairness of responsibilities and obligations^[8]. Being as implicit, it emphasizes the tacit between people and government^[9], which leads them to find the common target and value standard^[10].

This paper based on these theories including social exchange theory, equity theory and prospect theory, try to discover the psychological contract's structure, concluded by the people to the government, in our specific cultural.

2 Theoretical framework and research hypothesis

2.1 Relevant theories and concepts defined

The theory of social exchange created by Homans in 1958, and then expanded into all areas. The principle of reciprocity, as a motivation start of the human relationship, shows that your demands can meet when you satisfy other's expectation.^[11] With the increase of reciprocal behavior, the relationship of exchange can be stronger and stronger.^[12] In the study, the government is in absolutely strong position, in the process of social exchange between the government and the people. Although people have their own rights to trust or distrust the government, government should still bear the mainly responsibility^[13], due to the particularity of China's political system structure. Meanwhile, people trust in government based on the future expectations, which means the payoff is uncertain, in this way, the understanding and application of reciprocity is of considerable significance.

Based on the social exchange theory, Adams, American behaviorist, came up with the social comparison theory in 1965, start a more systematic research on the fairness. Social comparison theory emphasizes on the pursuit of relative rather than absolute rewards, including horizontal comparison (social comparison) and longitudinal comparison (historical comparison). The pursuit of balance, in the social exchange, is to achieve fairness. Having sense of unfairness, when the balance was broken, coming with complex emotions such as negativity, complaints, even anger. What's worse, it leads to less input in the social exchange, or withdrawal from the exchange directly. So, the government should focus their attention on the people's feeling of fairness in each part, in the context of people and government power and resource disparity. At the same time, people can adjust the psychological contract according their feeling of fairness in time, which can influence the trust in government.

Victor H. Vroom gave a completely interpretation for Incentive theory in 1964, says that one's efforts depends on the attraction of object and the possibility of succeed, which is a classic formula of Expectancy theory: M (motivation) $= \sum V$ (valence) $\cdot E$ (expectancy). As far as the influence that people's psychological contract to government trust be concerned, different dimensionality of the valence and expectancy leads to different motivation, corresponding different trust.

The contract is to regularize both of their behaviors by define their rights and duties, used from primitive society to now. Two forms of the contract, one is written contract mentioned by people usually, named "Writing the contract"; the other is ignored at many times, while it plays an important role, named "Psychological contract". There are two major schools, the broader one emphasize both parties' subjective understandings of each other's obligations in an exchange relationship, named "Classical school"; the narrower one emphasize employee's subjective understandings of each other's obligations in an exchange relationship, named "Rousseau school". Considering the unequal status between people and government, this paper do psychological contract research from individual perspective, which means the psychological contract concluded by the people to the government.

People and government as two major subjects in this paper, from power, resource or any other perspective, people are always in a weaker position. In this context, written contract is far from beneficial and enough for people, it's hard to reflect people's expectation and demand actually, so the advantage of psychological contract is obviously. This paper focuses on the people's subjective and implicit understandings of each other's obligations in an exchange relationship, which is the definition of the psychological contract.

2.2 People's psychological contract with the government is widespread

"Psychological contract" was proposed by western scholars in enterprise production, afterwards others drill down, from basic concept to inter dimension, influence factor, and other conception's influence. Surely, the research not limited in itself, scholars apply it widely to agricultural, high school, civil servants and other areas. Further research shows that the psychological contract is widespread between all kinds of organizations and individuals.

Related literature research shows that combining individuals with organizations organically to standard behaviors, except the normal contract which defines the duty between individuals and organizations by written form, the psychological contract as an implicit, unwritten expectation and understanding, is the organization's basis together with written contract^[14]. Comparing individual's social value and norm with oneself expense and receipts in the social exchange^[15], in this way, the psychological contract is widespread between all kinds of organizations, groups and individuals. The psychological contract, generally exist in the social moral relations, emphasize the intrinsic motivation of social behavior comes from the interaction of subjective expectations and the fulfilled contract, rather than limited in the mandatory constraint on the surface, which is a revelation of human behavior mechanism.^[16]

From the perspective of establishment, social cognition and social exchange motive, as a tool of social culture, affect the psychological contract's structure constantly, in fact, motivate mechanism have influence in pattern of behavior, while the cognition mechanism as an information processor by mental models.^[17] The psychological contract between the country and the farmer come into being, in the process that the country safeguard the farmer's interests.^[18] Expanding the scope of farmers to the whole society, ordinary citizens need to carry out relevant obligations such as tax, organizational

citizenship behavior and so on, when they hope that they can access to public services or even realize equality and freedom. Tacit formed in the interaction between people and country, except in the written contact, as an invisible being, expressed in the form of the psychological contract. As for China, the psychological contract conducted by the nation to the country nearly equal to conducted by the people to the government, due to the Party and the government as the country's representative. So, people's psychological contract with the government is widespread in current China.

2.3 Different dimensions of people's psychological contract with the government

The psychological contract includes trade and relation factors^[19], it's the representative of two-dimensional structure. Lee & Tinsley and other scholars did a research in Hong Kong P.R.China and America, find out there are three dimensions including trade, relation and team-member factors.^[20] The "Trade & Relation" contract is divided on the exchange basis of material economy and social emotion, The "Reality & Development" contract is divided on the contractual liability's purposiveness and effectiveness.^[21] Realistic duty emphasizes maintaining the normal work and daily life, while the development duty cares about the long-term development of organization and staff.^[22] Three dimensional structure separated from two-dimensional structure, something related to career and work in the relational dimension can be weakened, while emphasize the interpersonal interaction and care.^[23] People's psychological contract with the government should be divided into three dimensions, in Chinese cultural background which stress on interpersonal interaction and duty.

2.4 Research hypothesis

People's psychological contract with the government can be divided into three dimensions in this paper: Trade-model psychological contract is a kind of cognition and expectation, refers specifically to people fulfill the duty of taxation and enjoy the equal public goods and services. Relation-model psychological contract is a kind of cognition and expectation, refers specifically to people support the government in emotion and the government lays on people in psychology. Development-model psychological contract is a kind of cognition and expectation, refers specifically to people support the government in policy macroscopic orientation and the government put upturn living standards, rising channel into consideration. The hypothesis is as follows:

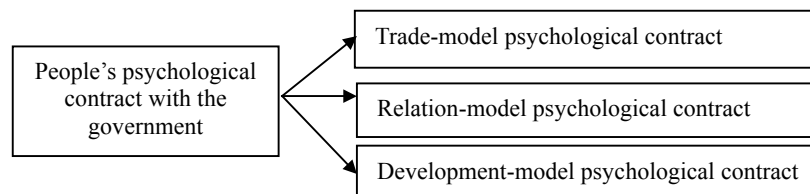


Figure 1 Concept model

H1: There is positive correlation in three dimensions of people's psychological contract with the government.

3 Data source and collation

The data come from 2015 China Social Governance Survey, organized by Department of Political Science Tsinghua University with Nanjing University, Southwestern Jiaotong University, Shanghai Jiaotong University etc. The sampling method uses the "GPS Assisted Area Sampling Method," which incorporates population as a measure of size, stratification and multi-stage PPS (Probabilities Proportional to Size). The field interviewing was launched in full scale on July 1, 2014, and entry of raw data starts on December of 2015, finally, database and coding manual were completed on June 20th, 2016. Sample drawn in the field is 7500 and eligible sample is 6013, completed and valid interview is 4068, the response rate comes to 67.65%.

Substitute the mean for the missing value in this paper, and then examine the reliability and validity. Before distributing questionnaires formally, specialists have examined and retested the questionnaire in a small scale, which means the retested reliability and criterion validity is fine, so this paper focus on the internal reliability and structural validity of each scale.

4 The structure of people’s psychological contract with the government

The research, related to the internal structure of people’s psychological contract with the government, is extremely scarce, not to mention a mature scale. By reviewing the literature and analyzing the theory, the related items are extracted to explore the exploratory factor analysis, based on the understanding of psychological contract. Firstly, examining the related items including C1B,C1C,C1F,C1G,C1H,C1I,D12B,C5,C7,D12D,D12C,C18A,C18B,C19,F18,F7A,C16A,C16B,C16C,C16D,C16 in KMO values and Bartlett’s balls, KMO values of 0.886 is greater than 0.8 and Bartlett’s balls test has a significant probability $p < 0.05$, which shows that the items are related to each other, in this way, it is suitable for factor analysis. After that, the internal consistency of 0.864 is greater than 0.6, by using the “Cronbach α ”, which shows that the reliability is totally fine.

Considering there are three dimensions in people’s psychological contract with the government, such as trade-model psychological contract, relation-model psychological contract and development-model psychological contract. Trade-model psychological contract is related to public goods and services, and relation-model psychological contract is related to democracy, freedom, while development-model psychological contract is related to fairness and equality. So, using the principal component analysis to analyze the factors, and then extract three factors from the scale by orthogonal rotation with the maximum variance. The following are shown in Table1:

Table 1 Factor analysis of the psychological contract scale

Items	Factors		
	1	2	3
National defense and foreign policy	0.223	-0.092	-0.060
Environmental conservation	0.223	-0.066	-0.053
Employment (central)	0.091	0.097	-0.114
Foods	0.176	-0.002	-0.060
Public health and health care	0.147	0.064	-0.090
Primary and secondary school education (central)	0.119	0.081	-0.094
Democratic level (10 years ago)	0.239	-0.145	0.019
Democratic level (10 years later)	0.234	-0.112	0.034
Democratic implementation satisfaction	0.127	-0.020	0.105
Democracy in our country	0.213	-0.079	0.044
Elections focus on the needs of people	0.081	-0.031	0.113
Everyone’s basic life insurance	-0.061	-0.010	0.332
Fairness of individual income distribution	-0.037	0.176	0.001
Fairness of familial income distribution	-0.106	0.230	-0.006
Justice	-0.035	-0.065	0.433
Equality	-0.058	-0.034	0.425
Primary and secondary school education (local)	-0.066	0.230	-0.038
Provide for the aged	-0.076	0.224	0.016
Employment (local)	-0.082	0.253	-0.036
Medical	-0.075	0.244	-0.028
Housing	-0.107	0.242	0.017

From Table1 we can see, there are a lot of problems with the direct extraction of three principal component factors, so that we should dig into the structure of the psychological contract. And then, it is found that there is a big difference between the central government and the local government in the trade-model psychological contract. Meanwhile, combining the questionnaire with the analysis result, finds that the central trade-model psychological contract is embodied in C1 (The situation of our country), while the local trade-model psychological contract is embodied in C16 (The situation of our local government). So, separate the psychological contract conducted by people to the central government from to the local government, thus analyze the influence and structure between the psychological contract conducted by people to the central government and to the local government.

Exploratory factor analysis of people’s psychological contract with the central government, select 16 items such as C1B,C1C,C1F,C1G,C1H,C1I,C5,C7,D12B ,D12C ,D12D,C18A,C18B,C19,F7A,F18.

Exploratory factor analysis of people’s psychological contract with the central government, select 15 items such as C16A,C16B,C16C,C16D,C16E,C5,C7,D12B ,D12C ,D12D,C18A,C18B,C19,F7A,F18. The KMO values and Bartlett’s ball tests are performed respectively, and found that the former KMO values of 0.868 is greater than 0.8 and the later KMO values of 0.868 is also greater than 0.8, what’s more, both of their Bartlett’s balls test has a significant probability $p < 0.05$, which shows that the items are related to each other, in this way, it is suitable for factor analysis. After that, the internal consistency of 0.832 and 0.817 are greater than 0.6, by using the “Cronbach α ”, which shows that the reliability is totally fine. By using the principal component analysis, analyze the factors in people’s psychological contract with the central government and the local government respectively, and then extract three factors from the scale by orthogonal rotation with the maximum variance. The following are shown in Table 2 and Table 3:

Table 2 Factor analysis of the psychological contract scale (central)

Items	Factors		
	1	2	3
National defense and foreign policy	0.147	0.054	-0.090
Environmental conservation	0.137	0.094	-0.076
Employment (central)	-0.059	0.298	-0.075
Foods	0.067	0.176	-0.059
Public health and health care	0.042	0.228	-0.069
Primary and secondary school education (central)	0.001	0.249	-0.061
Democratic level (10 years ago)	0.352	-0.207	-0.048
Democratic level (10 years later)	0.316	-0.135	-0.019
Democratic implementation satisfaction	0.228	-0.088	0.081
Democracy in our country	0.265	-0.073	0.004
Elections focus on the needs of people	0.111	-0.032	0.099
Everyone’s basic life insurance	-0.046	-0.026	0.337
Fairness of individual income distribution	-0.161	0.326	0.064
Fairness of familial income distribution	-0.246	0.381	0.077
Justice	-0.027	-0.064	0.429
Equality	-0.064	-0.022	0.431

Table 3 Factor analysis of the psychological contract scale (local)

Items	Factors		
	1	2	3
Democratic level (10 years ago)	-0.131	0.394	-0.088
Democratic level (10 years later)	-0.091	0.386	-0.071
Democratic implementation satisfaction	-0.004	0.272	-0.002
Democracy in our country	-0.042	0.320	-0.032
Elections focus on the needs of people	-0.023	0.167	0.055
Everyone’s basic life insurance	-0.016	-0.069	0.361
Fairness of individual income distribution	0.188	0.007	-0.033
Fairness of familial income distribution	0.232	-0.080	-0.025
Justice	-0.082	-0.019	0.463
Equality	-0.055	-0.046	0.460
Primary and secondary school education (local)	0.248	-0.067	-0.032
Provide for the aged	0.247	-0.049	-0.015
Employment (local)	0.260	-0.051	-0.051
Medical	0.264	-0.072	-0.032
Housing	0.253	-0.070	-0.021

Based on the understanding of related literature and theory, combining the results of Table 3 and Table 4’s exploratory factor analysis, found out that people’s trade-model psychological contract with the central government corresponds to C1B,C1C,C1F,C1G,C1H,C1I, and people’s trade-model psychological contract with the local government corresponds to C16A,C16B,C16C,C16D,C16E.

Meanwhile, the relation-model psychological contract corresponds to C18A, C18B, C19, F7A, F18, and the development -model psychological contract corresponds to C5, C7, D12B, D12C, D12D. In order to ensure the effectiveness of exploratory factor analysis, analyze the internal factors of each dimension in factor analysis once again. Firstly, examining each of dimensions in KMO values and Bartlett's balls, KMO values are 0.818, 0.802, 0.791 and 0.626, which shows that the former three are close to 0.8 and even the least is greater than 0.6, meanwhile, Bartlett's balls test has a significant probability $p < 0.05$, which shows that the items are related to each other, in this way, it is suitable for factor analysis. Then, the internal consistency of 0.909, 0.734, 0.729, 0.751 are greater than 0.6, by using the "Cronbach α ", which shows that the reliability is totally fine. Consequently, internal reliability and structural validity of the people's psychological contract with the government are high enough to dig into, whether from the whole scale or each of dimensions' perspective. Based on the results of factor analysis, it is found that each of dimensions corresponds to the date by weighted average, and the modified model as follows:

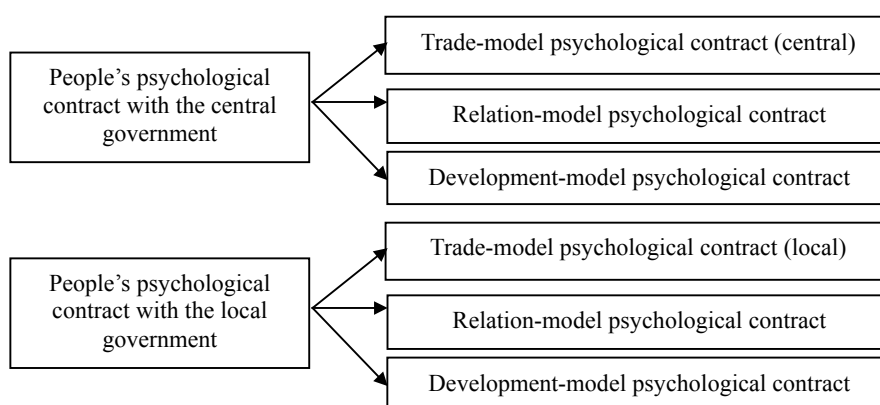


Figure 2 Modified concept model

5 The relationships between each of psychological contract's dimension

In order to dig into the structure of people's psychological contract with the government, analyze the correlativity between each dimension and the results are as follows:

Table 4 Correlation analysis in each of the psychological contract's dimensions

	1	2	3	4
Trade-model psychological contract (central)		0.436**	0.492**	0.246**
Trade-model psychological contract (local)	0.436**		0.376**	0.284**
Relation-model psychological contract	0.492**	0.376**		0.289**
Development-model psychological contract	0.246**	0.284**	0.289**	

Note: **indicates that the correction coefficient is significant at 0.01

Obviously, there is always a positive correlation between each dimension of the people's psychological contract with the government and the other, at the level of 0.01, so the hypothesis1 realized. Therefore, it has some positive influence in other dimensions when people's psychological contract with the government's one dimension had a better performance. On the contrary, other dimensions may be adversely if people's psychological contract with the government's one dimension were disobeyed. What's more, the correlativity between central trade-model psychological contract and relation-model psychological contract is the highest, which is 0.492 at the level of 0.01. While, the correlativity between central trade-model psychological contract and development-model psychological contract is the lowest, which is only 0.246 at the same level.

6 Conclusions

Based on the review of literature, theory and related data analysis, results indicate that the psychological contract, concluded by the people to the government, includes three dimensions, which are trade-model psychological contract, relation-model psychological contract and development-model psychological contract. There are some differences between the trade-model psychological contract of central government and the trade-model psychological contract of local government, due to the differential public goods and services. The relation-model psychological contract mainly refers to democracy and freedom, while, the development-model psychological contract primarily involves in the opportunity of equitable development.

The central trade-model psychological contract and relation-model psychological contract are the closest, while the central trade-model psychological contract and development-model psychological contract are the weakest. In a way, relation-model psychological contract contains two dimensions including relation and development at this paper, in the original psychological contract which is "Trade & Relation" two-dimensional structure. So, both the relation-model and development-model focus on the development of long-term relationships, and the development-model psychological contract refers to the opportunity of equitable development from perspective of the career, while the relation-model psychological contract refers to democracy and freedom from emotional perspective. Thus, in the long run, compared with the opportunity of equitable development, the atmosphere of democracy and freedom is closer to the people's enjoyment of public goods and services, provided by central government.

In a word, there is always a positive correlation between each dimension of the people's psychological contract with the government and the other. As the government agencies and related personnel, it's necessary to recognize the difference in power and resources between people and government, and then, standing in people's shoes, think about the most realistic and urgent need of people, what's more, satisfy people's reasonable expectations actively and strive to improve the quality of service for the people. With the rapidly development of society and economy, the government should attaches great importance to the increasingly demand of people in public goods, services and the opportunity of equitable development, and improve the quality of public goods and services by take advantage of the growing social organizations, meanwhile, introduce third-party to monitor and provide advice for reference, in order to promote the establishment of a fair and equitable system. With the rapidly development of economic globalization and the Internet, the central government should pay attention on the demand of rational citizens in the atmosphere of democracy and freedom. On the one hand, the government should make their unremitting efforts to promote the construction of freedom and democracy in our country, on the other hand, considering our national conditions, historical and cultural background, it's of importance to choose the liberal democratic form, which is suitable for our country, and propel step by step.

It is essential for the government to understand the dynamic demand of people in real time, when government put all efforts into promote the work. Prohibit escapism and pay close attention on the most realistic and urgent need of people, then, understand the structure of people's psychological contract with the government and dig into the condition of influential factors in each dimension, in order to guide the government to carry out work smoothly and improve the efficiency. At the same time, it's helpful for the government to avoid a detour and closer to people, which means improving the people trust in the government. As a tie between the people and the government, the psychological contract's dynamic and bi-directionality are favorable for people to assess the government's actions and examine their own' simultaneously. In order to achieve a reasonable state, we should make a dynamic adjustment to keep the balance between limited trust and limited doubt with government. Furthermore, by digging into the psychological contract, the scientific accuracy is good for us to get a better understanding in the degree of trust between the people and the government, which is better for us to grasp the appropriate suspicion's "degree" of the government. Related research shows that people's trust in government is proportional to the number of the middle class.^[24] With the development of the economy, the lager of the middle class's number and the interactions between people and government growing frequently, facilitate the government to recognize the people's real

universal needs and expectations in time, and promote the effective development of various tasks.

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The Scientific Nature of Experimental Points Selection in China: Criteria and Status Quo —An Empirical Study Based on the Case of Smart City

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Abstract In recent years, Chinese scholars have carried out heated debates on the failure of policy experimentation. Available research on the failure of experiments mostly focuses on the implementation of experiments but relatively neglects the selection of experimental points. This paper intends to re-examine the functional failure of experimentations from the perspective of scientific nature of the selection of experimental points. Based on the data from Urban Statistical Yearbook of China (2014), the empirical study takes the 289 prefecture-level cities in the country as samples to examine the experimental points of Smart City from three aspects: readiness, quantity and space distribution. The result indicates that the strategy of experimental point selection lacks scientific evidence, probably caused by local governments' pursuit of qualification and the competitive authorization by central ministries and commissions.

Key words Experimental point, Scientific nature, Qualification pursuit, Competitive authorization

1 Introduction

The experimental point method is generally regarded as one of the crucial mechanisms effecting the outstanding reform achievements in China. In recent years, however, reform policies addressing major issues have failed frequently at the stage of experimentation¹, which have drawn concern and sparked debate in society. Relevant discussions are mostly conducted under two frameworks and two theoretical approaches for understanding experimental points as well as their "failure". Firstly, taking a policy experimentation as "an experiment based on the selective control by the central government". For example, Liu Pei-wei (2010) proposes that policy experimentation has no preset principle or goal, but is only an instrument of the central government to exercise selective control over local governments^[1]. The initialization, promotion and evaluation are subordinated to the will of the central government. "Any policy experimentation which contorts the essence of the state policies, even if it can take place, will inevitably be intervened or terminated."^[2] Therefore, the failure of an experimental point, to a very large extent, originates from the fact that the experimental point is out of control or the effect of experimentation fails to meet the expectation of the central government or taints the image or reputation of the central government^[3]. The second approach is to regard a policy experimentation as "experimentation under hierarchy"^[4]. For example, Wang Shao-guang (2008) points out that policy experimentation is a form of practice through which policy makers and policy advocates learn and acquire necessary experience and lessons, thus adjusting policy objectives and instruments^[5]. Such factors as state system's "compatibility" or "integrating capacity" with policy elements^[6]; the perfection of institution, policies and laws^[7]; the attitude of local political elites^[8]; the importance of a sector or a field to national economy and the people's livelihood^[9] etc., may greatly affect the experiment results. So the failure of experiments largely stems from the absence of such necessary conditions as institution, mechanism and intention. The two types of research complement each other to constitute a solid and sound theoretical system.

On the other hand, the deficiencies of available research are also revealed: most research focuses

1 For example, according to the incomplete statistics of 30 sponge city experimental points nationwide, 19 have water-logging. (Wang Hong-ru. 19 of the 39 Sponge City Experimental points Nationwide Have Water-logging This Year[EB/OL]. ceweekly.cn, <http://www.ceweekly.cn/2016/0905/163283.shtml>, accessed on Sept. 5, 2016 (in Chinese))

on the execution of policy experimentation, but somehow neglects the importance of experimental point selection. Actually, on account of political factors and interest-related factors deeply affecting the whole policy process, the “side-affect” of experimentation frequently occurs, which is that the policy experimental points are too many. It makes people question the qualification of those selected experimental points. As a reform policy is often compared to a prescription healing the ills of the country, implementing policy experimentation may be described as a clinical test of the prescription, selecting an experimental point is equivalent to selecting subjects for tests, and executing an experiment is equivalent to subjects taking medicine during a test. If an experimental point is not scientifically selected, the experiment should not be drawn upon for policy rectification or policy diffusion no matter what the execution results are. From this perspective, the failure of policy experimentation not only refers to an unexpected result, but also the functional failure for a non-scientific selected experimental point, and its reference value does not exist accordingly. In this regard, paying attention to experiment execution merely will lead to biased understanding of policy experimentation and its failure. Therefore, this study will focus on the scientific nature of policy experimental point selection, make evaluation of current situation based on cases (as the response to the query mentioned before), and provide a new perspective for re-examining the failure of policy experimentation. The content structure of the remaining parts of the paper and their logical relation are summarized as follows: Part 2 explores the principle for experimental point selection; Part 3 elaborates the design and operation of the empirical test, including case selection, research design and data pre-processing etc.; Part 4 analyzes the results of the empirical research, and speculates the causes of experiment failure; Part 5 summarizes the research conclusion and gives a brief discussion on it.

2 The scientific principle for selecting policy experimental points

According to Wang Shao-guang (2008), a policy experimentation is an interventional test initiated by decision-makers from top to bottom^[10]. Strictly speaking, it differs from the mode that a local government initiates policy innovation from bottom to top, which is then recognized by the central government^[11]. If simply separates a policy process into three stages: planning, execution and revision^[12], policy experimentation, in a broad sense, belongs to policy execution, which takes places after a policy goal is set up, but in a narrow sense it also differs from policy execution, as it is prepared before promotion and implementation—whether as a “policy solving” guided by the central government^[13], or an “administrative experiment” prior to legislation^[14]. Its different internal logic shown in different periods may be deemed a response to the political demands of a specific historical period: The land reform, for instance, was implemented in the Shanxi-Gansu-Ningxia Revolutionary Base for the purpose of exploration, and each experimental point was allowed to “act before reporting” and “learn by doing”^[15]. Also, a special zone of reform was established in Shenzhen etc., which was encouraged to break ideological shackles^[16], and to innovate bravely by promoting work in all areas by drawing upon the experience gained on key points... Under this prerequisite, the selection of experimental points is for the effect of experiment implementation to offer better reference to the next decision of the central government (policy diffusion or policy rectification). As to the setup of scientific criterion, two principles should be followed: 1. The selected points can fully represent the action objects of policy^[17]; 2. Provided the representative principle is met, the scale of experiment should be as small as possible. The first principle should be followed because the experiment experience which is sometimes too special can hardly be promoted in a larger scope, as different results may entail in different places^[18]. The second principle should be followed because the control of experiment scale, on one hand, can dilute risks and prevent negative impact of policy failure nationwide^[19], and on the other hand can save cost and identify unexpected general difficulty in advance through policy effect of a limited scope, thus minimizing the problem of “blind” implementation^[20]. To sum up, the selection of policy experimental points should be subordinate to the decision-making will of the central government (to select the points whose basic conditions can satisfy policy requirement as candidate), and the following two aspects should be stressed to examine the scientific nature of experimental point selection: 1. Whether experimental points are representative; 2. Whether the overall experiment scale is economical.

3 The design and operation of empirical test

Based on the principle mentioned above, we take three groups of experimental smart cities authorized by the Ministry of Housing and Urban-Rural Development (MOHURD) as research object to evaluate the scientific nature of experimental point selection by quantified research. Smart city experimental points are taken as example mainly for six reasons:

(1) The construction of smart cities centers on cities. Cities vary widely in terms of location, geographical conditions, cultural customs, climatic environment, and resource endowment. Therefore, it is necessary to conduct policy tests.

(2) In the selection of experimental points of smart cities, top-level planning on the central government level goes before experimentation application on the local level, and then the central ministries review the applications and confirm experiment qualifications¹, meeting the top-down policy experimentation trigger mode that this paper is concerned with.

(3) There is a threshold for the construction of smart cities. Not all cities are qualified to become experimental points of smart cities². Therefore, how to select cities with good policy conditions may reflect the subordination to decision-making will.

(4) The construction of a smart city is a grand work³ and costs enormously. Thus, it is necessary to follow the scientific principle in the selection of experimental points.

(5) Smart city experimentation can enjoy preferential treatment in policy and fund, and can also represent a salient political achievement⁴. Consequently, the local governments are keen for

1 Refer to The Interim Administrative Measures for National Smart City Experimentation (Jian Ban Ke[2012] No. 42)

2 In a speech on a work conference on network security and IT application, Xi Jin-ping expressly pointed out that “we should promote the construction of new smart cities through hierarchical classification.” The so-called hierarchical classification stresses the threshold and focus of smart city construction, meaning the same as the instruction in the Guiding Opinion on Promoting the Healthy Development of Smart Cities (Fa Gai Gao Ke[2014] No. 1770), “We should try and implement it first in regions or key areas with better comprehensive conditions.” “Hierarchical” means that we should conduct smart city construction in cities’ readiness in information infrastructure etc. (that is, “with better comprehensive conditions”); as to cities where it is necessary (for example, strategic location, or it is imperative to resolve practical problems in economic transformation by developing smart city) to build a smart city but conditions are not ready, we should promote the construction of information infrastructure (the state has a special IT application fund), and conduct smart city construction after readiness is up to standard.

3 Yu Wen-xuan and Xu Cheng-wei (2016) point out in their research: “In China smart city is no longer a technical solution, but smart city construction has been written into the ‘Twelfth Five-Year Plan’ and ‘Thirteenth Five-Year Plan’ of the CPC Central Committee and the State Council, and be upgraded to a height of economic and social development program of the CPC Central Committee and the State Council, thus becoming a highly political issue.” (Yu Wen-xuan and Xu Cheng-wei. Technical and Political Rationality of Smart City Initiatives in China[J]. Journal of Public Management, 2016, 13(4): 127-138 (in Chinese))

4 By reviewing documents such as the Detailed Rules on Process Management of National Smart City Experimentation (for trial implementation), the Circular on Approving 80 Cities Including Shenzhen to Construct National Experimental Cities of Information Benefiting the People, and the Guiding Opinion on Promoting the Healthy Development of Smart Cities, we can summarize the main preferential conditions provided by the state for promoting the construction of smart cities as follows: (1) On the policy level: “Within the limit of local government bonds approved by the State Council, provincial people’s governments should arrange for some funds to be used in the construction of smart cities”; as to the supporting policies made by provincial departments on housing and urban-rural development, the Division of Building Energy Efficiency and Science & Technology Division of the MoHURD will try to implement them; 12 ministries and commissions such as the NDRC “coordinate the solution of problems arising from the construction work and ensure the coordinated promotion of related policies.” (2) On the level of funding: “For cities with mature conditions, the state venues will arrange some start-up funds and give fiscal rewards in the following years according to the results of evaluation and inspection; for cities to which start-up funds have been allocated, reward funds will also be allocated if they pass evaluation and inspection”; the China Development Bank (CDB) provided investment and financing quota of no less than RMB 80 billion in three years from 2012 to 2015, and CDB Capital, a wholly-owned subsidiary of CDB, and the MoHURD Chinese Society for Urban Studies jointly established the Smart City Development Fund. (3) In terms of performance: “The achievements of smart city construction will be included into the government performance assessment system”, etc.

experiment qualifications¹. Therefore, political, especially interest-related factors may challenge the scientific nature of experimental point selection.

(6) Smart city experimentation has advantages in operability of related concepts and data availability, and it is easy to conduct quantified research and statistical analysis.

3.1 Design of empirical test

3.1.1 Test criteria

On smart city experimentation, the scientific nature of experimental point selection (including whether the policy will of the central government is followed) should be judged from three aspects: (1) The readiness score of experimental points; (2) The number of experimental points; and (3) The evenness of spatial distribution of experimental points.

(1) The readiness of experimental points corresponds to the requirement of “hierarchical classification” of the central government, that is, the threshold of basic conditions (see footnote 2 in page 3). Though we cannot delimit an accurate “cut-off score”, it can be confirmed that we should select experimental points in cities with higher readiness scores. That is to say, the basic conditions of the cities selected for smart city experimentation should be obviously higher than the average level of all cities nationwide.

(2) The number of experimental points corresponds to the overall scale of experimentation. The ideal number of experimental points should be the minimum number with which the results of policy experimentation can reflect overall conditions.

(3) The evenness of spatial distribution of experimental points corresponds to the representativeness of experimental points, including other factors that can affect the results of experimentation apart from basic conditions, such as geographical location (plateau/plain, inland/coastal etc.), administrative division (provinces/municipalities directly under the central government/autonomous regions for ethnic minorities).

3.1.2 Steps of test

Step I: Construct a readiness index system of smart city and determine index weight;

Step II: Calculate the scores of all the prefecture-level cities nationwide and the scores of all the prefecture-level cities for smart city experimentation according to the index system, and then conduct statistical analysis to test the level of basic conditions of the cities selected for smart city experimentation in the country. Meanwhile, comprehensive evaluation is made on whether experimental point selection is scientific according to the number and spatial distribution of experimental points.

As there are three possibilities for the research results, in the third step we should make the following discussion:

(1) If the readiness scores of smart city experimental points are obviously higher than the national average level, and the number and spatial distribution of experimental points are reasonable, it means that the selection of experimental points is scientific.

(2) If any one or several cases appear in the research results: the readiness scores of experimental points are close to or even lower than the national average level; the number of experimental points is higher than the due number; the spatial distribution of experimental points does not consider geographical or ethnic factors, that means that the experimental point selection is partly scientific.

(3) If all the cases as listed above appear in the research results, it means that the experimental point selection is unscientific.

If the latter two cases occur, then the fourth step should be taken: by qualitative analysis, trying to find out what cause or causes have led to such unscientific experimental point selection.

¹ For example, Mei Ci-qi et al (2015) point out, “One opportunistic choice of local officials is to strive to become enforcers of the experiments designed and launched by the upper government authorities, and attempt to win the attention of the upper government authorities by more effectively implementing such experiments according to their intention.”(Mei Ci-qi, Wang Xiao-nan, Liao Lu and Liu Zhi-lin. Patterns of “Experimentation Point”: Evidence from People’s Daily’s 1992-2003 Report on Policy Experimentation Point[J]. Journal of Public Administration, 2015, 8(03): 8-24 (in Chinese))

3.2 Empirical test operation

3.2.1 Design of the smart city readiness index system (level II indexes)

Smart city readiness measures whether a city is ready for the construction of a smart city. The design of the index system should consider informatization readiness, human resources readiness and economic readiness:

First, information facilities (especially network infrastructure, including mobile and fixed telephone, broadband and wireless broadband etc.) and the IT industry (including the construction of an industrial chain from materials, technologies to devices, systems to network, as well as the institutional cluster integration of research institutes, operators, integrators, developers, etc.) are the basic conditions for the construction of a smart city^[21]. Therefore, the degree of informatization should be taken as a major content of measurement in the readiness index system. It should be explained that for cities that are ready, the construction of a smart city is not the repeated construction of urban IT application, or the simple upgrading of a “digital city”, but the transformation of the traditional urban governance mode^[22], and “promoting the innovative application of new generation information technologies such as the Internet of Things, cloud computing and big data, and realizing the deep integration of urban economic and social development”^[23], so smart responsiveness is available in urban operation^[24]. Indexes used to measure the maturity of a smart city should stress the application of information infrastructure, such as E-commerce and E-government, as well as the improvement of urban operation through such application, such as the reduction of traffic jams. The same indexes in two systems¹ should be distinguished in weight.

Second, smart city readiness also includes the readiness of human resources and the readiness of economic development. Shapiro (2006) puts forward that human resources are a major characteristic of a smart city, and that in a sense, a smart city is an urban area in which people who have received higher education account for a large proportion in the total population^[25]. On one hand, the construction of a smart city stresses the adoption of a people-based approach and gives priority to people’s livelihood, and aims at making smart response to citizens’ demands. If citizens are not adapted to the operation and use of smart equipment or even never heard of it, it is meaningless to talk about improving people’s livelihood through such construction^[26]. On the other hand, people’s participation is an important guarantee for the normal operation of the smart city system, as only when “software” and “hardware” are matched can the smart operation of a city be effectively supported. Therefore, a city should have a certain popularization rate of higher education to ensure the use rate of smart devices, and have a certain number of professionals in the IT field to engage in the development, operation and maintenance of smart software and hardware.

Third, though developing a smart city can foster strategic emerging industries and create new economic growth point, developing the smart city also requires enormous investment, and the high cost for smart technologies will also be a major obstacle^[27]. For example, sensor tags, as necessities for the operation of a smart city, entail high production cost. According to the survey of Wang Li (2011), “The cost for making a tag in China is about RMB 1.5. The high cost determines that this technology currently can only be applied on commodities with higher added value, while it is impossible to promote it on low-value commodities.”^[28] Therefore, a city should have sustainable economic growth, reasonable economic structure and healthy public finance as powerful support for the construction of a smart city. (See Table 1 for the readiness index system of a smart city)

3.2.2 Data pre-processing and index weight determination

We have determined the list of experimental points based on the list of prefecture-level cities in Urban Statistical Yearbook of China (2014) and according to the three groups of smart city experimental points released by the MOHURD:

First, all experimental points are divided into prefecture-level cities, county-level cities, and districts in some prefecture-level cities, prefecture-level cities, while districts in prefecture-level cities are retained, and districts are transformed into relevant prefecture-level cities. Afterwards, 163 experimental points of prefecture-level smart cities are selected as research objects, accounting for

¹ Refer to The Index System for Experimental points of National Smart Cities (Districts and Towns) (Jian Ban Ke[2012] No. 42) and The Evaluation Indexes for New Smart Cities (2016) (Fa Gai Ban Gao Ji[2016] No. 2476)

56.4% of the 289 prefecture-level cities nationwide.

Second, the 163 experimental cities are divided into three types and labeled according to the list of experimental smart cities released by the MOHURD by batches (Batch I , Batch II and Batch III).

Data preprocessing

The index data in this paper are all from Urban Statistical Yearbook of China (2014), and the software used is R3.3.2.

First, some indexes are obtained through calculations:

(1) Internet broadband family penetration=the number of households with Internet broadband access/ (the total population at the end of a year÷2.97): as the data of total number of urban households are absent in the yearbook, estimations are used here, that is, the total population at the end of a year÷2.97. 2.97 is the average number of people in a household released by the National Bureau of Statistics in 2014 (persons/household)

(2) The proportion of education expenditure in total expenditure=education expenditure/financial expenditure

(3) The student/teacher ratio of secondary vocational education schools=the number of students at secondary vocational education schools/the number of full-time teachers at secondary vocational education schools

Second, apply imputation method to the missing data. As some indexes have missing data, considering that the number of missing data is small, regression imputation method is applied with the Pearson's correlation coefficient of two variables being above 85%. The correlation coefficients pass 5% significance test.

Third, apply dimensionless method to the data. The indexes selected in this paper are all positive indexes. Conduct 0-1 standardization processing of indexes, and remove the influence of original index units through mathematical manipulation.

Determining index weight

The analytic hierarchy process (AHP) is adopted to determine index weight.¹ That is, the pairwise importance of indexes on different levels is obtained through scoring by experts in relevant fields to construct a judgment matrix. For levels for which a judgment matrix has not been listed, the equal-weight weighting method is adopted:

$$\text{Level I : } P_1 = \begin{bmatrix} 1 & 5/3 & 5/2 \\ 3/5 & 1 & 3/2 \\ 2/5 & 2/3 & 1 \end{bmatrix}$$

$$\text{Level II : } P_{21} = \begin{bmatrix} 1 & 2 \\ 1/2 & 1 \end{bmatrix}, P_{22} = \begin{bmatrix} 1 & 3 & 3/2 \\ 1/3 & 1 & 1/2 \\ 2/3 & 2 & 1 \end{bmatrix}$$

According to the judgment matrix, the product of each line of elements in the matrix is calculated, $M_i (i = 1, \dots, k)$, in which k is the number of elements on each line. And then each k^{th} root of each M_i is calculated to get $V_i = M_i^{1/k}$. Normalization processing is conducted on the obtained vector,

¹ The Analytic Hierarchy Process is a simple and practical multi-criteria evaluation and decision-making quantitative method for multi-index comprehensive evaluation. First, according to the understanding and preliminary analysis of problems, complicated problems are decomposed into different parts (elements), which are then divided into several groups according to their property, to develop different levels. Elements of the same level are taken as criteria to control some elements of the next level, which are at the same time controlled by elements of the higher level. This top-down control relationship develops a hierarchical and orderly structure model; second, the relevant importance of elements of each level in the model is subject to pairwise comparison according to the judgment of objective reality to constitute a judgment matrix. The importance of the indexes is ranked by calculating the corresponding eigenvector of the largest eigenvalue of the matrix, and consistency check is conducted to get index weight respectively. The eigenvector corresponding to the largest eigenvalue of the matrix, through normalization processing, becomes the weight vector of an index.

$V = (V_1, \dots, V_k)'$, that is, $W_i = \frac{V_i}{\sum_{i=1}^k V_i}$, $W = (W_1, \dots, W_k)'$, namely the eigenvector sought. The

following table lists the weights of indexes on each level calculated by the analytic hierarchy process (AHP). Through calculation, we can see that the judgment matrixes of each level are consistent.

Table 1 Readiness index system of smart cities (including index weight)

Level II indexes	Level I weight	Level III indexes	Level II weight	Level IV indexes	Final weight
Informatization readiness	0.50	Perfection level of information infrastructure	0.67	Internet broadband family penetration rate	0.11
				Number of mobile phone users at the end of year	0.11
				Number of fixed phone users at the end of year	0.11
		Development level of information industry	0.33	Teleservice income	0.08
				Ratio of people working in the information industry (computer service and software industry)	0.08
Economic readiness	0.30	Growth level and efficiency	0.50	Regional GDP	0.05
				GDP growth rate	0.05
				Per capita GDP	0.05
		Economic aggregate and structure	0.17	Proportion of added value of tertiary industry	0.02
				Fixed assets investment	0.02
				Social retail goods	0.02
		Fiscal revenues and expenditure	0.33	Public fiscal revenues	0.02
				Public fiscal expenditure	0.02
				The proportion of education expenditure in total expenditure	0.02
				Expenditure of science and technology	0.02
				Expenditure of fund for urban maintenance and construction	0.02
Human resource readiness	0.20	Education background	0.50	The number of college students per 10,000 people	0.03
				The student/teacher ratio of secondary vocational education schools	0.03
				Book collection in public libraries/100 people	0.03
		Occupational structure	0.50	The proportion of people working in the tertiary industry	0.05
				The number of people working with units of scientific research, technical services and the geological prospecting industry at the end of a year	0.05

4 Results and analysis

4.1 Readiness scores of smart city experimental points

The smart city readiness scores of all prefecture-level cities nationwide are calculated according to the weights obtained by the AHP, and then using the weights of the addition model,

$$score_j = \sum_{i=1}^k w_i X_{ij},$$

in which X_{ij} means the i^{th} index value of the j^{th} prefecture-level city after

data pre-processing. Afterwards, the smart city readiness scores for 289 prefecture-level cities nationwide are obtained. The mean value and median of readiness scores calculated according to experimentation batches are sorted out in the following table:

Table 2 Statistical results of readiness scores of smart city experimental points by different batches

Readiness	The first batch of experimental points	The second batch of experimental points	The third batch of experimental points	All experimental points	None experimental points	All
Average value	0.17	0.15	0.14	0.13	0.10	0.12
Median	0.12	0.11	0.10	0.10	0.09	0.09

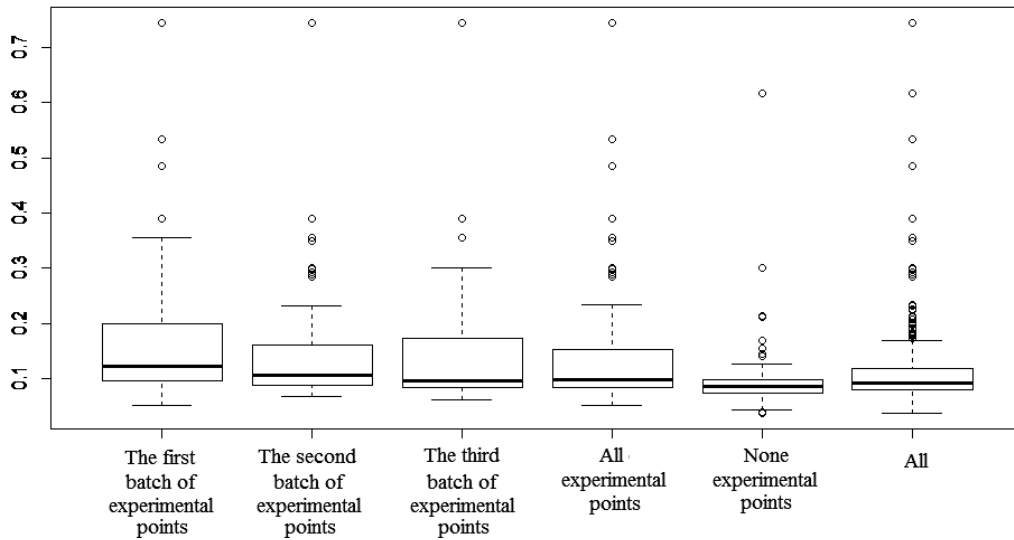


Figure 1 Readiness score distribution of smart city experimental points by batches

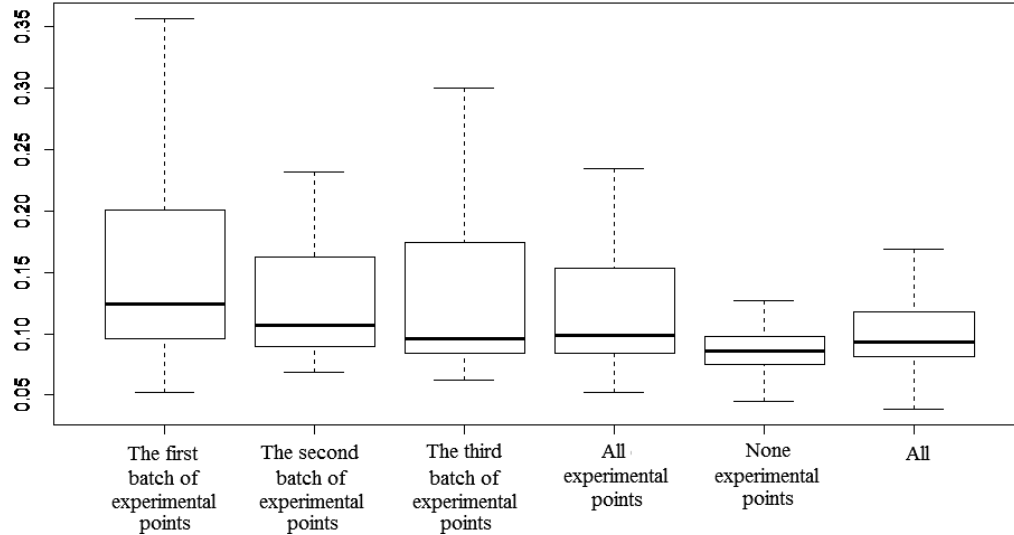


Figure 2 Readiness score distribution of smart city experimental points by batches (extremely abnormal values removed)

As is shown in the above table, the median of scores of the experimental city is close to the median of scores of all cities,¹ which means that the average basic conditions of experimental cities

¹ As the average value and median value in statistics are representative indexes reflecting the central tendency of a group of data, and the median value is not susceptible to the impact of extremely abnormal values, priority is given to median values in the comparative analysis of the conclusion.

are similar to those of all prefecture-level cities (not obviously higher than the average level). The result shows that the function of “threshold” is not reflected in the selection of experimental points. Besides, in the three batches of experimental cities, the median of scores of each batch of experimental cities is closer to the median of scores of all prefecture-level cities than the median of scores of its previous batch, which means that in the selection of the second and third batches of experimental cities, preference is given to cities with lower scores. Therefore, from the perspective of meeting the policy requirement, the selection of smart city experimental points is inappropriate.

4.2 The number of smart city experimental points

As to the number of experimental points, the relationship of experimental points and all cities across the country may be compared with the relationship of samples and collectivity in the sampling technique. Therefore, given that the specific requirements (such as budget cost and number of experimental points) of decision makers on how to select experimental points are unknown, to determine the optimum number of experimental points, we can refer to the sample size determination method in the sampling technique.

Scheme I : Simple random sampling

Simple random sampling, also called purely random sampling, is the most basic sampling method, which is to randomly take out n units one by one from the population and the probability of each unit to be sampled is equal. Generally this method applies to cases in which the population size N is not big, and little difference exists among individuals.

The following formula is often adopted to determine the size of samples:

$$n = \frac{n_0}{1 + \frac{n_0}{N}}, n_0 = \frac{t^2 \cdot S^2}{r^2 \cdot \bar{Y}^2}$$

In which under 95% confidence level $t = 1.96$, and when the relative error r may be 10%, the result of calculation $n = 110$. This means that if 110 cities are sampled as experimental points by the method of simple random sampling, the average readiness level of experimental cities can represent the average readiness level of all prefecture-level cities nationwide (relative error less than 10%).

Scheme II : Stratified random sampling

When the population size N and the sample size n are both big, and the difference between population units is also big, high cost and low accuracy may occur if simple random sampling is used. In this case, stratified random sampling may be considered. That is, classifying units for sampling into different groups according to a certain characteristic or rule, independently and randomly taking out samples from different groups, and maintaining the characteristic of big inter-group difference and small intra-group difference, accordingly, the cost is reduced and the accuracy is improved.

If the stratified random sampling method is used to take samples, all prefecture-level cities should be classified according to their readiness scores into high, medium and low levels. Then experimental cities are determined by the method of stratified sampling. We can use design effect $deff$ to adjust the size of samples on the basis of the samples needed by simple random sampling. The formula is as follows:

$$n' = n \times deff$$

It is known that in stratified random sampling, $deff < 1$, and therefore the number of samples needed for stratified sampling should be less than 110 cities.

Scheme III: All representative cities are sampled, and other cities are partly sampled

The basic conditions of different prefecture-level cities vary greatly. For example, in 289 prefecture-level cities, 4 municipalities directly under the central government and 31 prefecture-level cities are in autonomous regions inhabited by ethnic minorities. If all the 4 municipalities are sampled, while simple random sampling is conducted over 31 prefecture-level cities in autonomous regions and the remaining 254 prefecture-level cities, with the number of samples being 17 and 82 respectively, this scheme needs about 103 prefecture-level cities as samples.

Whatever sampling method is adopted, under the same accuracy requirement, with the increase of

restrictive conditions for sampling, the number of samples tends to decrease. According to statistical principles, when the number of samples needed is calculated for each applicable sampling method, the result generally does not exceed 110 of simple random sampling. This shows that even without any restrictive condition, 110 cities selected as experimental points will be fully representative, and the result is adequate to judge the whole situation (all the 289 prefecture-level cities). Currently 163 experimental points have been selected with conditional restriction (readiness threshold), this obviously does not meet the expectation of saving the cost of policy experimentation. Therefore, considering the quantity of policy experimentation, the selection of smart city experimental points is not scientific.

4.3 The evenness of spatial distribution of smart city experimental points

It should be noted that spatial regional division includes: (1) Economic regional division; (2) Division of coastal and inland areas. To scientifically reflect the social and economic developments in different regions of China and to provide a basis for the CPC Central Committee and the State Council to make policies for regional development, the National Bureau of Statistics divides the whole country into four major economic regions: East China, Northeast China, Central China and West China. According to the Marine Statistical Yearbook of China (2014), similar division is conducted over coastal and inland cities.

Table 3 Frequency statistical table of smart city experimental points under different regional divisions

		Experimental cities	Non-experimental cities	Total
Regional division by ethnic minorities	Located in autonomous regions inhabited by ethnic minorities	17 (56.67%)	13 (43.33%)	30
	Not located in autonomous regions inhabited by ethnic minorities	146 (56.37%)	113 (43.63%)	259
Coastal/inland regional division	Coastal cities	29 (54.72%)	24 (45.28%)	53
	Inland cities	134 (56.78%)	102 (43.22%)	236
Economic regional division	Northeast China	16 (43.24%)	21 (56.76%)	37
	Central China	52 (65.00%)	28 (35.00%)	80
	East China	51 (58.62%)	36 (41.38%)	87
	West China	44 (51.76%)	41 (48.24%)	85

In the above table, the data in parenthesis indicate the percentage of the number of smart city experimental points in the total number of prefecture-level cities in a region. It is obvious that the number of smart city experimental points varies in different areas, which is related to the difference of the number of prefecture-level cities in different regions. However, the percentage of the number of smart city experimental points in the total number of prefecture-level cities in a region is about 55% on the whole (except for Northeast China and Central China). Therefore, from the perspective of equal proportion, experimental cities are evenly distributed in the space of their region, and the selection of smart city experimental points is relatively scientific.

4.4 Analysis of causes for unscientific selection of smart city experimental points

As reform and opening-up enters a “deep-water zone”, the pursuit of potential interests by relevant entities as well as their consolidation and maintenance of their vested interest^[29] are also obvious in the field of policy experimentation. For example, competing for preferential policies^[30], interpreting the policies of the central government in the direction which is favorable to themselves^[31], implementing reform policies driven by political achievements^[32], etc. This paper will follow the theory of “Transition Trap” to make two hypotheses from the perspective of public choice theory¹ about the lack of scientific nature in the current selection of experimental points:

First, as mentioned in this paper, there are both economic and political incentives to become a smart city experimental point: smart city construction can drive the development of related industries, and boost local growth; as a priority strategy and policy focus that the state vigorously promotes, local

1 Public choice theory holds that actors in the political market also seek maximization of private interests as their basic motive. (William A. Niskanen. *Bureaucracy and Public Economics*[M]. Cheltenham, UK: Edward Elgar Publishing, 1994)

governments should actively implement it, otherwise, they will be held accountable. So the qualifications for smart city experimentation will be fervently sought after. Local governments may “show their special prowess” to obtain experimentation qualification, as they did to get projects by visiting men of influence in Beijing. Considering the fact: The selection of the first batch of experimental points follows the scientific principle (selecting cities with higher readiness scores); while in the second and third batches, cities with low readiness scores are selected as experimental points. Besides the three batches of formal experimental points, more cities have been selected as the experiment expands. The result of orientation by unscientific factors may be caused by the vertical activities of local governments.

Second, as it has been mentioned in this paper, “classification” in the principle of “hierarchical classification” means that smart city experimental point construction should stress some certain aspect, which involves many functions of ministries and commissions. As cross-departmental cooperation among ministries and commissions is subject to such risks and costs as losing competitive advantages, resources (time, fund, information, raw materials, legitimacy, status, etc.) and the capability of unilateral control of results^[33], horizontal competition is prevalent among different ministries and commissions, embodied as power departmentalization and departments driven by interests—the latter mainly includes two basic forms, “protection of stocks” and “expansion of increase”^[34]. Considering the fact ministries and commissions strive for having a finger in the “pie” of smart cities^[35], “protection of stocks” may be understood as protection of the power vesting experimental point qualification, while “expansion of increase” is to strive for it. In such chaotic competition, experimental point qualification tends to become an instrument for hooking in local governments, sending gifts or balancing interest relationship. The final result is: besides the MoHURD, at least 25 ministries and commissions such as the Office of the Central Leading Group for Cyberspace Affairs, the National Development and Reform Commission, the Ministry of Industry and Information Technology, etc., are promoting smart city construction and “giving license”, which have deployed nearly 700 smart city experimental points nationwide (including districts and counties, and some cities which managed to acquire several licenses from different ministries and commissions at the same time). Even if a local government has not acquired the qualification for comprehensive experimentation, there are other special experimental qualifications as compensation. There are so many experimental points that the State Council has specially established a national inter-ministerial coordination office for the construction of new smart cities to promote horizontal coordination and resolve the “fragmentation” of qualification licensing.

5 Conclusions

Through theoretical exploration, this paper sets up a standard for the scientific nature of experimental point selection, and conducts an empirical test of the scientific nature of the experimental point selection combined with the case of smart city experimentation. A conclusion is drawn as follows: The selection of experimental points does not meet the policy requirement, the selected experimental points are representative but the overall experiment scale is not economical. This probably results from local governments’ pursuit of qualification and the competitive authorization by central ministries and commissions. This research focuses on the functional failure of policy experimentation (refers to the non-scientific selected experimental points and the reference value is thus decreased) which differs from the failure in general (refers to the unexpected result of policy experimentation execution). It makes up for the demerits of available research to some extent and offers a new perspective from which to review policy experimentation and its failure. The conclusion of the research is also of guiding significance to reform practices. For the follow-up study, this paper, limited by its length, has completed three main tasks: (1) Preliminary discussion on functional failure of experimental points; (2) Evaluation on the scientific nature of experimental point selection; (3) Hypothesis on the reason for non-scientific selection. The next step will be to explore the internal logic of the selection of experimental points and try to open the “black box” of why those unqualified points are finally selected. And of course, if this paper could draw some attention and pave the way for further discussion in relevant field, its value would also be revealed.

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A Study on the Construction of Intelligent Community in China

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Abstract China has been promoting the construction of intelligent communities in recent years. The constructing process has been characterized by demand-oriented, service priority, government-led and planning ahead. In the construction of intelligent communities, a number of comprehensive information platforms for community public services have been built, some institutions and mechanisms of community governance have been innovated, and the level of residents' participation and self-governance has been raised. Nevertheless, there are still some problems to be faced. First, the construction of intelligent communities is not paid enough attention to in some areas. Second, the government is playing a monodrama without other roles' participation. Third, the technical methods are not advanced enough. Fourth, there are not enough experts and funds for the construction of intelligent communities. These problems must be paid enough attention to and be solved carefully.

Key words Intelligent community, Construction of intelligent community, Public service residents' self-government

1 Introduction

Through utilizing modern information technology comprehensively, the intelligent community integrates information about people, land, customs, events and organizations, coordinates community governance, public service and other resource platforms, depends on matching infrastructure, supported by intelligent community public service, to establish intelligent public services and handy service for the public of community governance in the framework of the intelligent city.^[1]

2 The general idea and the main features of the development of the intelligent community

2.1 The General Idea of the Development of Intelligent Community in China

In October 2013, Ministry of Civil Affairs, Ministry of Industry and Information Technology, the National Development and Reform Commission, Ministry of Public Security, Ministry of Finance unveiled 'The construction guidance of the promotion of community public service comprehensive information platform'. It has become an important policy paper to promote the construction of intelligent community. This document points out that the community public service comprehensive information platform relies on information technology and standardized construction, integrates public service information resources, provides basic public service for the public in the form of window service, telephone service and network service.^[2] It provides important policy guidance for the construction of intelligent community.

From this, we can see figure out the idea of the construction of intelligent community is that relying on accelerating the construction of community public service comprehensive information platform, our nation pays more attentions on developing community e-government and e-commerce, and promotes the intelligent upgrading of community nursing service, community health care, community property and other facilities and equipment.

At the same time, aimed at reforming the governance model and enhancing the effectiveness of community work, first, we should absorb community social organizations, community service enterprises, community service volunteer information resources, and then achieve integration of community public services, volunteer service, convenience services and other information resources of community services, and finally, form a new pattern of community economic services with the combination of online to offline(O2O), building 'intelligent community' with intelligent facilities, convenient service, delicacy management, and livable environment.^[3]

2.2 The main features of intelligent community

First, the constructing process has been characterized by demand-oriented, service priority and idea

innovation.

The construction of intelligent community requires to achieve many goals, such as refinement of community management, humanization of service socialization of operation, information of means and standardization of work, which all needs to coordinate various community service resources, and to satisfy the needs of community residents, enterprises and institutions, social organizations, supported by intelligent and information technology means.^[4] And it requires to build a comprehensive service management system covering social management, social services, community building, social mobilization, social organization, and social construction. For one thing, to promote the community work to be standardization, fine, scientific, management methods should be innovated. For another, service ideas should be innovated. Communities are supposed to provide resident, work units and social organizations with public services of humanization, diversification, socialization, making them feel the new experience of intelligent life, enjoying a “full response” intelligent condition, to achieve the management in the service and the service in the management. One of the goals of the intelligent community construction is to build an intelligent, humanistic and livable modern community, which has more convenient life, more beautiful living environment, more harmonious life and higher happiness index.

Second, the government leads the construction process and is involved deeply.

The construction of the intelligent community is at the beginning stage in our country, and its own characteristic decides that government from central to local takes ultimate responsibility naturally.

First of all, the government is the constitutor of relevant policies in the construction of the intelligent community, of which it has authoritative guidance. Second, the government is makers of relevant laws and regulations. Legal construction is the prerequisite for the construction of the intelligent community, which must be carried out under the laws. Thirdly, the government is the main financier for the construction of intelligent community which requires a lot of money. Moreover, financial allocation is the main source of funding. This requires the grassroots government to have sufficient financial resources to guard financial security. Fourth, the government provides part of the public goods and public service. Government is on behalf of public power, and providing public goods is one of its basic duties. It provides public goods and public services to the community to meet the community environment, medical, transportation, law and order and other requirements of community residents by allocating resources rationally. Finally, the government is the guide of community culture. Intelligent community, is not only material, but also spiritual. It embodies factors of this era, such as science and technology, humanity, society and culture, and carries specific traditional elements and local cultural symbols. The government is the educator and leader of the intelligent community culture, guiding residents to create a shared value and promote the development of colorful community cultural activities in order to achieve the benign interaction between communities.

Third, the intelligent community requires system, scientific planning and standard construction.

Institutional innovation, alongside scientific development planning is the system guarantee of the construction of intelligent community, which is also one of the important contents for intelligent community construction in 2015. In July 2014, the Ministry of Civil Affairs promulgated the ‘*Community Public Service Comprehensive Information Platform Basic Specification*’. Local governments in accordance with the actual needs of the construction of intelligent community, put out various types of ‘*smart community construction standards*’, ‘*intelligent community construction guide*’, ‘*the construction of intelligent community action program*’ and other documents. At the same time, schemes were developed in aspects of relevant laws, regulations, policies, personnel construction and material security mechanism. To promote the construction of an intelligent community, stable system guarantee is must. To give participants stable expectation of action affects not only the efficiency but success of the construction. Therefore, in the initial stage of construction of our intelligent community, it is indispensable to pay attention to the system construction.

3 The development effectiveness of intelligent community

The construction of intelligent community has stepped into fast developing stage with the great attentions from the Party Central Committee and the State Council in 2015, springing up a number of

intelligent communities with science planning, rapid development and distinctive styles. From the perspective of intelligent community development in 2015, the focus is on the following three aspects:

First, to regard the construction of intelligent community as a guide, to create a number of comprehensive information platforms of community public service.

The construction of community Public Service Comprehensive Information Platform is the fundamental task for intelligent community. It is the basic carrier to achieve intelligent community governance and service.^[5]

Shanghai has vigorously promoted the construction of comprehensive information platforms for community public services. By the end of 2015, the city has set up 211 reception centers, 11 sub-centers have been set up in the wider towns, and over 1300 village-level community affairs agency rooms have been set up in the suburbs. More than 10 government departments and 193 public service matters were integrated together by the reception center, established fully functional, rational distributed and convenient service facilities and network, formed a service model that is based on community affairs reception center, supported by 'one door' government service information system and conforms to the community public service standards and norms. Shanghai community public service comprehensive information platform construction has fully covered the city, which effectively promotes the community service quality, humanw are and window image, has achieved much good social efficiency, such as convenient public service, easy government management, open and transparent process, lower administrative costs, and community harmony and stability.

The construction of Comprehensive Information Platform of Panzhuhua City has a creative significance in organization system, technical design and construction model and so on, for example: First, the platform deployment is upgraded to the municipal level, breaking the traditional pattern that the construction of community information construction are deployed in units formed by district and county, improving the data coordination level, saving the construction operation and maintenance costs; Second, the platform application 'sank' to the community. The comprehensive information platform service terminal is directly extended to the community, effectively shortening the service radius, and maximizing the convenience of residents; Third, the platform operation is 'expanded' to the dedicated network, relying on the government information network to deploy comprehensive information platform equipment network, reducing intermediate links of the comprehensive information platform and departmental business system, which has explored a viable model for interlinking the construction of a comprehensive information platform and the present basis of community information construction.

The 'one door' government information service of Chancheng District, Foshan City, Guangdong Province, adheres to the core idea that 'simple process to the public, complex affairs left to the government', and regards the needs of the public as a guide. Through assembling many service halls to one centralized hall, changing many windows for accepting and handling service matters to one window, it implements "six services" principle—a window to service, immediate to service, time limit to service, online service, regional service and everyday service. By information technology, the servicereengineers the approval process, optimizes the front desk interface, forces the background revolution, breaks the department segmentation, opens up the 'information island', and gives advantage of the information technology efficiency, convenience and humanism to the government, doubling service ability.

The street administrative service center was increased from 70 to 282, respectively the administrative service center of the village (Habitat) increased to 77, and the number of affairs that every window can handle has increased greatly. The data and information left in the process of community residents dealing with public affairs are collected to form the dynamic, real-time and real database for the government to find "Greatest Common Divisor" of public services and provide a scientific basis for targeted public services.

Second, construction of intelligent community has promoted the innovation of community governance system and mechanism.

To promote subjects to engage, and achieve community governance innovation is one of important content. Qinhuai District, Nanjing, Jiangsu Province, as the first batch of national community governance and service innovation experimental area, on the basis of repeated research, focused on the main function of community autonomy, in accordance with the overall innovation thinking of upgrading administrative

functions, focusing on moving down service center, and conducted experimental work of comprehensive system reform. It introduced the *construction implementation plan of comprehensive affairs acceptance information system for street public service center in Qinhuai District*, to further clarify function setting, promotion method, timing and specific steps of the street citizen service center information platform construction. Through the integration of reception information platforms of affairs terminals to optimize the network layout, and through the establishment of a unified system to achieve “one network accepts, the whole network to service”, many channels service inquiries, statistical analysis of decision-making and other features. The current information platform covers 12 streets of the city’s 14 street public service center. On this basis, the department coordination is strengthened, forming resultant of work forces. Departmental coordination mechanism is established, and job responsibilities are implemented.

Third, the construction of intelligent community enhanced the community residents’ ability on participate and autonomy.

The innovation of community public service comprehensive information platform construction and community governance system mechanism has the purpose to achieve convenience, beneficial to residents and the quality of self-management so that the level of participation can be improved. The fundamental idea of the construction of an intelligent community is how to achieve this appeal better.

The cottage area in Harbin City, Heilongjiang Province proposed deepening community governance innovation by the construction of intelligent community. Through the construction of intelligent cloud center and mobile application system, the masses can get community notice, service booking, property repair and other services through their mobile phone, and at any time the system can address the masses of livelihood demands. The construction of intelligent community gives the community greater autonomy. The livelihood of the community residents is closely related to the livelihood matters, and they can all be accepted and handled in the community regardless of size. Community residents really feel the change of community work, which effectively stimulated the community self-management, self-service potential and vitality. Though the geographical space is broken, the intelligent community is also effective in promoting the community to return to the autonomy of the autonomous community. In the time dimension the system can achieve all-day operation, and self-help administrative examination and approval, self-help health examination, self-help financial services, self-help payment, self-help emergency rescue, self-service logistics and other services can be processed or appointed at any time within 24 hours. Construction of the intelligent community transforms the community at the end of social management to the forefront of serving the public, constantly glowing with new vitality and vitality.’ Handling affairs to the community, relying on the community, having fun in the community’ has become a new lifestyle of community residents.

The construction of intelligent community developed rapidly in 2015, fundamentally benefited from the central government’s vigorously promoting the construction of smart city. Smart city construction builds the overall framework for the construction of the intelligent community. On the unified intelligent city platform, the intelligent role of smart city has penetrated deep into the various areas of community life, making the construction of intelligent community become the basis of intelligent city construction, and an indispensable ring.

The intelligent community takes on the majority of work closely related to the well-being of the people. Therefore, community residents’ satisfaction is the key. Throughout the course of construction, the construction of the intelligent community to enhance community governance and service quality is the important duty and the direction of the local governments, and has achieved remarkable results in the process.

4 The main problems in the construction of intelligent community

Although the construction of intelligent community developed rapidly, there are still problems as follows:

First, the construction of intelligent community is not paid enough attention.

The construction of intelligent community is in the initial stage. Although there has been a number of high quality typical communities, from a national perspective there is still much space for improvement. The degree of local government’ sattention on the construction of intelligent community has impacts on

the construction effect directly. Effected by some factors, some areas do not really pay attention to this work, follow others step, and even ride the fence. So changing the attitude, having the courage to innovate, and highlighting the significance of intelligent community construction are the urgent problems.

Second, the subject of construction of intelligent community is simplex.

The initiative of government to intervene and get involved in the construction of intelligent community is very necessary to help grasp the overall direction, to provide a strong material guarantee. However, the construction of the intelligent community involves residents' eating, living, traveling, shopping, entertainment, health and other intelligent services. A single government subject of operation cannot fully meet the needs of residents, and it cannot fully protect the community service mechanism to run smoothly. We must take the advantage of the market in the allocation of resources in order to ensure the sustainable and healthy development of the intelligent of community development.

Third, the construction method lags behind the time.

At present, China's community network construction has much blank. The information infrastructure and application level in communities is low, and has not formed a perfect intelligent service system. Because the information among the departments lacks overall planning and unified standards, the community residents' information management systems are different. Combined with the management and business barriers of the department, the residents' information can not be shared and coordinated, which further reduces the efficiency of the intelligent community.^[6] The universal application of the community residents' information management mechanism and operational coordination mechanism has not been completed yet, resulting in a lot of waste of resources.

Fourth, the construction of intelligent community lacks talents.

The construction of the intelligent community has changed the mode of traditional community construction, and has adopted the combination of Internet of Things, Internet and cloud computing to create a convenient and intelligent community. Therefore, technology is an indispensable means to the construction of intelligent community. The construction of the intelligent community needs a large number of computers, software, information and other technical talents. At present, Chinese community workers education backgrounds were mainly below college undergraduate, and computer and software management knowledge is relatively scarce.

Fifth, the investment of construction of intelligent community is insufficient.

Currently, intelligent community construction is generally financially supported by government investment. In the limited capital investment, large-scale application and promotion of the construction of intelligent community is limited. Part of the local government funds can only meet the intelligent community infrastructure construction. To further improve and enhance the effectiveness of community services and residents' convenient daily life, funds are needed to raise in many ways, making the intelligent community sustainable. Changing the single investment way of the construction of intelligent community has become an urgent problem to be solved.

5 The measures to promote the construction of intelligent community

First, the government should understand the importance and urgency of the construction of intelligent community.

First of all, the intelligent community is an important way to improve the supply of basic public services. It will undoubtedly help to optimize the allocation resources of community public service, and solve the last kilometer to contacting and serving the public. Secondly, the construction of intelligent deepens the reform of administrative examination and approval system, and promotes the transformation of grass-roots government functions. Finally, intelligent community is an important platform that converges large data of livelihood base, and boosts the capacity of grassroots governance modernization. Therefore, local governments must establish the work idea of serving the people, connecting the higher and lower levels and scientifically coordinating. Promoting the construction of intelligent has great significance and is far-reaching.

Second, the government should build a new pattern of pluralistic construction under the auspices of a government initiative.

The construction of intelligent community should follow the requirements that “the party committee leads, the government takes responsibility, the social cooperates, the public participates and the law guarantees” of the social management system in the report of the 18th Party Congress, and construct the diversified subject structure under the auspices of a government initiative. The government should widely absorb information resources of community social organizations and community service enterprises, promote sharing of information resources, including community public services, convenient and beneficial services, and volunteer service, and supervise and evaluate service level and service effectiveness of other subjects in the construction of intelligent community, and provide financial support for information service facilities. Community service enterprises, community social organizations and other subjects of intelligent community construction should play an active participation in the role of collaborative governance, and continuously meet the growing material and spiritual needs of residents, and ultimately build’ intelligent communities’ with intelligent facilities, convenient services, fine management, and livable environment.

Third, the government should optimize the method of intelligent community construction.

The construction of intelligent community needs to integrate residents’ data resources according to industry standards to ensure that residents’ register information is true and to avoid duplication of registration, and construct efficient and convenient community public service comprehensive information platform system, solving the problem of out-of-time information standard and low version, and achieving the information sharing, digging the value of information data, so that community residents can enjoy the community life of high quality.

At the same time, the government should strengthen the intelligent community hardware construction, that is, the government departments take practical measures and connecting with adequate resources of enterprises and social organizations to optimize the work of the community electronic information equipment, and timely update the computer hardware facilities and software systems to improve the intelligence of community service means, thus consolidating the foundation of the construction of intelligent.^[7]

Fourth, the government should strengthen the construction of talent teams in intelligent community.

The lack of talents has seriously affected the further development of the intelligent community. We are supposed to strengthen the construction of talent teams. Intelligent community development and construction calls for the combination of complex talents with technique and management ability. For one thing, it should regulate the introduction system of excellent talent. Government departments in the recruitment of community workers, should pay attention to testing basic computer skills, hiring employees that meet the standard. For another, it is necessary to strengthen the training and education of the technical experience and management capacity of present community workers. They can rely on institute of industry-university-research to promote the combination of production and research, training the theory and practical ability of compound talents for the intelligent community through regular training, special training in information technology, special training in knowledge management and other forms, to improve community workers to master the skills of the construction of intelligent communities.

Fifth, the government should strengthen the financial security of the construction of intelligent communities.

In the construction of intelligent communities, the financial input of government departments are needed to increase, and also the financial support of enterprises and social forces are needed to strengthen. Government departments as the subject of community construction, should continue increasing investment to guarantee the infrastructure construction. In addition, we must effectively ensure the maintenance, hardware updating, basic network maintenance and security, the maintenance of management system operation, and personnel, training, office and other expenses involved in the construction of the intelligent community. Through the provision of preferential policies and protection, well-funded large enterprises are advocated entering the construction of the intelligent community. Changing the way of single investment can not only reduce the pressure on government funds, but also provide a better management and endogenous motivation for the construction of intelligent communities. The Public-Private-Partnership (PPP) model of the construction of intelligent communities can greatly

promote complement the advantages and organic combination of resources, protecting healthy and sustainable operation of the intelligent community.

Sixth, the government should further promote the optimization and upgrading of community public service comprehensive information platforms.

In the construction of community public service comprehensive information platform, we can link the various infrastructure in the community by adopting the information technology of new Internet of Things, cloud storage, cloud computing and other technologies through sensible, interconnected and intelligent methods. A new generation of intelligent infrastructure build a smart association among all areas of the city and the subsystems so as to facilitate building the comprehensive system platform with convenient service, real-time response, and coordinated operation. In the construction of intelligent communities, we should continue paying attention to overcoming the phenomenon of ‘information island’ caused by inter-industry and spatiotemporal gap. The local governments can build a unified standard according to the actual situation in the region. The information system can be docked, which the intelligent cloud platform can provide a solution for. With the rapid increase of the level of community life informatization, especially the large-scale application of mobile Internet and Internet of Things technology. Cloud computing technology can connect massive information with community intelligence platform together to deal with all kinds of information resources.

Seventh, the government should work hard to achieve large data integration and resource sharing of the construction of intelligent.

The intelligent community focuses on the integration and sharing of large data on the basis of common information exchange. Within the framework of the intelligent community, the data obtained by the sensory layer are processed with large data to ensure the smooth operation of the intelligent community. To upgrade community information from simple to intelligence, the key is the integration capacity of known information processing.^[8] Intelligent community can dig large data, including the basic data of the community population, community geography and space data, community communication information data and other massive data. These data have very high development and utilization value. Scientific use of large data for us to provide information can more effectively provide community residents with personalized, differentiated and high quality services, while improving the quality of community governance, and constantly meeting various types of community residents’ fragmented and indispensable real needs.

The most important thing in the construction of intelligent community is the development and integration of various types of community functions, and the formation of intelligent community function through building the hardware and software platform. Intelligent community governance, intelligent business services, medical care and pension, intelligent home service, intellectual security and other community affairs are key areas of the intelligent community development.

6 Conclusions

The construction of intelligent communities is rising globally. China has been exploring the ways of constructing intelligent communities and made remarkable achievements. It is true that China is still facing some problems in the construction of intelligent communities. But if only China solves these problems effectively. The construction of intelligent communities will surely improve the governance of communities, make the residents’ life more convenient, promote social harmony and enhance people’s well-being.

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A Study on the Relationship between Local Governance Modernization and the Development of Territorial Think Tank —Under the Analysis of Think Tank Big Data of Network Media *

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Abstract It is of great practical significance to enhance the effectiveness of network media's think tank participation in the modernization of local governance. Based on the study of the application scope, advantages and limitations of the entropy method, this paper establishes the effect evaluation index system of the local governance modernization and selects 16 typical regions in the east, middle and west of China as the research samples, extracts 100 network media's think tank big data index in these areas, uses the Gray correlation degree model to analyze the evaluation results of the 16 local governance modernization. The results show that under the condition of restricting GDP, talents, science and technology, public facilities etc., the development of territorial think tank can significantly promote the improvement of the modern level of governance. The more frequent think tank activities occur, the higher governance level of modernization in the area. There are obvious regional differences in the influence of the level of local governance, among which the development of the territorial think tank development in the central region has the greatest effect on the promotion of the modernization level, the western region is the second, the eastern region is the smallest. The influence of the local governance modernization and the development of the territorial think tank should be emerged as a "S" type curve, and the territorial think tank have the cluster effect under the influence of the level of local governance. Finally, based on the results, this essay gives policy suggestions on supporting and standardizing the development of territorial network media's think tank.

Key words Network social media, Think tank big-data index, Governance modernization, Entropy method, Gray correlation degree

1 Introduction

The Third Plenary Session of the Eighteenth Central Committee of the Party put forward the "Construction of a New-type Think Tank of Chinese Characteristics". In January 2015, the Central Committee and the State Council jointly issued the Opinions on Strengthening the New-type Think Tank with Chinese Characteristics, and proposed to strengthen the construction of local think tanks from various aspects so as to achieve "Brainstorming and Making Good". In December 2015, the central government held a work conference on New-type think tanks with Chinese characteristics, and introduced the construction of high-end think tanks and local think tanks. "2016" is a year of our country characteristics of the New-type think tank construction of high-speed development of the year, from government departments to the community awareness of the role of the think tank, think tank widely involved in government planning, document drafting and third-party assessment, many high-quality results by all levels of government and business attention and adoption. The local governance level of the decision-making with a holistic, comprehensive, long-term and other characteristics, think tank involves both academic, practical, integrated and integrated scientific research results of local governance on professional knowledge, authoritative information and holistic governance requirements, the New-type think tank is the local government governance "brain"^[1]. Therefore, it is of great theoretical and practical value to analyze how the think tank affects local government decision-making and enhance the effectiveness of think tank participation in the modernization of local governance.

* Financed by "National Social Science Foundation of China—Research on the Generating Mechanism, Evaluation Method and Governance Model of the Political Cost of Environmental Pollution Problem, (Project No.:16BGL138)".

In recent years, the emergence of social new media has greatly changed the local political ecology, WeChat, microblogging, and mobile news client to provide New-type think tank activities of the tools and media. In order to pursue the influence, the local think tanks also take the initiative to accept the new media transmission, to adjust the main way to influence the policy, to promote the modernization of local governance. The emergence of the network media think tank making the exchange of cooperation between the think tanks is increasing, the research power to converge, industry standards gradually formed, and the social influence gradually increased, so that in the government counseling, the impact of government decision-making and other aspects of the role are highlighted. Therefore, it is important to collect the data from the think tank activity in the social media and analyze the relationship between the activities and the influence of the local management ability. In this context, through the study of the application of the entropy method, based on advantages and limitations, the establishment of local governance modernization effects the evaluation index system, and selects our eastern, central and western of 16 typical areas as a research sample, extracting the large data index of the 99 network media in these areas. This paper uses the gray correlation degree model to analyze the evaluation indexes of the modernization effect of the 16 local governments and the think tanks in the territorial network media, obtained territorial think tank behavior and development of local governance modernization. We put forward the corresponding countermeasures and suggestions, so that the local government can grasp the situation of the development of the think tank in general, introduce the policy of supporting the development of the think tank, standardize the development of the intellectual library industry, enhance the public image of the territorial think tank, and stimulate the function of the think tank. Governance modernization provides targeted, operational decision-making solutions that provides higher quality think tank products.

2 Literature review

The Evaluation of the think tank development and the relationship between the think tank and the local governance modernization have always been the focus of the local economic and social development process. It is also a hot spot of the academic research at home and abroad. In the past two years, scholars at home and abroad have carried out extensive and in-depth qualitative research on this issue. Lu Hong-ru et al. (2017) constructs the evaluation index system of the think tank by using the social structure paradigm and the explanatory structural model, aiming at evaluating the construction, operation and performance of the think tank^[2]. Chen Jie et al. (2016) based on the evaluation criteria and scale of static, dynamic, characteristic and trend, that constructed the evaluation index system of the construction of the new type of think tank^[3]. Li Ling (2014) adopts the subjective evaluation method based on the questionnaire to evaluate and rank the three aspects of the comprehensive influence, system influence and professional influence of our country's think tank^[4]. Patrick Koellner (2017) pointed out that there is a serious problem and methodological problems in the current ranking system for the global think tank^[5]. Yang Si-luo et al. (2017) constructs the evaluation index system of the think tank network influence (think tank website construction, think tank network communication, think tank new media) with colleges and universities, party and government, local social science and society as the sample^[6]. Wang Zhan (2014) argues that the think tank plays an important role in perfecting the national governance system and promoting the modernization of the governance capability, but the institutional mechanism of the comprehensive participation of the Chinese think tank in the process of public policy formation is not yet perfect^[7]. Long Yu (2015) pointed out that the development of China's think tank is still in its infancy, which should explore the management style and organization of the New-type think tank with Chinese characteristics, and promote the modernization of the national governance system^[8]. Wang Li-juan et al. (2013) used the gray relational grade and the cross-sectional data to analyze the lag of the financial indicators of the enterprise, and established the multiple regression financial early warning models^[9]. Zhao Ao (2017) applied the gray relational analysis model to measure the effect of industrialization and urbanization on the ecological environment of Liaoning Province^[10].

Based on the above research, we can see that the domestic and foreign scholars have achieved fruitful results in the evaluation of the development of the think tank and the relationship between the

think tank and the modernization of the local governance. However, due to the differences in research samples and research methods, previous studies have focused on the overall level of the country's think tank evaluation research, the evaluation of the development of local think tanks less, the impact of the network media think tank and evaluation less, at the provincial level there is little research on the comparative analysis of the think tanks, and the research on the relationship between the think tank and the local governance in different regions is neglected, and the research on the qualitative research is scarce. Therefore, on the basis of the existing research, with data collection from the local network media think tank, it is proposed to carry on the quantitative analysis and evaluation of the relationship between the local think tank activity and the local governance modernization to construct the theoretical model, as well as to promote the efficiency of the think tank activities and local governance modernization to further improve the guiding significance.

3 Model building

3.1 Theoretical models and data sources

Based on the traditional geographical location method, this paper chooses the local think tank in the east, middle and west of China as the research object, combines the evaluation standard of the network media think tank and the local governance modernization, which calculates the correlation coefficient between the local governance modernization and the territorial network media think tank (The theoretical model shows in Figure 1).

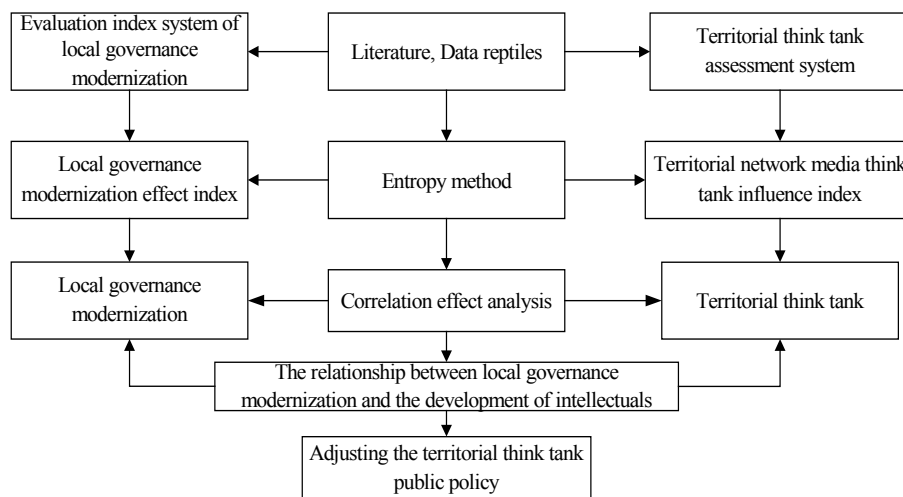


Figure 1 Theoretical model of the relationship between local governance modernization and territoriality

This paper analyzes the relationship between territorial think tank and local governance modernization, and takes the data of 16 provinces and cities in eastern, middle and west of China as the object of study. The data of the network media think tank are derived from the ideological and political schools of the party and government departments, think tanks, college think tanks, military think tanks, corporate and social think tanks, research institutes and the academy of social sciences think tank site, WeChat public number, microblogging account, forum and mobile APP, including the basis of large data platform. The study period is from 2015 to 2016. The basic data of the selected indicators are collected from the "China Statistical Yearbook-2015" and "China Statistical Yearbook-2016", "China Urban Statistical Yearbook", "China Procuratorial Yearbook", "CTTI source think tank MRPA evaluation report (2015-2016)" and "China think tank Large data report (2016)", "Toutiao Gsdata Index" and other information. All data is appropriately treated.

3.2 Evaluation of the effectiveness of local governance modernization

(1) Index system construction

Promoting the modernization of local governance is to reform the local government governance system and governance capacity to adapt to the requirements of modern social development, requiring

local governments to uphold the concept of modern governance on the basis of reforming its governance system. It is an important part of the modernization of the state governance system and the governance capability is to carry out its governance function in accordance with the law and effectively promote the sustainable economic growth and social justice, freedom and equality in the governance area. It is a systematic project, should be an operable, measurable practice. The United Nations, the World Bank and other important international organizations, as well as Chinese and foreign academic experts and scholars have developed a number of government governance on the modernization of the index system. Kim, Halligan et al. (2005) argued that by analyzing the key elements of the modernization process and clarifying the basic characteristics of local governance capacity building in this context, finding the fit of the two, and by answering “for what”, “who is to build”, “how to build” the three theoretical problems, to construct a “concept-structure-process” assessment analysis framework that includes the target vision, policy behavior and ability feedback^[11]. Yang Chen et al. (2016) constructed a six-level index, covering “economic governance, political governance, cultural governance, social governance, ecological governance and party building”, and the “industrial structure distribution, per capita GDP, Engel Coefficient” and so on a total of 28 secondary indicators based governance system and governance capacity of modern indicators system^[12]. Li Xian-qi (2015) pointed out that the basic framework of the local governance assessment model should take into account the structure of governance and the structure of governance behavior, the need to reflect the main body of government administrative governance, social organizations and enterprises and other non-administrative role, but also reflect the local governance between the main structure, the process of the governance system and the difference between the governance process and the effect and the degree of relevance and so on^[13]. These indicators of the assessment from the target is the state or the general sense of the government, and the lack of local government governance characteristics based on the development of local government governance modernization index system. Only from the local government’s statutory functions to select and design indicators, in order to truly reflect the actual situation of local government governance.

Both the subjective and the objective indicators are supported by the relevant data, and the availability of these data must be open and easy to handle, so that the measurement system is operational. At the same time, the measurement index system must be scientific. Therefore, the measure of local governance modernization should not only include the result indicators of local government governance, objective indicators and subjective indicators of input and process, but also fully reflect the advanced modern governance concept, namely, rule of law, democracy, responsibility, efficiency, limited , cooperation coordination and so on. In order to design a scientific and effective evaluation index system, we must follow the system, focus, operability, effectiveness, comparability of several basic principles, so that it can be objective, comprehensive and accurate reflection of local governance modernization, and effectively promote the community “The liberation of productivity (efficiency)” and “The liberation of human nature”^[14]. Based on the research results of Tang Tian-wei and Cao Qing-hua and other scholars, this paper establishes the evaluation index system of local governance modernization effect, including two primary indicators, namely, the modernization of local government governance system and the modernization of local government governance ability, eight secondary indicators including administrative system, administrative staff quality, party building, economic governance, political governance, social governance, cultural governance and ecological civilization governance and 31 three indicators (as shown in Table 1).

(2) Entropy method determining the weight and index

Indicator weights reflect the importance and impact of the indicators on the overall assessment, directly affecting the final assessment results. After determining the index system for the evaluation of the effectiveness of local governance modernization, it is necessary to analyze the importance of each evaluation index relative to the overall assessment effect, that is, to determine the weight of each index. In order to objectively and truly reflect the importance and influence degree of the evaluation index on the effect of local governance modernization, this paper uses the entropy method to objectively empower the index weight.

Entropy method is to determine the index weight by highlighting the local difference, and then

calculate the comprehensive score of each sample. It is a relative value. Therefore, the entropy method is applied to the relative evaluation of multiple indexes. The weighting of the entropy method is determined based on the actual situation of the index data, avoiding the doping of the subjective factors, so the weight of each index can be determined objectively and the basis of the evaluation is more scientific.

In the weight calculation process, we use the formula:

$$e_j = -K \sum_{i=1}^m p \ln p_{ij} (0 \leq e_j \leq 1) \quad (1)$$

to calculate the entropy of the index (there was $K = \frac{1}{\ln m}$, m is the number of samples), and as a basis to determine the weight of the evaluation index, that is, the weight of the index j is

$$w_j = \frac{h}{\sum_{j=1}^n h} \quad (2)$$

(Among them, the index difference coefficient is $h_j = 1 - e_j$), as shown in Table 1. Finally, use the formula:

$$x_{ij} = \frac{x_{ij} - \min_i \{x_{ij}\}}{\max_i \{x_{ij}\} - \min_i \{x_{ij}\}} \quad (3)$$

There was ($i = 1, 2, 3, \dots, m; j = 1, 2, 3, \dots, n$) after the poor standardization of the new data x'_{ij} obtained, the index of the maximum value of 1, the minimum value of 0, the remaining values Are between 0 and 1. The data will be dimensionless processing, based on

$$F_i^k = \sum w_j^k x_{ij}^k \quad (4)$$

(Where i is the number of samples, k is the secondary index, j is the third level index), and 16 comprehensive evaluation values of regional governance indicators are shown in Table 2 and Table 3.

Table 1 Local governance modernization evaluation index weight system

Primary indicators	Secondary indicators	Third-level indicators	Weights
Local Government Governance System Modernization (Qualitative indicators)	Administrative system of modern	Authority (The relationship between government and market enterprises, civil society), organizational design (position staffing is reasonable, clear functions, small government (streamline the administrative structure)), decision-making system (major decision-making hearing rate, budget development of public participation), The mechanism of power operation (the degree of responsibility and responsibility, the autonomy of public officials, policy stability and continuity)	-
	The modernization of administrative staff	Education, professional, age, human resources development (to participate in training and training related to their own jobs, training results)	-
	Party modernization	The degree of government political integrity and and the effectiveness (government implementation efficiency), army building (the party's absolute leadership of the army), propaganda and construction (the party to the network media guidance level)	-
Local Government Governance System Modernization	Modernization of economic governance	Per capita GDP (yuan)	0.0332
		Technology R & D Fund (ten thousand yuan)	0.0313
		Local fiscal revenue (hundred million yuan)	0.0328
		Resident consumption index (%)	0.0338

Primary indicators	Secondary indicators	Third-level indicators	Weights
(Quantitative indicators)		Per capita disposable income (yuan)	0.0333
		Household per capita consumption of food (kg)	0.0338
	Modernization of political governance	Traffic accident situation (times)	0.0319
		City area (square kilometers)	0.0323
		Corruption index (piece)	0.0323
		Candidate (person)	0.0327
	Modernization of social governance	Social organization	0.0322
		Number of insured (medical) (ten thousand)	0.0317
		Social and urban rescue (ten thousand yuan)	0.0322
		Community service	0.0316
		Social worker (person)	0.0312
		Per capita disposable income (yuan)	0.0333
	Modernization of cultural governance	Number of people employed (ten thousand)	0.0325
		Number of persons in culture and related industry (unit)	0.0317
		Per capita possession of public library collection (volume)	0.0322
		Per capita possession of public library collection (person)	0.0331
		Number of colleges and universities	0.0334
		Education funding (ten thousand yuan)	0.0329
		Scientific and technical activities R & D staff full-time equivalent (person years)	0.0311
	Modernization of ecological management	Number of valid patents (pieces)	0.0300
		Water pollution control index (ten thousand tons)	0.0324
		Waste gas pollution control index (ten thousand tons)	0.0328
		Waste disposal targets (ten thousand tons)	0.0303
		Afforestation area (hectares)	0.0318
		Environmental management investment (ten thousand yuan)	0.0322
		Cultivated land area (thousand hectares)	0.0324
	Sudden environmental events (times)	0.0318	

Table 2 Evaluation values of local governance modernization evaluation indicators

Cities	Modernization of economic governance	Modernization of political governance	Modernization of social governance	Modernization of cultural governance	Modernization of ecological management
Beijing	0.0960	0.0212	0.0640	0.0695	0.0145
Shanghai	0.1087	0.0098	0.0606	0.0687	0.0196
Tianjin	0.0902	0.0085	0.0231	0.0279	0.0118
Jiangsu	0.1457	0.0692	0.1421	0.1696	0.0929
Guangdong	0.1199	0.0813	0.1711	0.1874	0.1011
Zhejiang	0.1009	0.0521	0.0971	0.1035	0.0660
Shandong	0.1114	0.0924	0.1181	0.1239	0.1283
Anhui	0.0605	0.0526	0.0495	0.0643	0.0613
Henan	0.0755	0.0772	0.0627	0.0930	0.1027
Hubei	0.0742	0.0422	0.0586	0.0699	0.0688
Jiangxi	0.0724	0.0230	0.0361	0.0411	0.0453
Inner Mongolia	0.0643	0.0191	0.0292	0.0092	0.1370
Shaanxi	0.0511	0.0250	0.0357	0.0415	0.0978
Guizhou	0.0567	0.0205	0.0411	0.0119	0.0711
Gansu	0.0621	0.0132	0.0355	0.0036	0.0593
Sichuan	0.0747	0.0656	0.0803	0.0669	0.0937

Table 3 Evaluation of local governance modernization index

Location	Guangdong	Jiangsu	Shandong	Zhejiang	Henan	Sichuan	Hubei	Anhui
Ranking	1	2	3	4	5	6	7	8
Index	0.6608	0.6195	0.5740	0.4196	0.4111	0.3811	0.3137	0.2882
Location	Shanghai	Beijing	Inner Mongolia	Shaanxi	Jiangxi	Guizhou	Gansu	Tianjin
Ranking	9	10	11	12	13	14	15	16
Index	0.2674	0.2652	0.2587	0.2511	0.2179	0.2013	0.1737	0.1615

3.3 Evaluation of network media think tank data indicators

Through the WeChat, Sina microblogging and other network media think tank, this paper captures data initially and batch collection, builds the basic database, and then does data cleaning and accurately matching. At the conclusion, it accesses to 99 think tanks of WeChat public number, think tank microblogging experts and think tanks in all active WeChat public numbers traces of data. Firstly, information is identified and collected from the WeChat public numbers. In the WeChat public number, we identify the effective official number of the think tank, with collection of these public account information and all the information issued, reading amount and points of praise, and issue a message on the maximum number of readings, the maximum number of praise, starting articles and other data identification. Secondly, the traces of data are collected (micro-reference) from the think tank in all active WeChat public numbers. From the active WeChat public numbers who published all the articles, we collect all the articles referencing to the 99 think tank, and extract information from these WeChat public articles, such as data field, reading amount, points of praise, article position, the original situation and other information. The Third is think tank microblogging expert identification and information collection. From the microblogging account, the fuzzy recognition of the extraction of real-name authentication users; and then accurately match the 99 think tank experts from the microblogging to find out the concerned fans and microblogging article data (Forwarding number, Point number, Comment total) owned by these think tank experts. Finally, the network media think tank evaluation index weight system (As shown in Table 4) is constructed, and the network media think tank index is calculated by the entropy method (As shown in Table 5).

Table 4 Network media think tank large data index evaluation system

Primary indicators	Secondary indicators	Weights
WeChat public number Influence	The number of articles published in the public year	0.1
	The number of readings of all the articles of the public year	0.2
	The public number of all the articles of the year	0.2
	The number of posts published by the public number	0.1
	The number of articles published by the public issue (Number of articles / 8)	0.1
	The ratio of praise for public headlines (Point of praise / Reading quantity)	0.3
Microblogging expert Influence	Number of expert fans	0.4
	Experts microblogging plus total of the year	0.1
	Experts all blog posts forward total of the year	0.2
	The proportion of all the comments of the experts in the year	0.1
	The proportion of all the blog points of praise	0.1
	The proportion of all the blog posts forward	0.1
Micro-reference index	The number of articles cited in the active WeChat quota	0.4
	The number of articles in the active quota cited in the public quotes	0.2
	Active WeChat in the public number of the reference to the think tank	0.2
	Active WeChat public number cited in the importance of the text (Position in 8 articles)	0.2

Table 5 Local network media think tank evaluation index statistics

Location	Shanghai	Jiangxi	Sichuan	Beijing	Jiangsu	Henan	Tianjin	Guangdong
Ranking	1	2	3	4	5	6	7	8
Index	1	0.983	0.901	0.865	0.639	0.555	0.379	0.332
Location	Zhejiang	Shandong	Inner Mongolia	Gansu	Anhui	Anhui	Shaanxi	Hubei
Ranking	9	10	11	12	13	14	15	16
Index	0.241	0.212	0.173	0.162	0.150	0.103	0.040	0

3.4 Empirical analysis

The gray relational analysis is a quantitative description and comparison of the development trend of the system. Based on the mathematical basis of spatial theory, the correlation coefficients and correlations between several comparison sequences are determined according to the four principles of gray correlation between normality, even symmetry, integrity and proximity^[15]. The purpose is to seek the main relationship between the various factors in the system, to identify the important factors affecting the target value, so as to master the main features of things to promote and guide the system to develop rapidly and effectively. The advantages lie in the fact that the amount of data is not too high, no matter how much and less data can be analyzed; its mathematical method is non-statistical method and can better adapt to various situations of data system, with more practicality. The modeling principle of gray relational analysis is as follows.

The sequence of the system characteristic behavior $X_0 = \{x_0(k) | k = 1, 2, \dots, n\}$ is selected as the reference sequence, and the other sequence of actions in the system $X_i = \{x_i(k) | k = 1, 2, \dots, n\}$ ($i = 1, 2, \dots, m$) is the comparison sequence. So $\xi \in (0, 1)$, order :

$$\gamma(x_0(k), x_i(k)) = \frac{\min_i \min_k |x_0(k) - x_i(k)| + \xi \max_i \max_k |x_0(k) - x_i(k)|}{|x_0(k) - x_i(k)| + \xi \max_i \max_k |x_0(k) - x_i(k)|} \quad (5)$$

$$\gamma(X_0, X_i) = \frac{1}{n} \sum_{k=1}^n \gamma(x_0(k), x_i(k)) \quad (6)$$

The coefficient ξ is called the resolution coefficient, usually take 0.5, $\gamma(X_0, X_i)$ called the gray correlation degree between X_0 and X_i . The evaluation index system of local governance provides k indicators for the model. As a series of each program, it becomes the “scale” in the model, and the different provinces are equivalent to the different “schemes” in the steps. Through the above four steps, the order of the relationship between the two provinces is calculated, which reflects the interaction between the local governance modernization and the territorial think tank.

Through the relevant data collection of the indicators from the 16 provinces and cities, on the basis of that to be processed, original data is required and analysis. By weighted calculation, the weighted correlation value of each province is obtained, and the weighted correlation value of each index is added in units of provinces, that is, the weighted correlation degree of each province is obtained showing in Table 6.

When the resolution coefficient ξ is equal to 0.5, the correlation between the two factors is greater than 0.6 indicates that there is a significant correlation. It can be seen from Table 6 that the weighted degree of association between the governance modernization and the territorial think is obviously higher and relatively high, indicating that the development of the territorial think tank at the present stage can promote the improvement of the modernization level governance and in the higher level of modernization of the activities of the think tank is more frequent (As shown in Figure 2). Territorial think tanks can also promote the modernization of local governance to a certain extent. In addition, in all the variables, the think tank to promote the modernization of economic governance to promote the role of the largest.

Table 6 Local governance modernization and territory think tank relationship assessment weighted correlative degree

Absolutely Associated	Modernization of economic governance	Modernization of political governance	Modernization of social governance	Modernization of cultural governance	Modernization of ecological management	Local Governance Modernization Total
Beijing territorial think tank	0.857	0.912	0.665	0.812	0.587	0.767
Shanghai territorial think tank	0.814	0.713	0.608	0.698	0.595	0.686
Tianjin territorial think tank	0.611	0.856	0.870	0.664	0.502	0.701
Jiangsu territorial think tank	0.934	0.676	0.774	0.663	0.606	0.731
Guangdong territorial think tank	0.632	0.622	0.874	0.648	0.756	0.706
Zhejiang territorial think tank	0.809	0.821	0.771	0.835	0.910	0.829
Shandong territorial think tank	0.714	0.624	0.581	0.931	0.583	0.687
Anhui territorial think tank	0.805	0.726	0.895	0.743	0.713	0.776
Henan territorial think tank	0.755	0.772	0.627	0.930	0.827	0.782
Hubei territorial think tank	0.842	0.822	0.786	0.699	0.788	0.787
Jiangxi territorial think tank	0.724	0.730	0.761	0.611	0.553	0.676
Inner Mongolia territorial think tank	0.843	0.791	0.892	0.792	0.907	0.845
Shaanxi territorial think tank	0.811	0.750	0.557	0.815	0.778	0.742
Guizhou territorial think tank	0.567	0.605	0.611	0.719	0.611	0.623
Gansu territorial think tank	0.721	0.732	0.855	0.836	0.593	0.747
Sichuan territorial think tank	0.747	0.656	0.803	0.669	0.837	0.742

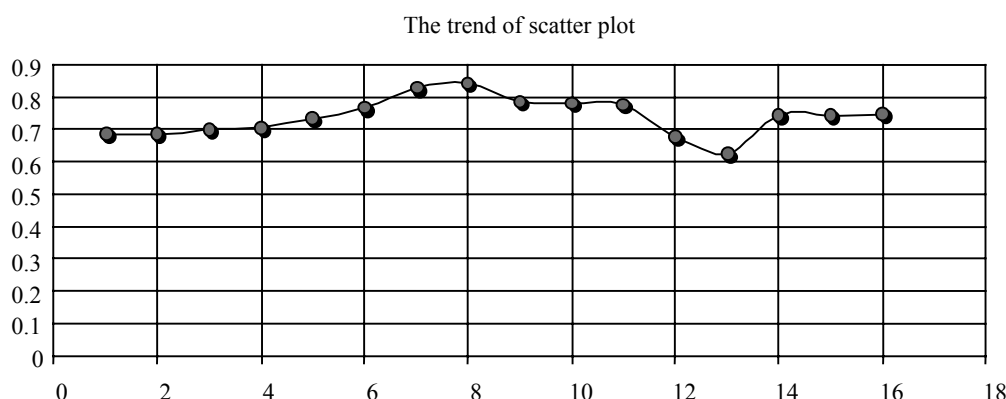


Figure 2 Local governance modernization and territory network media think tank relationship assessment overall weighted correlative degree change

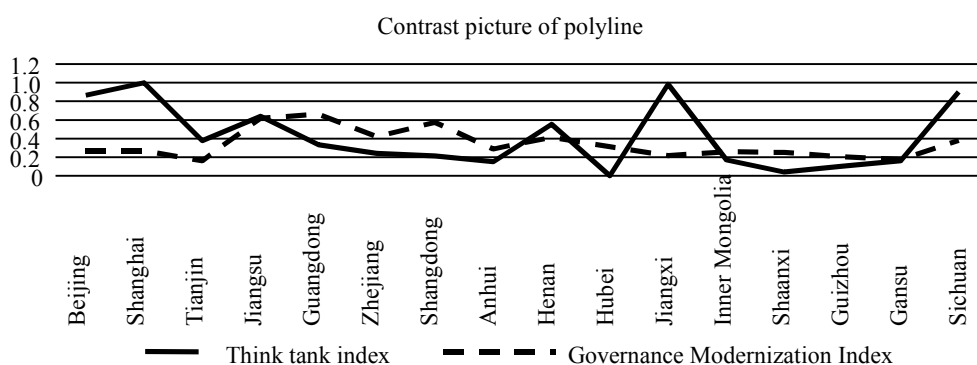


Figure 3 Local governance modernization of the provinces and territorial network media think tank sub-indicators assessment of the situation

At the same time, according to Table 3 and Table 5, we obtain the local governance and territorial network media think tank sub-indicators assessment of the situation (Figure 3). In specific, according to Figure 3 and from the primary indicators of the provinces of the weighted contribution rate of view, the relationship between the various aspects of the process has made a good effect, but its aspects in the process of the importance and contribution are different. The development of territorial network media think tank on the level of modernization of local governance there are obvious areas. The comparison of the relevant statistical data shows that the development of the regional network media think tank in the central region has the greatest effect on the promotion of the modernization level of governance, and the western region is the second, and the eastern region is the smallest in the eastern region. The network media of think tank has the strongest influence on the modernization of ecological management and the modernization of cultural governance in the western region. The network media think tank in the eastern region has a strong influence on the modernization of its economic governance, the modernization of political governance and the modernization of social governance. Modernization and the impact of modernization of cultural governance is the most intense, on the whole, the network media think tank has the greatest effect on the modernization of economic governance and the modernization of ecological management. The influence of the local governance modernization and the development of the network of the territorial network is “S” and the geographical network media think tank has the cluster effect under the influence of the local governance modernization level.

4 Conclusion and policy implications

As an exploratory study, this paper firstly utilizes OLS model to fit the data in individual level. This model treat age, sex, education, income, migrant, social trust, political interest and sense of happiness as control variables, and set up retrospective/prospective assessment of economic development, retrospective/prospective assessment of social welfare and retrospective/prospective assessment of pure public good supply as explanatory variables. Table 2 shows the result of OLS.

According to the current situation of China's governance modernization and the empirical conclusion in this paper, we can get the following inspiration. In the context of the governance system and the modernization of governance capacity, China's local network media think tank has developed rapidly, and in the local social and economic development, government governance to the important role, but there are still regional differences and lack of redundancy. The relationship between governance modernization and territorial network media think tank is in line with the "S" curve, which is mainly due to the different stages of governance in different regions. At present, China's central region is in the stage of rapid development of governance and modernization. The rapid expansion of urban space and the increase in the demand of government decision-making on the network media think tank have led to the increase of the network media think tank and the modernization of governance. The western region is in the early stage of governance modernization to the rapid development of the transition stage, the degree of modernization is relatively low, the development rate is relatively slow, and the region for the network media think tank demand is limited and concentrated in the economic modernization of governance. The modernization of ecological management, the network media think tank and the modernization effect of governance are obviously smaller than that of the central region. The eastern part of China is in the stage of development of governance modernization, the level of modernization is high, and the number of think tanks is huge. The speed of the impact slowed down, the demand for regional demand decreased, which leads to the minimization of the relevance of the network media think tank and the modernization of governance. Therefore, from the promotion of local governance capacity modernization, think tank construction and development still has huge space and potential, should take active and effective policy measures, increase the network media think tank construction, make it more effective for the management of modern service. It can be carried out from the following aspects.

(1) Enhancing the innovation power of think tanks, enhancing the effectiveness and relevance of think tank services

It is necessary to adhere to the principle of seeking truth from facts and innovation and development. Based on the differences between provincial conditions and cultural practices, we should grasp the position of the local think tank in the local governance system, and proceed from the research subject and the reality from the research object, in order to carry out systematic, forward-looking research, long-term research, follow-up research and comprehensive analysis of the governance problems, which faced by the realization of the modernization of the land, relied on scientific independent analysis and investigation, and constantly looked for the real answer to the question. To sum up the practical experience of refining, and constantly enrich the theoretical innovation and academic foundation, standing on a just and objective position to the government put forward a variety of policy options to maintain their credibility in the eyes of decision makers and the public, and then for the government to provide innovative, operable and practicality of the best policy recommendations.

(2) Focusing on think tank differentiation, promoting the East, Central and Western think tank coordinated development

From the above analysis, we can see that China's think tank construction is coming into the "blowout" period. The overall development is fast, but it exposed the heavy quantity, light quality, local development unbalanced and other issues. Therefore, the local planning and classification guidance should be carried out for different types of think tanks in terms of their strategic positioning, operation mechanism, research direction and so on. The eastern region can follow the principle of less and fine on the existing think tank for integration, timely elimination of "dormant think tank". The western region should continue to strengthen the government on the school think tank, social think

tank, military think tank and other work of the think tank support. On the basis of the existing research project funding support, western region should establish the work of the special funds for the protection of funds, and encourage all types of private intellectuals in the western region played a comparative advantage, do the overall industry development plan, in the capital registration, market access as much as possible to reduce the threshold. In the central region the construction of the think tank should be further precise docking, by breaking the institutional mechanisms of restraint, and constantly improve the internal system, through the operation of standardized operation to achieve efficient operation, to activate its research motivation.

(3) Enhancing the information of think tank, making full use of “large data, mobile, cloud” technology

The value of the scientific research results of the think tank depends on not only the size of its own value, but also on the breadth and depth of its spread. Therefore, the local think tanks should carry out a wide range of scientific communication activities for the public to explain the government policy, evaluate the rationality of the policy, the transfer of think tank ideas, do a good job of government decision-making and public feedback bridge link, and thus significantly improve the think tank network resources Indicator score. At the same time, with the help of new media, new technology, social networks and the impact of the cloud, they also need to strengthen cooperation with the media, the establishment of the media friendship reproduced links, rich website content and public participation, open up personalized columns, the formation of regular public opinion collection, tracking , the mechanism of judgment, so that the public can understand the detailed think tank ideas, think tank products, improve the policy recommendations of the scientific and participatory.

(4) Providing a relaxed think tank policy environment, the progressively realizing various types of think tanks competing trend

Local governments should create favorable conditions for the development of think tanks, establish diversified channels of policy communication, broaden the channels of achievement transformation, build a reasonable think tank subsidy system and break the monopoly of data resources on policy research, make some basic data more open, and comprehensive social sharing, to give think tanks more independent research space and competitive space, to enhance the international influence of China’s think tank, to promote the international development of decision-making advice. At the same time, they should improve the tolerance of government and society, so that from different views, suggestions, through rational discussion, debate, there can be screened and smoothly the “wisdom channel”. Opening the competition and strict precision assessment mechanism is to ensure the quality of decision-making advice, the formation of official think tank, semi-official think tanks and civil think tanks of the powerful force to reduce the possibility of decision-making mistakes, to enhance the effectiveness of think tank to participate in local governance.

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Partnership Governance in Rural Domestic Drinking Water Supply and Conservation in India

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Abstract Water is essential for survival and growth. The limited availability and supply of potable water have given rise to competition among water users. Water supply is one of the key civic amenities which are provided by government. Even though state through its public agencies has moral mandate to take care of the wellbeing of population but for making it possible the collaboration of all key stakeholders is needed. The provisioning of water supply has been gradually decentralized in India. There are host of projects in the area of rural drinking water supply and conservation in which national and/or international organizations are collaborating. Many local level projects have been/are being conceived and implemented within the parameters laid down in official policies. At several places the projects are producing desirable impacts but overall the performance of these projects is not heartening. As water is essential for survival and keeping in view the fast depleting drinking water sources, it is essential that drinking water supply and conservation projects should be judiciously planned and implemented with heartfelt involvement of stakeholders.

Key words Drinking water, Partnership governance, Stakeholders, Local level projects, Rural areas

1 Introduction

Water, one of the most important chemical substances on earth, is essential for survival and growth. Healthy human growth needs adequate, safe and potable water. The limited availability and supply of potable water have given rise to intensive competition among users and consequently, water issues have become a bone of contention among the stakeholders. *Kofi Annan*, former Secretary General of the United Nations (1997-2006), has once rightly remarked, “fierce national competition over water resources has prompted fears that water issues contain the seeds of violent conflict. If all the world’s peoples work together, a secure and sustainable water future can be ours”.¹

The highly remarkable value of water has led to number of initiatives at global level for conservation and development of water resources. At national level the issues of judicious use and conservation of water resources as well as significance of public cooperation in development process have attracted the attention of policy makers since the inception of planned development in the country. The *First (1951-1956)* and *Second (1956-1961) Five Year Plan* documents though comprised no separate chapters related to water resources but definitely implied them. It was in the *Third Five Year Plan (1961-1966)* document a separate chapter on natural resources (Chapter 12—Natural Resources²) was included for the first time. However, it was the *Seventh Five Year Plan (1985-1990)* document which included a distinct chapter related to water supply (Volume 2, Chapter 12—Housing, Urban Development, Water Supply and Sanitation). Since then water supply has remained a distinguishable chapter in subsequent five year plan documents.

Water consumption in India is increasing unabated. Alongside of fulfilling necessities there is continuous wastage of water on uneconomic and unproductive activities. Water bodies are being polluted at an alarming pace with highly unsatisfactory recharging rate. All these have resulted in a situation of acute water shortage in the country. Water crisis is affecting the state of human well-being and is forcing people to live in abject poverty and remain vulnerable. Therefore, one of the biggest challenges of human development in the twenty-first century is to get rid of water crisis, conserve and develop water bodies and ensure water security.

1 United Nations Department of Economic and Social Affairs, International Decade for Action ‘Water for Life’, Transboundary Waters, http://www.un.org/waterforlifedecade/transboundary_waters.shtml

2 Chapter 12—Natural Resources in Third Five Year Plan document covers land resources, forest resources, water resources, fisheries, mineral resources, energy, and resources of the sea.

2 Partnership governance as an essential aspect in rural domestic drinking water supply and conservation in India

Water supply is one of the key civic amenities which are provided by government. The government is under obligation to ensure that potable drinking water is sufficiently and easily available to all households in every settlement of the country. Drinking water supply utilities in India are mostly government owned and maintained bodies. These utilities are usually in ramshackle condition so they are striving hard to recover their operation and maintenance costs and hardly earn any revenue for further capital investment.¹

Even though state through its public agencies has moral mandate to take care of the wellbeing of population but for making it possible the collaboration of all key stakeholders² is needed. *National Water Policy, 2002* clearly advocates a participatory approach to water resources management and favors private sector participation for enabling sustainable drinking water availability.

The provisioning of water supply has been gradually decentralized in India. At official level, the role of Government of India (GOI) is mainly that of facilitator. The Union *Ministry of Drinking Water and Sanitation* is nodal ministry for overall policy, planning, funding and coordination of programmes of drinking water and sanitation in the country. One of the key functions of the ministry is to build partnerships and synergize efforts with other sector partners, organizations, United Nations and bilateral agencies, non-governmental organizations (NGOs), research and development institutions and civil society.³

The roles of state governments and local bodies are more direct in implementing drinking water supply and conservation schemes. State governments have main responsibility of ensuring the availability of drinking water facilities. Their efforts are supplemented by GOI which provides financial assistance under *National Rural Drinking Water Program*⁴, which has been termed as movement towards ensuring people's drinking water security in rural India.⁵ The national goal of the program is to provide every rural person with adequate safe water for drinking, cooking and other domestic basic needs on a sustainable basis.⁶ The institutional set up of program runs from national level to village level. The national level set up comprises Ministry of Drinking Water and Sanitation, national technical support agencies, national level technical experts and National Informatics Centre.

1 Domestic drinking water supply projects face number of challenges related to finance, manpower, technology, operation, political expediencies, administrative lethargy etc. The projects face risks in terms of insufficient funding, lack of dependable specialized project competencies, not so readily forthcoming support from stakeholders, disappointing community involvement, weak local supply chains for water supply services, missing precise and specific terms and conditions in contracts, shifting of time schedules and targets, undue cost escalations and inappropriate pricing mechanisms for services. Besides, there are other concerns which relate to quality of services, uncovered/partially covered habitations, sustainability of sources, depletion of ground water table, drying of drinking water sources and outliving of utility of systems.

2 Key stakeholders in water supply and conservation are central government, state governments, public agencies, water utilities agencies, financing institutions, private companies, non-governmental organizations, civil society organizations, think tanks, researchers, architects and area planners.

3 Ministry of Drinking Water and Sanitation, Government of India, New Delhi, About Us, <http://www.mdws.gov.in/about-us>

4 The Government of India launched *Accelerated Rural Water Supply Program* in 1972-1973 to provide assistance to states and union territories to expedite the coverage rate of drinking water supply. With the launching of *Technology Mission on Drinking Water and Related Water Management* in 1986 the program acquired a mission approach. The name of this mission was changed to *Rajiv Gandhi National Drinking Water Mission* in 1991-1992. Again in 2009 the mission was renamed as *National Rural Drinking Water Program*.

5 Ministry of Drinking Water and Sanitation, Government of India, New Delhi, National Rural Drinking Water Program, Framework for Implementation, Cover Page, http://mdws.gov.in/sites/default/files/NRDWP_Guidelines_2013.pdf, Updated 2013.

6 Ministry of Drinking Water and Sanitation, Government of India, New Delhi, National Rural Drinking Water Program, Framework for Implementation, Page no. 01, http://mdws.gov.in/sites/default/files/NRDWP_Guidelines_2013.pdf, Updated 2013.

At state level the chief agencies are State Water and Sanitation Mission (with chief secretary/additional chief secretary/development commissioner as chairperson to furnish policy guidance), State Level Scheme Sanctioning Committee (with secretary, Public Health Engineering Department (PHED)/Rural Water Supply and Sanitation Department (RWSSD) as chairperson), Source Finding Committee, state technical agencies, water and sanitation support organization¹; and main executing departments are PHED and RWSSD/Board. The institutional set up at district level includes District Water and Sanitation Mission (headed by chairperson of *zilla parishad*² to prepare district water security plan); at sub-district level Block Resource Centre (to function under administrative control of block *panchayat* to provide continuous support in terms of awareness generation, motivation, mobilization, training and handholding to village communities, *gram panchayats* and GPWSCs/VWSCs); and at village level *Gram Panchayat* Water and Sanitation Committee (GPWSC)/Village Water and Sanitation Committee (VWSC) (to plan, design, and implement all in-village drinking water and sanitation activities with active participation of villagers).³ *National Rural Drinking Water Program guidelines*, issued in 2009 and revised in 2013, delineate the roles to be played by NGOs and civil society organizations in information dissemination, institutional building, engagement at state level, planning and technical support and programme monitoring.⁴ The guidelines further provide for public-private partnership as it enables the state to have access to skilled operator and service providers and at the same time to hold back regulatory and supervisory responsibilities.

Swajaldhara, launched on 25 December 2002, is another major program of GOI for reforming rural drinking water supply sector. *Swajaldhara guidelines*, issued by Department of Drinking Water Supply of Ministry of Rural Development in June 2003, clearly lay down fundamental reform principles which are to be followed by state governments and implementing agencies. The principles are: adoption of a demand-responsive, adaptable approach along with community participation based on empowerment of villagers to ensure their full participation in the project through a decision making role in the choice of the drinking water scheme, planning, design, implementation, control of finances and management arrangements; full ownership of drinking water assets with appropriate levels of *panchayats*; *panchayats*/communities to have powers to plan, implement, operate, maintain and manage all water supply and sanitation schemes; partial capital cost sharing; 100% responsibility of operation and maintenance by users; an integrated service delivery mechanism; taking up of conservation measures through rain water harvesting and ground water recharge systems for sustained drinking water supply; and shifting the role of government from direct service delivery to that of planning, policy formulation, monitoring and evaluation, and partial financial support.⁵

As the threat of climate change is looming around all over the world and is most likely to influence hydrological cycle, therefore, GOI has launched *National Water Mission*⁶ to take care of concerns regarding its impact on water resources of the country. One of the goals of the mission is promotion of citizen and state actions for water conservation, augmentation and preservation (goal 02). Mission document identifies strategies, having partnership and participation as key elements, which

1 Ministry of Drinking Water and Sanitation, Government of India, New Delhi, National Rural Drinking Water Program, Framework for Implementation, Page no. 75-77, http://mdws.gov.in/sites/default/files/NRDWP_Guidelines_2013.pdf, Updated 2013.

2 *Zilla parishad* or district council is third-tier of *panchayati raj* or rural local government system. Its intermediate or second-tier is block *panchayat* and first-tier is *gram* or village *panchayat*.

3 Ministry of Drinking Water and Sanitation, Government of India, New Delhi, National Rural Drinking Water Program, Framework for Implementation, Page no. 78-86, http://mdws.gov.in/sites/default/files/NRDWP_Guidelines_2013.pdf, Updated 2013.

4 Ministry of Drinking Water and Sanitation, Government of India, New Delhi, National Rural Drinking Water Program, Framework for Implementation, Page no. 23, http://mdws.gov.in/sites/default/files/NRDWP_Guidelines_2013.pdf, Updated 2013.

5 Department of Drinking Water Supply, Ministry of Rural Development, Government of India, New Delhi, *Swajaldhara Guidelines*, <http://megphed.gov.in/knowledge/schemes/Swajguide.pdf>, 13 June 2003.

6 National Water Mission is a part of National Action Plan on Climate Change which was unveiled on 30 June 2008.

have to be followed for attaining this goal.¹ States have to formulate state specific action plans for water sector. A memorandum of understanding, signed between North Eastern Regional Institute of Water and Land Management (NERIWALM), Tezpur, Assam state and National Water Mission on 16 February 2016, authorizes NERIWALM to act as nodal agency to get state specific action plan for water sector prepared from twelve states—Andhra Pradesh, Assam, Chhattisgarh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, Telangana, Uttarakhand and West Bengal—in Phase I.²

Union Ministry of Drinking Water and Sanitation has launched *Water Security Pilot Projects* for achieving drinking water security in a holistic manner through measures for source sustainability, participatory integrated water resources management led by *gram panchayats* and preparation of drinking water security plans by villages.³ Ten states have selected over-exploited fifteen blocks for pilot projects.⁴

Union Ministry of Water Resources, River Development and Ganga Rejuvenation started *Jal Kranti Abhiyan (Water Revolution Campaign)* on 05 June 2015 to consolidate water conservation and management through a holistic and integrated approach involving stakeholders. Objectives of this mass movement are strengthening grass root involvement of all stakeholders in water security and development schemes; encouraging adoption/utilization of traditional knowledge in water resources conservation; utilizing sector level expertise from different levels in government, NGOs, citizens etc; and enhancing livelihood security through water security in rural areas.⁵

There are host of projects in the area of rural drinking water supply and conservation in which national and/or international organizations are collaborating. *GOI*, with the assistance of *World Bank*, is implementing *Rural Water Supply and Sanitation Project for Low Income States of Assam, Bihar*,

1 The main strategies identified in National Water Mission document comprise empowerment and involvement of rural local government institutions, urban local bodies, water users' associations and primary stake holders in management of water resources; sensitization of elected representatives of over-exploited areas; encourage participation of NGOs in various activities related to water resources management; and encourage corporate sector to take up, support and promote water conservation, augmentation and preservation within the industry and as part of corporate social responsibility (Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India, New Delhi, National Water Mission under National Action Plan on Climate Change, Comprehensive Mission Document, Volume-I, Page no. 11-12, [http://wrmin.nic.in/writereaddata/ NationalWaterMission/nwm16606419934.pdf](http://wrmin.nic.in/writereaddata/NationalWaterMission/nwm16606419934.pdf), April 2011).

2 National Water Mission, Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India, New Delhi, State Specific Action Plan, <http://www.nationalwatermission.gov.in/?q=node/76>

3 Ministry of Drinking Water and Sanitation, Government of India, New Delhi, Water Security Pilot Projects, [http:// www.mdws.gov.in/water-security-pilot-projects](http://www.mdws.gov.in/water-security-pilot-projects)

4 List of over-exploited blocks with among the highest levels of groundwater development selected by states for pilot projects

(as on 17 January 2012):

State	Block	District
Andhra Pradesh	Gorantalu	Anantpur
	Moothey	Nalgonda
	Pileru	Chittoor
Gujarat	Kheralu	Mahesana
Haryana	Kaithal	Kaithal
Karnataka	Mulbagal	Kolar
Maharashtra	Warud	Amrawati
	Morshi	Amrawati
Madhya Pradesh	Piploda	Ratlam
	Rampur Baghelan	Satna
Punjab	Dhuri	Sangrur
Rajasthan	Raipur	Bhilwara
Tamil Nadu	Morappur	Dharmapuri
Uttar Pradesh	Barauli Ahir	Agra
	Mauranipur	Jhansi

Source: Ministry of Drinking Water and Sanitation, Government of India, New Delhi, Water Security Pilot Projects, <http://www.mdws.gov.in/water-security-pilot-projects>

5 Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India, New Delhi, Frequently Asked Questions on Jal Kranti Abhiyan, [http://wrmin.nic.in/writereaddata/JKA_FAQ\(1\).pdf](http://wrmin.nic.in/writereaddata/JKA_FAQ(1).pdf)

*Jharkhand and Uttar Pradesh*¹ for a period of six years (from 2013-2014 to 2019-2020) with the objective to improve piped water supply and sanitation services for selected rural communities through decentralized delivery systems, and to increase the capacity of participating states to respond promptly and effectively to an eligible crisis or emergency.² The project is being implemented with direct participation of beneficiary communities through strengthening of *gram panchayats*.

IRC, the Hague situated international organization which supports water, sanitation and hygiene services for life, is involved in *Community Water Plus Project*, a research project, in India. This project has inquired into twenty cases of community managed rural water supply programs in the country. The performance of these twenty projects is briefly described in Table 1:

Table 1 Performance assessment of community managed rural water supply programs

S. No.	Name and Location of Project	Performance Assessment of Project
01.	Gravity-fed Water Supply Project in Mandi District, Himachal Pradesh State	Indo-German bilateral pilot project was executed in villages where drinking water was supplied from gravity-fed systems. Irrigation and public health departments of state government provided considerable software backing during execution phase but continuous support is not there. Consequently, levels of service delivery have been falling over a period of time.
02.	Himmotthan Water Supply and Sanitation Initiative, Uttarakhand State	Himmotthan Society with assistance from local voluntary organization Himalayan Institute Hospital Trust is supplying water to villages from gravity-fed systems. Village Empowerment Committees (VECs) have been constituted to look after day-to-day operation and maintenance of these systems. Tariffs from villagers are collected by them. Tariff amount is used for incurring all operation and minor maintenance expenses. There is an insurance scheme to meet capital expenses and VECs contribute to this scheme. Due to these initiatives communities are receiving water supply as per the standards.
03.	24x7 Water Supply in Punjab State: International Funding for Local Action	World Bank provided financial support for Punjab Rural Water Supply and Sanitation Project. Since the inception of this project remarkable betterment has been there in rural water supply and service levels have improved tremendously. High quality infrastructure has been created and there is continuous water supply in villages. <i>Gram Panchayat</i> Water and Sanitation Committee (GPWSC) owns and operates this water supply system. There is much greater transparency and accountability in its functioning. People are ready to pay more user charges. Department of Water Supply and Sanitation (DWSS), through which all funding and support is directed, has created an enabling work environment with changes being introduced in its working methods.

1 The project is expected to directly benefit a rural population of about 78 lakh persons with improved piped water supply covering approximately 17,400 habitations in 2,150 *gram panchayats* in the following 33 districts of the four states:

a) Assam: 07 districts (Hailakandi, Kamrup, Jorhat, Morigaon, Bongaigaon, Sonitpur and Sibsagar);
 b) Bihar: 10 districts (Patna, Begusarai, Munger, Muzzafarpur, West Champaran, Nalanda, Nawada, Saran, Purnia and Banka);
 c) Jharkhand: 06 districts (East Singhbhum, Dumka, Garwah, Palamu, Saraikela-Kharsawan and Khunti);
 d) Uttar Pradesh: 10 districts (Gorakhpur, Kushi Nagar, Deoria, Basti, Ghazipur, Ballia, Allahabad, Sonbhadra, Bahraich and Gonda) (Press Information Bureau, Government of India, New Delhi, Cabinet Committee on Economic Affairs, The World Bank assisted Rural Drinking Water Supply and Sanitation Project for Low Income States of Assam, Bihar, Jharkhand and Uttar Pradesh, <http://pib.nic.in/newsite/PrintRelease.aspx?relid=102268>, 02 January 2014).

2 The World Bank, Washington DC, the United States of America, Projects and Operations, Rural Water Supply and Sanitation Project for Low Income States, <http://projects.worldbank.org/P132173/india-rural-water-supply-sanitation-project-low-income-states?lang=en>

S. No.	Name and Location of Project	Performance Assessment of Project
04.	Community-managed Water Supplies in Rural Jaipur: <i>Swajaldhara</i> Scheme 15 Years on, Rajasthan State	State government has provided villages with high quality infrastructure and households receive better water supplies. But there are inter-village variations in long-term success of scheme. Public Health Engineering Department (PHED) is providing limited assistance to scheme. Assistance is mostly technical in nature and is reactionary. Village Water and Sanitation Committees (VWSCs) have raised concern about source of water which has become a limiting factor. It is beyond technical and financial capabilities of VWSCs to locate new sources of water with complex treatment.
05.	Users becoming Managers of Water Supply—an Initiative of Water and Sanitation Management Organization (WASMO), Gandhinagar District, Gujarat State	WASMO is a special purpose vehicle which was established with the help of Government of Netherlands to endorse community-owned water supply and sanitation systems. It is working as a facilitating organization which is empowering communities to take care of their water sources and drinking water supply system at local level. WASMO has established <i>Pani Samitis</i> (Water Committees), sub-standing committees under <i>gram panchayat</i> and are community service providers in villages to supply safe drinking water. Through these committees, which have full financial autonomy, community is actively involved in decision making at all levels of planning and implementation stages. They are responsible for operation and maintenance of water supply systems. There is transparency in their operations and water supplied by them meets national quality norms. Most of the households have been covered. Tariff is collected by <i>Pani Samiti</i> once in a year along with other taxes.
06.	Support to Community-managed Rural Water Supply by Water and Sanitation Management Organization in Kutch District, Gujarat State	Like Gandhinagar district, in Kutch district also performance of <i>Pani Samitis</i> is remarkable. Most of the households have continuous water supply. In several villages tariff is collected per individual per month.
07.	Empowered Community – Secured Safe Water Supply in Parts of Dhar District, Madhya Pradesh State	PHED and <i>Vasudha Vikas Sansthan</i> (VVS), a NGO, are working in partnership for providing safe drinking water in villages by adopting community management model. There is good coverage of hand pumps managed by PHED. In some villages PHED provides support for piped water supply from tube-wells. VVS has focused its work activities on several challenging villages where groundwater sources have presence of fluoride mineral to dangerous extent. It has provided direct help to twenty villages and ancillary software support to other thirty-five villages. It has involved community based Drinking Water Sub-committees which are responsible for operation and minor maintenance activities of water supply system. Since these are not very professional in their working so their service level is limited but still they are able to supply water which does not have dangerous levels of fluoride.
08.	Public Health Engineering Department Support to Community-managed Water Supply, Amravati District, Maharashtra State	Maharashtra <i>Jeevan Pradhikaran</i> (MJP), water supply and sewerage board of Water Supply and Sanitation Department, is implementing ‘one hundred and fifty-six villages and two towns scheme’ in Amravati district which has improved provisioning of water services in the district. MJP has exclusive responsibility for implementation and maintenance works. Though there are VWSCs but their role is highly limited. They mainly act as ‘watch dogs’ on MJP’s performance and also help it in its tasks. Service delivery level in villages is high. Water supply is continuous, of adequate quantity and good quality.

S. No.	Name and Location of Project	Performance Assessment of Project
09.	Understanding Resource Implications of “Plus” in Community Management of Rural Water Supply Systems in India: Case of Public Health Engineering Department, Chhattisgarh State	PHED is responsible for implementation of National Rural Drinking Water Program and for providing support for community management of water supply schemes. PHED staff have direct role in initial phase as they have to ensure real functioning of schemes and that community is able to have necessary experience for operating them. Then their day-to-day operation is handed over to <i>gram panchayats</i> which act as service providers. PHED provides grants every year to service providers while other support is in form of testing of water quality and technical help for major repair works. PHED has well qualified technical staff but they are found lacking in community mobilization and capacity building skills.
10.	Understanding Resource Implications of “Plus” in Community Management of Rural Water Supply Systems in India: Case of Drinking Water and Sanitation Department (DWSD), Jharkhand State	DWSD has responsibility for execution of rural water supply schemes and for providing help to VWSCs, the service providers. There is <i>Jal Sahiya</i> (Water Volunteer), who is one of the daughters-in-law of village, in each VWSC. There is informal support relationship between DWSD’s engineers and VWSC’s members. Department provides training to VWSC’s members as well as technical and financial assistance for operation and maintenance of water supply systems. Department pays electricity bills for water supply systems which cover a large part of their operating expenditure.
11.	Understanding Resource Implications of “Plus” in Community Management of Rural Water Supply Systems in India: Case of <i>Gram Vikas</i> in Odisha State	<i>Gram Vikas</i> , an international famed NGO, is providing all requisite assistance to VWSCs, the service providers, for execution of piped water supply schemes in villages through community empowerment. Its aim is to provide continuous water supply in villages with cost effective and high quality solutions. There is high willingness among users to pay for services and they have feeling of ownership and pride in schemes. The work on schemes starts only when every household agrees to participate in it. There is an element of simplicity in schemes, and their operation manuals and designs are easily comprehensible.
12.	Effects and Costs of Support to Community-managed Hand-pumps in Patharpratima, West Bengal State	Water for People, an international level NGO, has adopted a practical approach to address water needs in Patharpratima block in South 24 Parganas district. It is working on an approach that everyone should be reached and provides lasting services. Tube-wells with hand-pumps are being installed and repaired. Coordination is done with <i>gram panchayats</i> and block offices for ensuring adequate water supply. Water committees have been set up for operation and maintenance activities and their members are trained. A network of <i>Jalabandhus</i> (Friends of Water) undertakes major repair works. Since international NGOs are not permitted by the government to implement programs directly so Water for People is executing programs in partnership with local NGOs. Service delivery level in villages is high.
13.	Gravity Based, Community-managed Rural Water Supply in South Sikkim District, Sikkim State	Sikkim has attained almost 100% coverage in provisioning of drinking water with piped supply systems from springs. Rural Management and Development Department (RMDD) is empowering <i>gram panchayats</i> to improve water supply. Departmental engineers provide essential technical support to <i>gram panchayats</i> . A local person called ‘barefoot engineer’ is trained by department on important fitter/plumber techniques and water quality monitoring. It is ensured by RMDD that members of <i>gram panchayats</i> and VWSCs are trained on water management related issues at local level. There is sustainable service delivery due to community participation at all stages. There is 100% tariff payment by community members.

S. No.	Name and Location of Project	Performance Assessment of Project
14.	Tribal Communities Managing Water Supply—a Success Story from Meghalaya State	Two departments in Meghalaya namely PHED and Soil and Water Conservation Department are providing necessary facilities to ensure provision of safe drinking water to communities. Communities are usually managing service delivery on their own. In several cases they take some assistance from government departments.
15.	The Plus of Additional Professionally Treated Drinking Water, Telangana and Andhra Pradesh States	Rural Water Supply and Sanitation Department of Telangana and <i>Panchayat Raj</i> and Rural Development Department of Andhra Pradesh are providing assistance to communities for delivery of water service. Three prominent social sector organizations— <i>Bala Vikasa</i> , <i>Naandi</i> Community Water Services, and Safe Water Network-Modern Architects for Rural India—essentially involve community members in delivery of water. Reverse osmosis technology is used by them for water purification. Purified water is sold at outlets. Water committees have been informally set up. Their members are trained for operation, maintenance and management of service delivery systems.
16.	<i>Jal Nirmal</i> and Beyond: Supporting Community Management of Rural Water Supply in Belagavi District, Karnataka state	<i>Jal Nirmal</i> , a World Bank assisted rural water supply and sanitation project implemented from 2002 to 2014, provided a good support environment for involvement and management of project by communities. After 2014 state government has continued to provide professional support. Communities through their VWSCs are efficiently taking care of project as these are competent and have adequate resources. Community members are regularly paying tariffs and payments are above government norms. So it has been possible to meet a large proportion of operational expenditure for water supply and deliver services.
17.	<i>Jalanidhi</i> Program for Professional Service Delivery in Nenmeni <i>Panchayath</i> , Wayanad District, Kerala State	<i>Jalanidhi</i> is a World Bank assisted rural water supply and sanitation project in Kerala state through which government has started following a new service delivery model—Nenmeni <i>Sudha Jala Vitharana</i> Society (NSJVS—Nenmeni Drinking Water Supply Society)—for rural water supply service. NSJVS is a NGO which manages a piped water supply scheme in Nenmeni <i>gram panchayat</i> . It has a General Body comprising end users, and an Executive Committee whose members are democratically elected. Team members manage scheme very professionally so there is 100% coverage with clean drinking water.
18.	Community-managed Rural Water Supply in Malappuram District, Kerala State	A demand for a new scheme is raised in <i>gram sabha</i> , a meeting of all adults residing in an area covered by <i>gram panchayat</i> . The demand is then forwarded to <i>gram panchayat</i> for consideration which sends a formal proposal to Kerala Water Authority (KWA). KWA prepares a technical detailed project report which is sent to <i>gram panchayat</i> for necessary action. <i>Gram panchayat</i> mobilizes funds which are deposited with KWA. The scheme is then completed by KWA and handed over to beneficiary group. An engineer from Local Self Government Department is positioned by <i>gram panchayat</i> for supervision of work progress. An ISO 9001-2008 certificate has been awarded to Kodur <i>gram panchayat</i> in Malappuram district for high quality of service delivery.
19.	Rural Water Supply Program in Kathirampatti Village <i>Panchayat</i> , Tamil Nadu State	Piped water supply system has emerged step by step in Kathirampatti village <i>panchayat</i> in Erode district. This system completely covers all villages within jurisdiction of village <i>panchayat</i> and water is made available at doorsteps. Due to risk of apparently shortage of drinking water, village <i>panchayat</i> has started to take water from Combined Water Supply Scheme, in which water is derived from far-away river beds or reservoirs so that continuity and adequacy of water supply remain. Rural Development and <i>Panchayat Raj</i> Department and Tamil Nadu Water and Drainage Board (TNWDB) provide necessary help to <i>panchayats</i> in drinking water sphere. Clean water service level in village <i>panchayat</i> is high, and community participation in operation and maintenance of system is much higher. Most of the user-charge is timely collected.

S. No.	Name and Location of Project	Performance Assessment of Project
20.	Supporting Community-managed Water Supply in Morappur Community Development Block, Tamil Nadu State	INWDB administered a program in Morappur community development block in Dharmapuri district, which was having contaminated and reduced supply of ground water, with an objective to deal with issues of sustainability of water source with community involvement. Later on, Centre of Excellence for Change, a national level NGO, took forward this initiative. VWSCs (service providers) and <i>gram panchayats</i> collaborate with each other in accomplishing operation and maintenance tasks of water supply system. Communities are actively superintending the system.

Source: IRC, IRC–International Water and Sanitation Centre, the Hague, the Netherlands, Case Studies Community Water Plus Project, <https://www.ircwash.org/news/case-studies-community-water-plus-project>, 11 June 2015.

Union Ministry of Drinking Water and Sanitation has formulated *Corporate Social Responsibility (CSR) Guidelines for Rural Drinking Water Projects* to enable corporate sector to initiate activities for provision of adequate and easily accessible potable drinking water along with its conservation and recharge. Central public sector enterprises (CPSEs) and corporate houses have to spend a certain allocated fund each year on drinking water supply and conservation projects in rural areas.¹ They may take up such projects in partnership with state government, *gram panchayats/VWSCs*, principal national level NGOs, social non-profit organizations and section 08 companies under the Companies Act, 2013.²

Hindustan Aeronautics Limited (HAL), national aerospace and defence company, has in 2017 ceded *Kumudvathi river rejuvenation projects* to village *panchayats* in Bengaluru rural district, Karnataka state. HAL has supported and sponsored mini watersheds through International Association of Human Values of Sri Sri Ravi Shankar, universally acclaimed spiritual personality. CSR initiatives were taken up in a region that includes Tavarekere, Thyamagondlu, Mondigere, Teppadabeguru mini-watersheds benefitting number of villages in the form of revival of obsolete bore-wells, open wells, natural water resources; protection of drinking water sources; rise in natural vegetation; and conservation of eco-hydrological cycle.³

Tata Motors Limited, a multi-national largest automotive manufacturing company of India, through its *Amrutdhara* initiative has sought to provide access to safe drinking water to

1 According to guidelines all profitable CPSEs have to select CSR activities and compulsorily assign budget in following way:

Profit after Tax (PAT) of CPSE in Previous Year	Range of Budgetary Allocation on CSR and Sustainability Activities (as Percentage of PAT in Previous Year)
Less than Rupees 100 Crore	03% - 05%
Rupees 100 Crore to Rupees 500 Crore	02% - 03%
Rupees 500 Crore and Above	01% - 02%

As per section 135 (CSR) of the Companies Act every company having net worth of rupees five hundred crore or more, or turnover of rupees one thousand crore or more or a net profit of rupees five crore or more during any financial year shall constitute a CSR Committee of the Board. Board shall ensure that company spends, in every financial year, at least two per cent of its average net profits made during three immediately preceding financial years (Ministry of Drinking Water and Sanitation, Government of India, New Delhi, Corporate Social Responsibility Guidelines for Rural Drinking Water Projects, 3, Snapshot of CSR Guideline, Page no. 04, http://www.mdws.gov.in/sites/default/files/CSR_Guidelines_Water.pdf).

2 Section 08 of the Companies Act relates to formulation of companies with objects of promotion of commerce, art, science, sports, education, research, social welfare, religion, charity, protection of environment or any such other object (Ministry of Corporate Affairs, Government of India, New Delhi, The Companies Act, Page no. 28, <http://www.mca.gov.in/Ministry/pdf/CompaniesAct2013.pdf>), 2013.

3 PSU Connect, HAL Dedicates Kumudvathi River Rejuvenation Projects to the Villagers, <http://www.psuconnect.in/news/hal-dedicates-kumudvathi-river-rejuvenation-projects-to-the-villagers/14679>

underprivileged communities. Under this initiative about 330 drinking water projects have been completed benefitting more than 96,000 individuals.¹

Tarun Bharat Sangh, a NGO, under leadership of *Rajendra Singh (Waterman of India)*, a famous water conservationist, is working in about 1,000 villages in semi-arid region of Rajasthan state. The organization is highly active in reviving water supply systems through decentralized community participation by making use of indigenous knowledge and traditional technology. Its mode of operation consists of capacity building (organizing awareness campaigns, street plays, village meetings and trainings); community self-reliance (formation of village councils/*gram sabhas*, community participation in decision making and community contribution in conservation works); and adaptation to climate change (construction of rain water harvesting structures in village based on decisions of *gram sabha* and participatory conservation of forests according to rules defined by *gram sabha*).² Visible impacts of pursuits are rise in ground water level and availability of surface water, rejuvenation of seasonal rivulets, incessant availability of drinking water, greater community participation in natural resource management, setting women free from arduous task of fetching water from long distances, increase in agriculture production and employment opportunities, and improvement in standard of living of masses. Rajendra Singh for his commendable efforts was awarded with *Ramon Magsaysay Award* in 2001 in community leadership category and *Stockholm Water Prize* in 2015.

Arghyam, a public charitable foundation, in partnership with other NGOs developed *A Framework for Rural Drinking Water Quality Management: Collating Experiences from Voluntary Sector* in 2012 to lend an element of objectivity in creation of community engagement structure in rural water supply sector. This pragmatic framework consists of common actions required for sustainable water quality management. It comprises five phases and their activities which are presented in Table 2.

Table 2 Phases and activities of a framework for rural drinking water quality management

Phase	Main Activities
I : Assessment of Baseline Situation	Sourcing/Generating Baseline Data
	Community Interaction
	Institutional Activities
II : Participatory Planning	Participatory Planning
	Community Action
	Institutional Activities
III: Water Quality Monitoring – Training and Data Management	Training
	Water Quality Data Generation, Management and Dissemination
	Community Action
	Institutional Activities
IV: Implementation of Safe Water Options	Training
	Implementation
	Social Audit
V : Operation and Maintenance	Regular Operation and Maintenance Activities
	Activities Linked to Long Term Project Sustainability

Source: Arghyam, Bengaluru, *A Framework for Rural Drinking Water Quality Management: Collating Experiences from Voluntary Sector*, Page no. 17, 27, 39, 49, 63, <http://arghyam.org/wp-content/uploads/2013/06/WQM-BOOKLET-1.pdf>, 2012.

The GOI launched *Swachh Bharat Abhiyaan (Clean India Mission)* on 02 October 2014 to address issues of cleanliness and solicited support of corporate sector which has evinced keen interest in this regard. Many companies are implementing programs in area of water, sanitation and hygiene (WASH). Mumbai city based *Samhita Social Ventures Private Limited*, a social sector consultancy organization; and *India Sanitation Coalition*, launched by Federation of Indian Chambers of

1 Tata Motors, 70th Annual Report, Corporate Social Responsibility at Tata Motors, <http://www.tatamotors.com/investors/financials/70-ar-html/csr.html>, 2014-15.

2 Sisodia, Maulik, *Restoring Life and Hope to a Barren Land, 25 Years of Evolution*, Tarun Bharat Sangh, Jaipur, Page no. 11, <http://tarunbharatsangh.in/wp-content/uploads/2013/06/25years.pdf>, 2009.

Commerce and Industry under its aegis, conducted a study for examining CSR endeavors in WASH by 100 public and private sector companies which had largest CSR budgets during 2013, 2014 and 2015 on Bombay Stock Exchange 500 index. Major findings of study are: out of 100 companies, 90 companies undertook at least one CSR initiative in WASH during reported three years; of these 34 companies were public sector ones; in total 164 programs were implemented; heavy engineering and manufacturing industries and fast-moving consumer goods companies were more active in WASH initiatives; most of the initiatives were taken up in Maharashtra state followed by states of Uttar Pradesh, Rajasthan, Gujarat, Tamil Nadu and Karnataka; there were very few initiatives in north-eastern states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura; and initiatives of most of the companies were taken up in rural areas.¹

Partnership governance in domestic drinking water supply and conservation endeavors in rural areas, where successful, is leading to community empowerment, a sense of conservation of water bodies among people, change in perception of governmental staff, continuous supply of potable drinking water, and conservation of water bodies. However, such cases are few in number but are worthy to be emulated.

3 Assessment of partnership governance in rural domestic drinking water supply and conservation initiatives

Partnership governance in rural domestic drinking water supply and conservation has been emphasized upon since long time. Many local level projects have been/are being conceived and implemented within the parameters laid down in official policies. At several places projects are producing desirable impacts but overall their performance is not heartening in terms of water quality, quantity, source network, storage capacity, connection rate, payment of tariffs and user charges etc. There are success stories in different parts of the country and leadership has played an important role in these progressing cases. Local level leaders have helped to create an agreeable support environment which has facilitated overall project management and has efficaciously sustained community engagement. However, the success stories remain mostly unknown due to lack of their institutionalization in government policies, work plans and procedures.

Government guidelines are not very clear regarding role delineation of various stakeholders. This prevents developing proper work enabling environment and support arrangements. Lack of adequate coordination among government departments and local service providers is complicating the situation. Inadequate transparency in cost sharing between government and beneficiary communities is creating difficulties in fund mobilization.

The functioning of government agencies and local service providers is being hampered by shortage of financial and material resources. Its major apparent effects are scarcity of staff and equipments, endangering of safety standards, cutbacks and rationing in frontline services, lowering of service delivery standards and rising deficits.

Local service providers are not very professional in their working. Many times they do not have effectual mechanisms for water safety planning, water quality monitoring and testing, fixing of user charges, managing cash, book keeping and accounting. They do not have adequate staff like pump operators, mechanics, plumbers, electricians, guards, bill collectors, assistants etc. Even they do not have continuous means of paying them and building their capacity. All these are creating paucity of manpower and demoralizing existing staff.

Technical government departments, having pre-dominant technical orientation, remain primary implementing agencies. Their officials often lack soft skills and are not much competent in mobilizing and empowering community.

Local level organizations are not genuinely involved in all phases of water supply and conservation projects. Their insufficient empowerment and unwillingness of governmental agencies to

¹ Samhita Social Ventures Private Limited, Mumbai and India Sanitation Coalition, New Delhi, Corporate Social Responsibility in Water, Sanitation and Hygiene, What are India's Top Companies up to?, Page no. 09-16, <http://ficci.in/spdocument/20736/CSR-in-WASH.pdf>

involve them in a bona fide way are main reasons responsible for it. Members of *gram panchayat*, VWSCs, and other similar bodies are not suitably trained and, hence, lack appropriate work capacity.

Adequate community mobilization mechanisms are not there in reality. Awareness generation materials such as posters, handbills, pamphlets, booklets, banners etc. are developed in several cases by concerned government departments and given to service providers. Departments oftentimes do not develop these materials in attractive forms and easy to understand language, and do not make them timely available to local service providers in sufficient quantity. Even these providers do not use them pertinently.

Government departments are facing dearth of organized ways to assess performance of local service providers. Feedback about their performance levels is mostly obtained informally from field staff. At the same time, government officials generally do not take much interest in complaints made by local service providers and so they improperly retort to them.

The rural areas in India are facing host of problems simultaneously like food insecurity, water and energy crisis, poor health and education status, lack of basic amenities to state a few. Addressing these problems suitably requires determined leadership at local level which is found to be missing many a time. Besides, local level leaders continuously face the dilemma of fittingly prioritizing the prevailing problems as nearly all of them are widespread and need a strategic approach to iron them out. As most of the local leaders are working to further their own political ambitions so their functioning is found to be wanting in strong-willed and single-minded approach. They try to pretend themselves as rightful representatives of people but they lack a clear vision regarding what exactly is contemplated to be done by them. So they are not capable enough to mobilize community members demonstrably and bring them together instantly in resolving the rampant problems. In such a situation vested interests are able to take advantage of prevailing shortcomings and reap most of the benefits of community projects and, thus, depriving true intended beneficiaries.

4 Suggestions

Water is a highly precious national asset and having equitable access to potable water is a basic human right. As water is essential for survival and keeping in view the fast depleting drinking water sources, it is essential that drinking water supply and conservation projects should be judiciously planned and implemented. In the perspective of resource crunch government agencies should prioritize projects in following ways for maximizing service delivery results:

(1) Water should be regarded as a scarce natural resource which should be conserved like an economic asset. A truly scientific approach should be abided with pro-active perspective.

(2) Successful incidents of community management of rural water supply and conservation should be institutionalized in government policies and plans of action so that their strategies could be followed by others.

(3) Areas facing acute water scarcity should be focal ones where measures should be taken up on war footing. The challenges being faced by rural drinking water supply and conservation sector should be critically comprehended and authentic information related to it should be gathered.

(4) Habitation-driven mission mode approach should be followed in a targeted manner to address the problem of increasing coverage of access to safe drinking water.

(5) Local bodies and intended beneficiaries should be integrally involved in all priority tasks to ensure sustainability of drinking water sources.

(6) Collaboration with professional institutions, NGOs and community based organizations should be sought and suitable inputs provided by them should be used in planning and management pursuits.

(7) Private sector should be encouraged and given incentives to work in tandem with public administration machinery.

(8) Provisions relating to collaborations with stakeholders and their role specificity should be clearly provided in contracts to make work accomplishment easier by developing mutual understanding.

(9) Precise benchmarking indicators for water facilities should be adopted. Benchmarking schemes, conforming to international standards, should be taken up at national and regional levels.

(10) Resourceful financing and investment strategies involving lowest possible cost should be worked out so that the amount for making large capital investments can be easily mopped up.

(11) Preference should be given to adoption of low cost technological solutions, which mostly make use of local resources, to bring down construction and maintenance costs.

(12) Quality of services should be consistently maintained for all beneficiaries. Wherever subsidized service delivery is taking place it should be rationalized.

(13) Performance comparisons of water facilities by peer groups should be regularly done.

(14) Civil society organizations should play pro-active role in awareness generation, capacity building, advancing feasible alternative ways of service delivery, reinforcing local supply chains etc. Social media may be used by them for this purpose. Awareness should be spread by broadcasting relevant programmes on radio and television; making use of print media; making arrangements for essay writing, poster making, painting competitions; and organizing workshops, seminars, conferences on water management issues.

(15) Civil society organizations should be motivated to take up routine organization and management activities and mobilize resources. They should professionalize their work approach. They may outsource some of their works to expert individuals and institutions.

(16) Water users' management groups should be activated to manage water bodies as common property.

(17) Acquisition of land, procurement of materials, submission of financial and physical reports, and release of funds to implementing agencies should be done timely.

(18) Support programmes such as human resource development, research and development, management information system, computerization of establishments etc. should be zealously followed. Human resource development plans should emphasize on skill upgradation, inculcation of user sensitivity and raising public enlightenment.

(19) Informed public debates should be often held. Concerted discussions should take place among stakeholders who should make deliberate efforts to find reasonable systemic solutions for prevailing problems.

(20) Monitoring cells at central, state, district and sub-district levels should be revamped. Quality monitoring and surveillance system should be installed at all relevant places.

(21) Metering system for water usage should be improved for making correct assessment of actual quantity of water used, proper billing of water supply and streamlining revenue collection.

(22) An integrated approach for water supply, waste management and conservation of water sources should be followed up for improving health standards and quality of environment.

5 Conclusions

Partnership governance in rural domestic drinking water supply and conservation sector is an integral part of blueprint of planned development and cornerstone of various initiatives in the country. Despite some success, this type of governance is being hampered by several constraints which are curtailing its true potential. For the benefit of all concerned and for brightening national prospects partnership governance should be earnestly embarked upon and followed as the most primary strategy to ensure reasonable supply of drinking water to masses in rural areas and to conserve water resources. Even though water supply and conservation issues are quite complex but experiences have shown that these issues can be handled astutely.

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Reducing Complexity and Risks in Public Decision Making

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Abstract This paper discusses the complex issues and considerations surrounding the public decision-making process as well as approaches and solutions to address them. It first explores the factors that contribute to the uncertainty and risks in public decision making, and the dilemmas and frustrations that challenge today's public servants. Then, it focuses on how to make sound public decisions, first by elucidating the inevitability and necessity of exercising administrative discretions, and then by analysing the mechanisms of decision-making including determinants of a sound public decision, measures for avoidance of risks and uncertainties and resolutions of conflicts. It concludes that both quantitative and qualitative approaches may have to be utilized to ensure rationality and effectiveness of considerations, on the basis of which recommendations are to be made as to how to achieve fair and sound judgment and decisions, which aim to be ethical, legal, risk-free, socially and economically viable.

Key words Administrative discretion, Ethical, Dilemma, Public decision-making

I Introduction

The environment for public management has become increasingly complex over the past decades as a result of overall political, economic and technological changes. Osborne and Gaebler's concept of "re-inventing government" with the business-like, entrepreneurial mechanisms of the private enterprise has permeated almost every sphere of public service with growing emphasis on cost and efficiency while at the same time the demand and strive for quality and excellence of public service has never stopped. The advance of computer technology and the internet and advent of information age have greatly facilitated public access to government information, public supervision of government performance and increased public awareness and request for closer mutual contact and interaction with public servants. The change or movement of the political climate towards a more liberalized and democratic government has created the need for more transparency in government and increased public participation and involvement in policy planning, consultation and decision-making processes. All these changes have thus posed serious challenges to the old ethics and values like neutrality and anonymity that public servants have traditionally upheld as the basis for implementing government directives and carrying out their administrative duties. They have substantially added to the uncertainties and risks in making public decisions and in identifying responsibilities for the outcomes.

This essay is therefore aimed at addressing the complicated conflicting decision-making environment. Analysis will be made to examine these changes in the public service setting, the impacts they have on traditional values, and the dilemmas public servants are confronted with. It is primarily intended for current or new public servants who don't have adequate knowledge and understanding of the basic public service concepts, particularly the fundamental, core values related to decision-making and responsibility-taking. It is hoped that it will serve to improve their knowledge and awareness of the complexity of the conflicting environment and difficulty of rational judgment surrounding public decision making. It will then move to the topic of how to make sound public decisions, covering issues like the inevitability of administrative discretions in public decision-making, uncertainty or risk avoidance measures, as well as conflict resolution techniques, on the basis of quantitative and qualitative analysis of factors affecting the decision making processes. Recommendations will be made as to how to achieve fair, ethical, legal, risk-free decisions.

2 Analysis of factors affecting public decision making

2.1 Core values and ethic standards upheld by today's public servants

These refer to the long-tested and enduring beliefs, ideals and codes of conducts for public service that govern or influence the way public servants think, behave and act. They are the overarching guidance that constitutes the professional and spiritual basis on which public servants develop their

attitudes, take actions, and make decisions by selecting choices from among available means and ends.

Sherman (1998^[1]) believes the following to be the most common and widely held core values for public service, ie, honesty and integrity, impartiality, respect for the law, respect for persons, diligence, economy and effectiveness, responsiveness, and accountability. Some of these values are dominant traditional values, like integrity and honesty, respect, and accountability; others are a result of the changing new age, such as economy and effectiveness which strive for cost-consciousness, and impartiality which aims at equity or social harmony. All these values are important. They affect and complement each other. In spite of the variety, however, there is one thing in common: it has been the ultimate goals of the public servants to pursue and follow the most cherished values and ethic standards for the benefit and interest of the public.

For the sake of simplification and convenience, Sherman's ten core public service values can be condensed to three R values, ie, respect, responsibility, and responsiveness. Respect should cover the full spectrum from self respect, respect of relationships with political masters, clients, subordinates and peers or colleagues, to respect of law and legislature; Responsibility basically should comprise the notion of the people to whom public servants have obligations and the things for which they are held accountable; Responsiveness provides for satisfying the changing needs of Government and for dealing with the public. It has the connotations of listening to the people the public servants work with and serve and act in a timely and sensitive way.

2.2 Major changes affecting the values and standards of today's public service

Today's public service management has been under the influence of a number of factors, which have exerted a strong but varying impact upon the values of public service upon which public decisions are based. They work individually or jointly to influence interpretation of the above mentioned values and judgement of the situation and consequently determination of decision options.

In recent years, with the economic, technological, social, political and ideological changes on a global and national scale, many new phenomena have emerged that are affecting or even transforming public service and the values it has held. Most typical of these phenomena have been significant changes in the nature, size, and operations of public service.

The most significant change is the emergence and popularity of the New Public Management (NPM) characterized by government decentralization and regeneration concepts and by the managerial or entrepreneurial spirit of the private sector gradually and extensively entering the public service. While the absolute actual size of Government has been on the rise, its operation has been drastically reduced as a result of downsizing or outsourcing. Services and programs delivered previously directly by higher levels of government are now delegated to lower levels or regions. Government officials at different levels have been given more discretion and are playing more independent roles in decision-making than before. Contracting out and privatization, a typical feature of the private sectors, have become a frequent part of public service. As is noted by Demmke (2004^[2]), there have been growing relationships between public, private, public-private and non-profit sector interactions. Public service's expansion into public-private partnerships has become a new form of policy implementation and service delivery.

As a result of NPM progressively penetrating into and reforming public service to make it more efficient, as well as E-government quickly replacing the traditional mode of office-style government, Government has been experiencing cutbacks in both financial and human resources and government officials have been under the constraint to do more with less, The cutback in human resources has created a low public service morale and uncertainty among public servants about their career advancement or their future life. These human and financial deductions in the name of efficiency will inevitably lead to sacrificing of quality of service, and shifting of emphasis from process to outcome of service delivery. Horton (2006, 538^[3]) discussed such conflicts or difficulties presented by NPM-styled reforms, asserting that the emphasis on values such as "productivity, efficiency, risk taking, independence and accountability" can often be in conflict with "traditional Weberian values of procedural correctness, equality of treatment, risk avoidance and strict adherence to rules and regulations."

Moreover, NPM and delegation activities can often result in another complexity or dilemma for

public service decision makers, ie the agencification phenomenon. As is noted by Christensen, Lie, and Laegrid (2007^[4]), the dilemma is brought about by the co-existence of two value systems, ie, the standard values of the parent body against the specific values of the agency or contractor. Thus, it could be a challenging task for both parties as they will have to ensure value alignment and consistency of quality of service between themselves, mostly with the agency values following those of the parent body. Similar situations may also occur to services that are relocated to other physicalities where organizational values and cultures could be in conflict, which may require lots of networking for common understanding and interests.

2.3 Dilemmas confronting today's public servants

The emergence of the above mentioned changes and challenges to the public service has created baffling situations for interpreting the traditional core values and posed the needs for multi-directional or multi-perspective considerations of decision criteria. Often, in the midst of confusion and uncertainty, public servants will have to take risks and make a choice among different, self-conflicting criteria and several lines of accountability to base his decisions upon. The complicated situations and the conflicting criteria add to the difficulty and complexity of the decision-making procedures and give rise to serious problems of confusion, uncertainty and risk for decision-makers in utilizing the appropriate standards for judgement, identifying the right decision choices and establishing appropriate responsibilities for them.

These changes and challenges are actually creating a new type of public servant. They have been transforming the roles of the public servant and ways he makes decisions. They have turned the traditional public servant into the manager-a business person; the manager-a political person; and the manager-an ordinary person. Management, leadership, ethics and values have all been incorporated into decision considerations for the "new public manager". Should he stick to all the rules? Or should he be flexible, change his attitude and perspectives as the situation requires? Or should he be innovative and ready to take risks? Or should he give priority to professional responsibility and accountability, acting always in an ethical and fair manner? All these problems present serious challenges to the new public manager.

To illustrate how challenging it is in today's complicated changing public service environment to make a decision that benefits all stakeholders, Dobell (1984^[5]) outlined the existence of three different conflicting potential approaches to a government service program that requires drastic staff and budget cuts: a managerial approach, a "heart-searching" approach, and a political approach. All three approaches are backed up by solid economic, ethical and political value argument (cost-consciousness, fairness and political accountability). But the outcomes of the approaches to the same problem are significantly different, because preference to one value involved will inevitably result in the sacrifice of the others.

Kreitner and Kinicki (2005^[6]), on the other hand, explains the dilemma the public servant faces in delivering services through three different types of value conflict. Intrapersonal value conflicts occur within the individual when he or she is faced with competing personal values. Interpersonal value conflicts occur between individuals with different ambitions and goals. Finally, individual-organisational value conflicts occur when the values employed by an organisation are at variance with the personal values of an employee. The challenging nature of these conflicts makes it extremely hard for the public servant to come up with a visible, clear-cut solution.

To sum up, faced with today's changing environment and challenging circumstances, it is inescapable or inevitable for today's "new public manager" or public servant in general, to experience dilemmatic situations in the course of making decisions and assuming responsibilities, or simply in his role as the bridge between the public and the government. He will always have to make a hard choice between efficiency and effectiveness, between responsibility and accountability, and between personal interest and public interest. These dilemmatic situations will be analyzed below.

2.4 Responsibility and accountability

A very important conflict the public servant may encounter rests with the notions of responsibility and accountability. There is not a clear distinction between these two notions. Often, they are used and understood interchangeably. To Kernaghan (1994^[7]), however, they mean slightly different things.

They both fall into the category of administrative responsibility or the responsibilities the public servant takes for his decisions and actions. He broke down “administrative responsibility” into subjective and objective responsibility. “Subjective responsibility” refers to responsibility or loyalty to various political actors with whom the public servant reacts. “Objective responsibility” is similar in meaning to accountability, which means the responsibility the public servants assumes to political and administrative supervisors who may impose sanctions for failure to obey directions or orders. It is clear then responsibility is more psychological or conscience-based while accountability is objective, factual or result-oriented. Conflict between these two senses of responsibility may arise if emphasis is given to only one of them.

The central issues surrounding accountability are to whom and for what public servants are held accountable or answerable. As is stated in the Principles and Values of the Institute of Public Administration of Canada (IPAC^[8]), public employees are accountable for the quality of their advice, for carrying out their assigned duties and for achieving policy and program objectives within the framework of law, legislation, prevailing constraints, direction from their superiors, and the limits of the authority and resources at their disposal. They are also accountable on a day-to-day basis to their superiors for their own actions and the actions of their subordinates. They owe their primary duty, however, to their political superiors. They are indirectly accountable to the legislature or council and to the public through their political superiors. Public servants finally have a responsibility to report any violation of the law to the appropriate authorities.

Responsibility and accountability require public servants to be answerable to both the down-side and the up-side stakeholders, and capable of “managing up and managing down” (Privy Council Office of Canada^[9]). Managing up should address the concerns of public servants in meeting the demands of their superiors, both political and administrative. While managing up ensures that the requirements of democratic government are met, it can often be at the expense of managing down, which is always concerned with the implementation of programmes, utilization of human and financial resources, and satisfaction of customers and clients.

2.5 Efficiency and effectiveness

Public servants will always have to confront this pair of challenging issues and are compelled to make a choice between these equally important, interdependent, but sometimes conflicting values. Efficiency is a measure of performance which may be expressed as the ratio between input (like labour, time, money invested) and output. It emphasizes the process of performance or activities and always conveys financial or cost-benefit implications. On the other hand, effectiveness measures the effects, impacts or extend to which an activity achieves its goals. It emphasizes the results or outcome of an activity and suggests achievement of goals or practical and social effects. An efficient process doesn’t guarantee effective results; Vice versa, effective results mayn’t be achieved through an efficient process.

Public service has always shown a tendency to shift its emphasis on the outcomes of its services, ie quality of service and client satisfaction. This conflicts with the managerial notion of cost-efficiency. But over-emphasis on cost-efficiency may result in compromising quality of service. It is up to the public employees then to make a measured decision that best encompasses both of these values. This requires them to provide service to the public in a manner which is courteous, equitable, and efficient and effective. While striving for the goals of efficiency and effectiveness, they should always be sensitive and responsive to the changing needs, wishes and rights of the public, and respectful of the legal and constitutional framework within which service to the public is provided.

As a pair of most prominent conflicting values, they emerge in the context of demands for greater cost-cutting while simultaneously being a good employer providing quality services for all (Newman, 1996^[10]). They are challenges faced by local authorities in an environment where they are expected to emulate the market mechanism of private sector firms (efficiency), yet still achieving meaningful outcomes that satisfy the needs of a wide variety of stakeholders across a wide range of service areas.

2.6 Pursuing public interest v.s. neutrality and self interest

The principle of “acting in public interest” can easily come into conflict with other key values, like neutrality and avoidance of self-serving interest. Public servants have been receiving conflicting

messages regarding their duties to act in the interest of the public. The notion that public servants should seek out and protect public interest obviously contradicts with the ethics of neutrality that they should also abide by, which requires that determining the public interest be the job of the elected officials.

“Public interest” can also conflict with “private interest.” This is because public interest is often difficult to discern and public officials tend to be motivated by and act in their own personal interest. Public servants should be aware of and resolve any conflict between their personal or private interests and their official duties in favour of the public interest. They should also seek to serve the public interest by upholding both the letter and the spirit of the laws established by the legislature or council and of the regulations and directions made pursuant to these laws.

Conflict of interest arises when the private interests of the individual are at variance with his/her official duties and responsibilities to the government. Public servants should try to avoid any form of conflict of interest. They should not engage in any business or transaction or have any financial or other personal interest that is, or may appear to be, incompatible with the performance of their official duties. Nor should they, in the performance of their official duties, seek personal or private gain by granting preferential treatment to any persons.

2.7 Confidentiality and transparency

On the one hand, public servants are required to safeguard secret and confidential information of the government. On the other, they are also required to increase openness and transparency of their operations and performance of government duties. This presents another dilemma for public servants. As required by law, public servants should not disclose to any member of the public, either orally or in writing, any secret or confidential information acquired by virtue of their official position. But at the same time, within the bounds of law and propriety, public employees should be sensitive and responsive to the needs of the public, the news media and legislators for information on and explanation of the content and administration of government policies and programs. There is no clear-cut solution to this dilemma and uncertainty between secrecy and openness, which gives public servants considerable difficulty in interpreting their duties not to divulge confidential information. Searching for a right balancing point will be the essence of the work of the responsible public servant.

3 Exploring right approaches to sound public decision making

3.1 Inevitability of exercising discretion in decision-making

The above discussion helps explain how complex the environment for public management has become as a result of overall political, economic and technological changes, and how seriously the traditional values and ethics are now being challenged and shaken due to the emergence of the differing and conflicting situations and subsequently the controversial criteria in interpreting and judging these values and ethical standards. These changes and challenges to the public service have created baffling situations for interpreting the traditional core values. They put the public servant face to face with the inescapable or inevitable dilemmas in the course of decision making and pose the needs for multi-directional or multi-perspective considerations of decision criteria.

Often, in the midst of confusion and uncertainty, public servants will have to take risks and make a choice among different, self-conflicting situations and criteria and several lines of accountability. For example, they have to make a choice between responsibility (to one’s conscience) and accountability (to rules and regulations); They also have to choose between efficiency (financial results) and effectiveness (social effects); Further they will have to choose between public interest and private interest, between confidentiality and transparency, between maintaining close ties with public and maintaining neutrality, etc.

3.2 Basis for administrative discretions

Exercising the power of discretion often requires the public servant to take actions in situations when there is no support of unequivocal, unambiguous, clearly-laid-out principles, guidelines or criteria, or in the absence of sufficient facts, information, evidence, or a reasonably certain knowledge base. Lack of these knowledge and conviction of the right criteria often makes the decision-making process risky and sometimes costly, for the outcomes of decisions made under such circumstances are

often uncertain, unexpected, undesired or against certain principles. Therefore, for the public servant to make the sound decision in exercising discretion, reduction of risks and uncertainties is essential, for it leads to an increase in possibilities of making the right decisions.

To avoid risks and to reduce uncertainties, the public servant should understand that exercising his power of administrative self discretion doesn't mean taking actions in a random and unprincipled way. He needs to know that there are a variety of guidelines and sources on which he could base his decisions on. There are, fundamentally legal, procedural guidelines; there are also globally accepted ethical, moral guiding principles; Further there are scientific, evidence-based, empirical, analytical approaches, as well as intuitive or cognitive or instinct-based approaches, approaches based on personal experience, expert authorities, and literature research, etc.

3.3 Legal and ethical considerations

The fundamental guiding principles for public servants to follow are legal and ethical considerations in decision-making. In theory and in practice, the rule of law is paramount under any circumstances. Decisions to be made must first of all fall within the framework of law. This is the priority consideration. But it is easy said than done. In real practice, interpretation of the intent and meaning of the law or legal terms and consequent actions and decisions can be very difficult, uncertain and risky.

Consider the controversy in the practices of "assisted suicide" in many US medical institutions in the United States. The federal legislation formally declares that prescribing controlled substances like morphine to alleviate pain a legitimate medical decision even if those drugs increase risk of death. But that same legislation, the Pain Relief Promotion Act of 1999, also enters a minefield, by banning controlled substances for the purpose of physician-assisted suicide. According to the act, you can take strong steps to control pain, but don't intentionally hasten death.

This conflicting criteria for drug prescription presents considerable difficulty for practising physician to make decisions: on the one hand, legally allowed to the controlled drugs, doctors are willing to ease the intractable pain of the terminally ill patients suffering from continuous cancer who also need them for a peaceful death, on the other they are fearful of being accused of assisting or hastening death.

A decision under these situations can have significantly different implications and results. If slanted towards the legal side, the result could be no or less use of the controlled drugs and increased suffering and painful transition towards death on the part of patients; If slanted towards the ethical side, there will be (increased) use the controlled drugs and relief of pain and peaceful transition to death, but risks of hastened death and criminal charges. In such situations, it is the duty of the public servant to strike a balance that results in the uttermost benefit and least risks and losses for all people involved.

3.4 Ethical considerations

As can be seen from the above instance, legal considerations often and easily come into conflict with ethical considerations in the course of exercising self discretion. So, sound, balanced actions and decisions should always take into account the ethical or moral aspects of the decision-making process and its consequences.

Kitchener (1984^[11]) has identified five moral principles that are viewed as the cornerstone of ethical guidelines. They are autonomy, justice, beneficence, non-maleficence and fidelity. Reviewing these ethical principles will help clarify the issues involved in a given situation and better understand the conflicting issues surrounding the dilemma.

Autonomy or the concept of independence is the principle of allowing freedom of choice and action in decision making. The main considerations in exercising autonomy are acceptance by and impact on those affected by the decisions as well as the ability of the decision makers to make sound and rational decisions. *Non-maleficence* is the concept of not causing harm (both intentional harm or harm resulted from risky actions and decisions) to others. It is often considered by some as the most critical of all principles. *Beneficence* is the principle of contributing to the welfare of those affected by the decision, or simply it means to do good to be proactive and to prevent harm. *Justice*, means treating equals equally and unequals unequally but in proportion to their relevant differences according to a rationale that explains the necessity and appropriateness of different treatment. *Fidelity* refers to the

notions of loyalty, faithfulness and honoring commitments.

It is easy to note that these ethical principles are interrelated and interdependent. So when exploring an ethical dilemma or clarifying the conflicting issues, it is necessary that the public servant take an overall consideration of all these five principles, though particular cases may require examination of specific principles. It is also obvious that these ethical principles are oriented at the interest, rights and benefit of the recipients of decisions by emphasizing decision-makers' responsibilities to stakeholders, and accountability to results or consequences, as well as the fairness of the decision-making process. In essence, paying attention to these ethical principles in the course of exercising discretion and making decisions will help ensure a good process and good outcomes of decision-making, or lead to the desired objectives of efficiency, effectiveness and equity which decision-makers or public servants should aim at.

An ethical or good decision is a combination of good process and good outcomes. It is essential then that public servants understand their relationships. Theoretically, a good decision should lead to good outcomes if outcomes can be predicated with reasonable certainty. But when it is not possible to anticipate the results with certainty, or when the possibility of adverse outcomes exists, the decision-maker must rely on his judgement. Improving decision-making then means looking for ways of improving the quality of judgement of the decision-maker.

3.5 Evidence-based approaches (quantitative)

Aided by the two important guiding principles, the legal and the ethical, the public servant is in a position to tell in which direction he is going. But he isn't sure whether and when he can get there or not, nor is he certain what risks and difficulties he may encounter on his way. So he needs careful calculations and reasoning. He needs tools (like the telescope) that will expand his vision and reduce his uncertainty. A scientific, evidence-based approach, mostly quantitative, and a cognitive, intuitive or instinct based qualitative approach may serve this purpose.

The evidence-based approach to sound decision-making is actually the scientific process of understanding the unknown, ignorance, and uncertainty, clarifying the conflicting issues, assessing possible risks and indeterminacies, increasing knowledge of solution options and improving judgement of actions, based on real facts and truth gathered. It is essentially a process of risk assessment and risk management.

Risk assessment describes a formal structured process of analyzing risks. It consists of risk identification, risk estimation and risk evaluation. Risk identification attempts to identify all the possible outcomes that may eventuate from a particular action. Risk estimation uses analytical methods to estimate the probability of each outcome and the magnitude of the adverse effect associated with that outcome. Risk evaluation (which involves the decision maker) uses the technical information together with other information to evaluate alternative actions available. Risk management, on the other hand, is concerned with what we can do about risks, ie finding ways to eliminate, reduce, mitigate, transfer or simply learn to live with risks. Risk management can mean the integrated process of risk assessment and risk control.

3.6 Instinct-based, cognitive approach (qualitative)

The majority of human judgement and decision-making is based on quantitative approaches in which judgement is modelled in terms of mathematical choice functions. Such evidence-based approaches often overlook the mental process underlying decision-making under uncertainty. Instinct-based qualitative approaches where decisions are based on subjective or intuitive judgement under uncertainty have been drawing the attention of decision-makers, as supplementary approaches to aid decision processes. Instinct-based approaches are not only recommendable when there is an absence or lack of objective, quantitative data and other technical evidence that makes informed decision impossible, they can also be used even when quantitative data is available, particularly in situations where the outcomes are still difficult to project because of variables and uncertainties. Instead of depending on calculations, facts and figures, the decision maker will resort to his "gut feelings", his emotions.

4 Steps leading to sound public decisions

So far, the most essential considerations in the course of exercising discretion to facilitate making the right decision choice are covered, including the legal, ethical, considerations as well as quantitative and qualitative approaches towards risks and uncertainties involved in judgement and decision making. A knowledge of these considerations and being able to judge the value of them will provide the public servant the foundation for exercising reasonable discretion and making sound administrative decisions.

Then, what should public servants do to make sound decisions. Here are some recommendations.

4.1 Develop a rational attitude towards risks involved in judgement and decision making

Realize that taking risks is part of administrative and managerial life, Public servants inescapably and inevitably will have to take risks and exercise administrative discretion in decision making; Realize that opportunity cost (trade offs) inevitably incur when a decision is made under risk/uncertainty; Realize the risks and uncertainties can be significantly reduced and even avoided if the right decision is taken; Realize that Right decisions are always a result of sound risk assessment and management both qualitatively and quantitatively; Realize that the best decision choice or option is one that should generate the uttermost benefit to society in financial and social terms (from a cost-benefit analysis point of view)

4.2 Recognize the goal/objectives of decision and plan course of action

It is essential that the public servant be crystal clear about what he intends to achieve through his action and decision. This is the most important prerequisite to make error-free judgement of the situation and, reduce and avoid the degree of uncertainty and risks in the process of decision-making. Once the decision goals have been recognized, then plan actions to achieve them.

Identify the problem or dilemma

Problem would arise in the course of action planning. This is because the action and decision may have intended and unintended consequences on those who will be affected by the decision. Gather as much information as possible to illuminate the problem, identify and understand the dilemmas and the complexities, if any, involved. Try to determine if the problem is a legal, ethical, professional or personal issue, or a combination of more than one of these.

Determine the nature and dimension of the dilemma

The purpose of this step is to understand the conflicts, dilemmas, uncertain situations, or risks the public servant face. Use the moral/ethical principles discussed above to decide and prioritize which principles apply to the specific situations. Use both quantitative and qualitative approaches, ie statistical data and cognitive reasoning to examine the dilemmas and prioritize their importance. The purpose of this step is to increase knowledge of the dilemmas, possible relationships between action (the decision process) and consequences (decision outcomes) and eventually judgement of the situation.

4.3 Generate the selected course of action

List all potential solutions, alternative options to the problem; Consider the potential consequences of each option, weigh them against the legal and ethical framework as well as personal knowledge of beliefs, values, and resources; Decide a desirable course of action, based on information from the evidence-based approach and/or the qualitative, cognitive reasoning; Evaluate the selected course of action. Conduct a cost-benefit analysis of all options in order to single out the wanted option.

4.4 Implement the course of action

Taking the appropriate action in a conflicting dilemma is often very difficult. The final step involves the public servant strengthening his ego to allow him to carry out the plan. After implementing the course of action, it is good practice to follow up on the situation to assess whether the actions had the anticipated effect and consequences.

5 Conclusions

It has always been a challenging task for public servants to make decisions under uncertainty, for there is rarely one right answer to a complex conflicting dilemma, nor is there a single designated avenue to follow. Invariably, self-discretion will have to be involved. Because of this, it is also

important for the public servants to note that different professionals may implement different course of actions for the same situation. But, whatever criteria they base their decisions on, there should be one thing in common: i.e., they should always maintain personal and professional honesty and integrity in exercising their administrative discretion, by acting in a responsible manner, without malice or personal gain, in the best interest of the all stakeholders involved.

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Study of the Mechanism of Cross-boundary Governance of Water Pollution in the Taihu¹ Basin: A Synergy Perspective

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Abstract Water pollution has become a hot issue in the development for human society. The mobility of contaminants in water determines that polluted regions are within the basin across the geographic boundary. The extent of the water basins and the quasi-public good attribute of water environments make the pollution hard to be managed effectively by any local government alone, thus causing the public concern about how to manage cross-boundary water pollution. It is proposed that synergistic governance among local governments is an adaptive governance to manage the cross-boundary water pollution. However, the existing management system, decentralization of power, ignorance of collaboration, and lack of channels for communication among trans-boundary local government make it difficult to control pollution in water basins synergistically. In light of the status quo, this paper, based on the analysis of water quality of Taihu, intends to establish the mechanism of managing water pollution among trans-boundary local governments for the sustainable development in China.

Key words Synergistic governance, Mechanism, Cross-boundary governance, The Taihu Basin

1 Introduction

Water environment is an indispensable element in the development of human society, including surface water environment, soil, underground water and offshore areas. However, water pollution in China has posed serious threats to the safety of water resources because of human ignorance of environment protection when pursuing the development of society and economy. Water pollution not only deteriorates the environment, but also causes great loss of social benefits. In 1990s, environment protection was established as one of China's basic state policies. Since the 18th National Congress of the Communist Party of China, the Central Committee and the State Council have highlighted ecological conservation and environment protection. Meanwhile, stronger measures against water pollution are attached great importance. Now the status quo is: contaminants in water would flow in more than one direction across the boundary of administrative regions which leads to cross-boundary water pollution^[1]. Cross-boundary water pollution is the most difficult environmental problem to deal with and it happens frequently with considerably negative impacts. In the early 1990s, Shengze Town in Suzhou, Jiangsu Province poured waste water into the watercourse of Jiaying, Zhejiang Province, which polluted the water environment in Jiaying and then triggered conflicts; in 2004, the illegal discharge of pollutants by the Sichuan Chemical Company led to the contamination of the Tuojiang River, and influenced 5 cities around Chengdu, causing direct fishery losses of 15 million RMB; in 2009, arsenic contamination in Pizhou, Jiangsu Province was caused by illegal discharge of waste water containing arsenic from the Yixin Chemical Company in Linyi, Shandong Province; in 2012, the leakage of aniline from Tianji Coal Chemical Industry Group polluted the Zhanghe River, which influenced Handan, Hebei Province and Anyang, Henan Province.

From the perspective of public economy, water environment in river basin is a quasi-public good between the public good and private good. There are two reasons for its attribute. One is the externality of water environment. The other is that water environment is a resource that provides benefits to the public, but could theoretically be restricted if necessary. This differs from a pure public good, which remains accessible to everyone virtually all the time. The basic characteristics of river basins are cross-boundary flows and spontaneous accumulation. As a public resource, the water environment of

¹Taihu is the third largest freshwater lake in China, located in Jiangsu Province in the southeast of China. Among thousands of rivers and lakes in the Taihu Basin, Taihu is the largest lake at the center of the basin with surface area of 2338 km².

river basins has integrity in ecosystems and affinity mechanism in environmental systems [2]. Contaminants upstream could be carried to downstream by flows which would build malignant connection in regional environment systems. If the upstream city develops reasonably to improve the environment, both midstream and downstream can benefit a lot to form a benign connection. Once any part of the river basin is contaminated, the whole recycling system would be deteriorated, forming cross-boundary water pollution. No region could remain immune when facing cross-boundary water pollution in river basin.

Because of the extent of river basins and the mobility of pollution, different administrative subjects, economic subjects and social groups have crossed interests which lead to the confusion of victims, beneficiaries and polluters, making cross-boundary water pollution more difficult to cope with [3]. In addition, the governance toward water pollution in China is influenced by the territory principle, so administrative regions in the river basin cannot form a systematic and integrated mechanism because of the fragmented governance. Each power is hard to combine toward a common direction, presenting a tough challenge to the cross-boundary water pollution control [4]. Based on the current situation and challenges, it is proposed that synergistic governance is an adaptive way to control the cross-boundary water pollution. Hence, this research aims to appeal to local governments in the river basin to collaborate in managing water pollution from synergy perspective.

The cross-boundary synergistic governance and integrated management of local governments have been highlighted by the public. The spirit of synergy enjoys a long history: the ancient Greek philosopher Aristotle reckoned that the whole is greater than the sum of parts. Synergy theory could date back to 1970s when the famous Germany physicist Hermann Haken developed it into a part of systematic science. And according to Haken, synergy in management refers to the combined efforts of individuals as participants of the organization. When the organization's parts interact to produce a joint effect, their power is greater than the sum of the parts acting alone. He defined synergy as the collective or overall effect produced by the integrated work among different parts in the system [5]. Synergistic governance of local governments could maximize the overall effects. Government activity itself is integrated, and each functional department has to coordinate; meanwhile, the resolution of environmental problems needs the integrated work of local governments. In the process of managing cross-boundary water pollution, synergistic governance can be referred to as the integrated management of local governments across administrative boundary. The synergistic governance of local governments requires the diversity, equity, and negotiability. Synergistic effects of each local government make the resolution of cross-boundary problems possible. Therefore, to a certain degree, the idea of synergy shares a common value with the government activity.

Asaul (2009) suggests that "there are no real systems in the nature which are incapable of synergism, there are only matters of time, space and certain conditions" [6]. French scholar Philippe Moreau Defruges reckons that synergistic governance itself is not the final aim; in contrast, it is only the best approach to the community and the relationship [7]. Knowledge economy and challenges of post-industrial era make the relationship of social subjects much closer, and contamination transcends the boundary of administrative regions. Traditional governance models cannot satisfy the need of managing cross-boundary water pollution any more. So synergy theory could be applied to the governance of cross-boundary pollution, and it is possible to build an effective mechanism of synergistic governance. This research intends to establish the mechanism of cross-boundary governance of water pollution and put forward effective suggestions based on the analysis of water quality of Taihu in order to provide an available method to pollution control.

2 Predicaments of the governance of cross-boundary water pollution in China

As a vast country with a considerable number of different water environments, cross-boundary water pollution control in China is a key emphasis and difficulty of environment protection. The special distribution of water environment requires local government to cooperate beyond the geographic boundary, and then establishes an effective and available mechanism. However, the synergistic governance of cross-boundary water pollution faces several predicaments. From the perspective of synergy theory, the fundamental reason lies in the lack of tight partnership and effective cooperation [8].

2.1 Barrier of traditional government-guiding mechanism and structure

Traditional government-guiding mechanisms play an important role in China's environmental management system, which implies that local government has more power in the governance of pollution. This kind of system has its advantages with high authority, such as decree unity and financial integrity^[9]. However, its disadvantages are evident: distorted information, huge cost of governance, and lack of external supervision, which would even lead to malign competition. The environment protection department will be guided by both the superior department and government at the corresponding level. The overlapping operations by different departments will weaken the regulatory capacity of the environment protection department. When the two sides have different targets, the local environment protection department would be stuck in the dilemma. Meanwhile, each level of environment protection will involve many departments, industries and fields, which demand the improvement of coordination among horizontal departments. Without a clear distribution of responsibility in functional departments, each department would only focus on their own benefits, leading to buckpassing, thus reducing the efficiency in environment protection^[10].

2.2 The administrative segmentation and fragmentary governance of local governments

According to Article 6 of the Environment Protection Law of the People's Republic of China, local governments at different levels shall be responsible for the environment quality within areas under their jurisdiction. The environmental governance system is established in accordance with the administrative system by law. The regions in the river basin pursue a territory principle and only focus on the pollution within the region, thus neglecting the cooperation and communication, which leads to fragmentary governance^[11]. Therefore, some governments think that they only have to take the responsibility within the region and do not have to care about the environment quality in other regions. Scholars suggest that cross-boundary water pollution is the consequence of the territory principle^[12]. When sewage of companies upstream is poured downstream, the environment of the downstream area would be contaminated. Because of the administrative divisibility of the upstream and downstream regions, the downstream region has no right to intervene in the affairs of the upstream region, and the sewage may not threaten its environment, so the upstream region has less incentive to cope with the sewage. The administrative segmentation strengthens the local interests, so the government emphasizes self-interest because the sewage does not harm the upper reaches at all, or the cost could be paid by both the upper and lower reaches. It would be difficult for regions in the river basin to achieve common interests through collective action, which produces a "free ride" phenomenon and the "tragedy of the commons".

2.3 The lack of effective coordination mechanism and information sharing mechanism

Due to the contradiction between the integrity of the river basin and the division of the administrative region, it is necessary to have a unified coordination mechanism or institution to plan the whole process of water pollution in the cross-boundary water pollution in order to assign the tasks of the local governments. However, the lack of such institution in China makes it impossible for the local governments to share relevant information. At the same time, the shortage of effective coordination mechanism and information sharing mechanism will not only lead to the decentralization of resources, but also cannot fully optimize the utilization. And it is tough to adjust the plan according to the extent of harm and frequency of pollution^[13]. First, the lack of an information-sharing database restricts the governments'synergistic governance and communication. Second, the construction of e-government platforms in China is short of comprehensive and unified planning. The organizational boundaries among departments are obvious, and the system is closed to each other and which cannot meet the needs of interconnection and coordination. In addition, communication often exists within the government in the process of the governance of cross-boundary water pollution. The information sharing between government and society is not evident, which to a certain degree affects the right to know of the public, limiting the public participation in the governance of water pollution. At present, although China has established institutions in the seven major river basins, they are still not authorities and have no right to intervene in administrative and economic affairs; and the provincial water resources departments cope with water pollution solely from their own interests. Therefore, institutions in the river basin, local environment protection bureaus, and provincial and municipal departments cannot realize unified command or overall planning^[14].

2.4 The challenges of performance assessment system of local government

According to the rationality hypothesis (economic man), people with the ability of economic decision-making, would spare no efforts to maximize their own interests. The materialization of local interests drives local governments in the river basin to follow the principle of maximizing their own interests in decision-making^[15]. They attach great importance to the recognition of actions from leaders, whose origin lies in the performance assessment system of local government. Meanwhile, the GDP-guiding promotion mechanism under the bureaucratic system would expand the competitive space of politics and economy. So local governments would only pursue the effectiveness in their own regions, ignoring mutual cooperation.

2.5 The lack of legal protection mechanism

The lack of legal environment is a significant factor that hinders the cross-boundary governance of water pollution in China. The Constitution of the People's Republic of China stipulates that the State Council has to exercise unified leadership over the work of local organs of state administration at various levels throughout the country, and to formulate the detailed division of functions and powers between the Central Government and the organs of state administration of provinces, autonomous regions, and municipalities directly under the Central Government (Article 89). This is a higher level of management toward the lower level, but there is no clear regulation about how the local governments on the parallel level cooperate and how to divide the labor. Some laws only stipulate the jurisdiction within the region, which are not included in the collaboration process. Local governments only cater to the superior department, regardless of synergistic cooperation. Moreover, Law of the People's Republic of China on Prevention and Control of Water Pollution punish illegal discharge of sewage far less than the cost of pollution control. So the weak restriction of law causes some to knowingly-act guilty as the penalties are small. When cross-boundary water pollution happens, there are no corresponding laws or mechanisms of control and supervision. So governance of cross-boundary pollution within the river basin of environmental governance would face "kick the ball" and other buckpassing phenomena^[16].

3 Case analysis on cross-boundary governance of water pollution of the Taihu Basin

The Taihu Basin covers a range of 36900 km², locating in the core area of Yangtze River Delta in the southeast of China, with Yangtze River to its north, Hangzhou Bay to its south, East Sea to its east and Mount Mao and Mount Tianmu to its west. Its administrative divisions respectively belong to Jiangsu Province, Zhejiang Province, Shanghai Municipality and Anhui Province. The river basin is a typical plain river network area, and there are 10 lakes whose surface area is wider than 10 km². Taihu is the third largest freshwater lake in China, at the center of the river system with surface area of 2338 km². The relevant data come from "Master Plan for Integrated Management of Water Environment in the Taihu Basin (2013)" and "The Health Status Report of Taihu Lake (2007-2016)".

Since the reform and opening up, with economic development, industrial construction and population growth in the river basin, Taihu has been seriously polluted. Coupled with the conflicts of administrative divisibility and the basin integrity, the governance of water pollution in Taihu is getting more difficult^[17]. This research selects the data of water quality of the Taihu Basin from 2007 to 2016, pointing out its changes and developing trend, then summarizes the experience of governance to build a mechanism of cross-boundary governance of the Taihu Basin. Figure 1 is the map for the Taihu Basin. Figure 2 shows the key water functional areas in the Taihu Basin. Figure 3, figure 4 and figure 5 show qualified water rate of key water functional areas in the Taihu Basin, the eutrophic index of Taihu from 2007 to 2015 and qualified water rate of provincial boundary rivers from 2007 to 2016 in the Taihu Basin respectively.

3.1 Comparison of the qualified water rate of key water functional areas in the Taihu Basin

In 2016, Taihu Basin Authority has organized the systematic monitoring and analysis of the water quality of 108 key water functional areas, including 42 in Jiangsu Province, 15 in Zhejiang Province, 6 in Shanghai and 45 at the provincial boundary (Figure 2). According to Environmental Quality Standards for Surface Water (GB3838-2002), the indicators of water quality include water temperature, pH, dissolved oxygen, permanganate index, fluoride, cyanide, etc. Surface water is divided into five classes

according to its purpose for use and protection target. The water quality improves from Class V to Class I .

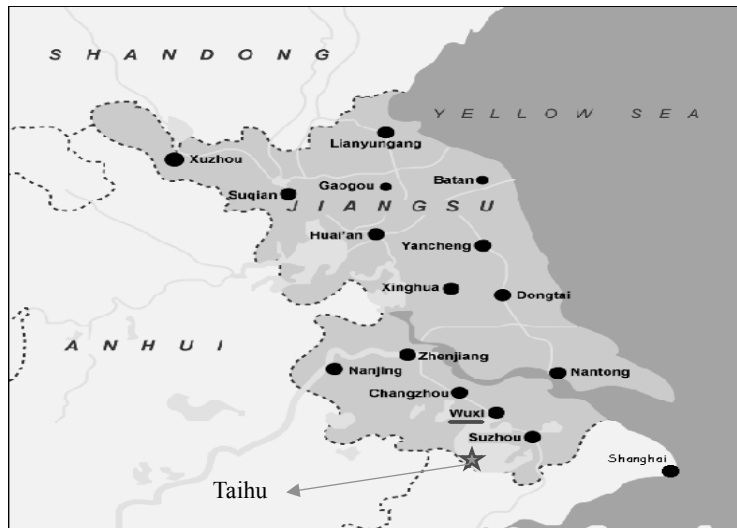


Figure 1 The map of the Taihu Basin



- The dots mark the locations of key water functional areas.

Figure 2 108 key water functional areas in the Taihu Basin

- (1) Class I : mainly for source of water and national nature protection areas;
 - (2) Class II : mainly for class one protection areas for centralized potable water source, protection areas for rare fishes, spawn ground for fishes and shrimps, etc.
 - (3) Class III: mainly for class two protection areas for centralized potable water source, protection areas for general fishes and swimming areas.
 - (4) Class IV: mainly for general industrial water areas and environment water areas, not directly touched by body.
 - (5) Class V : mainly for farmland water areas and water areas for general landscape requirement.
- The standard water quality of Taihu is defined by Class III. The annual average assessment method is

adopted, and among the 108 key water functional areas, 61 reached the standard and the qualified water rate is 56.5% in 2016 (Figure 3). From 2007 to 2016, the qualified water rate of the key water functional areas improved. In 2016, the overall water quality of Taihu improved from Class V to Class IV.

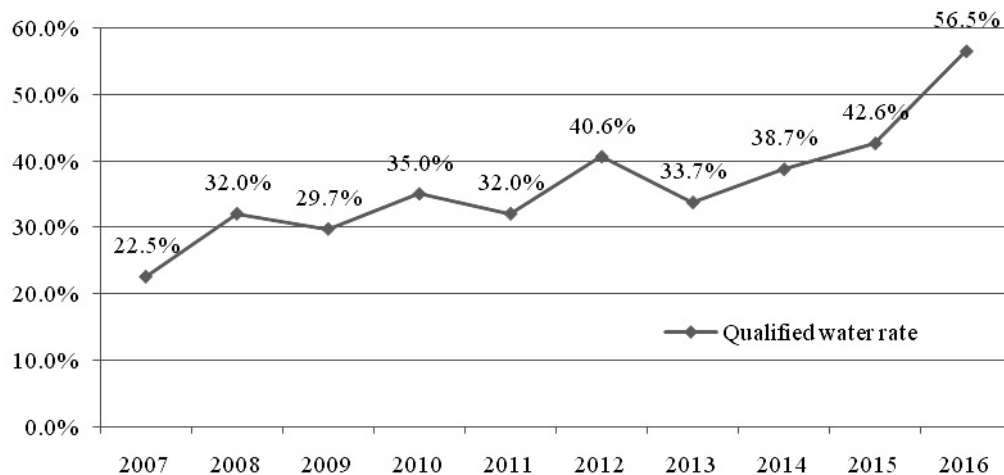


Figure 3 Qualified water rate of key water functional areas in the Taihu Basin

3.2 Eutrophication of Taihu

Eutrophication is mainly caused by the excessive input of nutrients to water bodies, such as nitrogen and phosphorus, often as a result of human activities. High nutrient concentrations can lead to harmful algal blooms and the production of toxins. The eutrophic index is introduced by Taihu Basin Authority to measure the level of eutrophication in water. In 2007, the average eutrophic index of Taihu is 62.3, at the moderate level. Compared with 2007, the eutrophic index of Taihu has slightly fallen to 61.0 in 2015. Further progress should be made in the process of coping with eutrophication.

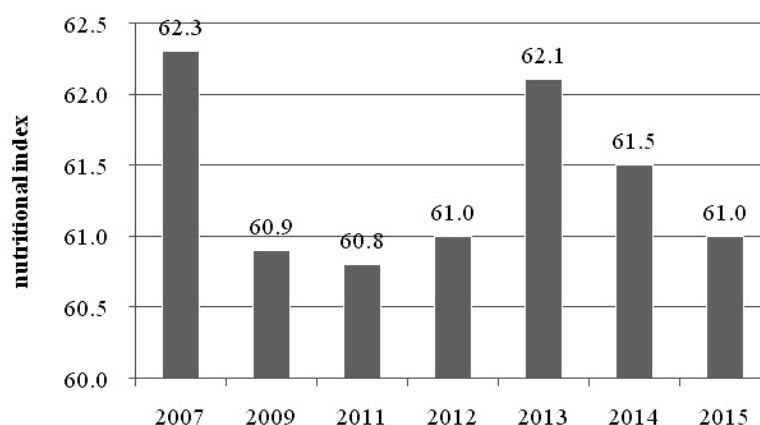


Figure 4 The eutrophic index of Taihu from 2007 to 2015

3.3 Water quality of provincial boundary rivers in the Taihu Basin

Provincial boundary river is defined as that the river flows across the boundary of two or more provinces. Taihu Basin Authority has made detailed assessment of the water quality by monitoring 34 river sections in the Taihu Basin: the water quality of 50% river sections met or exceeded Class III. The qualified water rate of provincial boundary rivers is improving, despite fluctuation from 2011 to 2014.

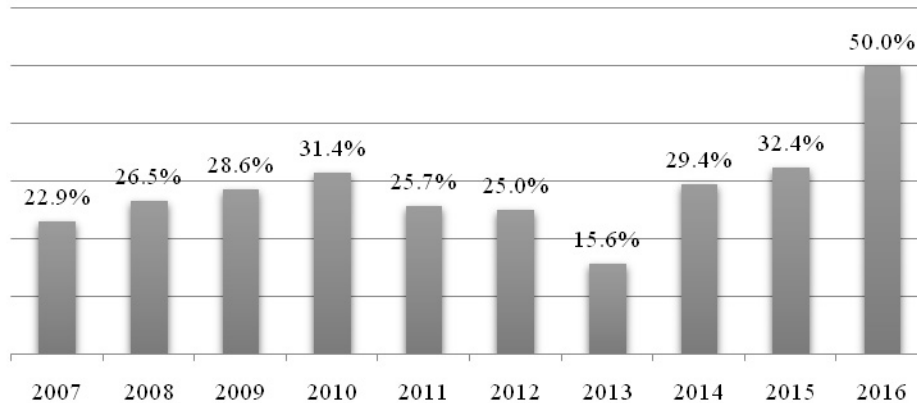


Figure 5 Qualified water rate of provincial boundary rivers from 2007 to 2016 in the Taihu Basin

3.4 Four stages of managing Taihu

According to the statistics, from 2007 to 2016, the relevant departments of Jiangsu Province have fully completed the ecological dredging task of 37 million cubic meters and over-fulfilled the task of 36 million cubic meters assigned by the State Council. The blue-green algae mechanized salvage ability fishing efficiency was improved with the total 10 million tons of aquatic algae salvage. Over 5300 heavy-polluting factories were shut down. A sewage pipe network of 25000 meters has been established. From 2007 to 2016, the governance of Taihu comprises 4 stages:

3.4.1 The bloom and emergency management of blue-green algae (05, 2007-05, 2008)

(1) Coping with blue-green algae crisis

From April to May in 2007, a large-scale outbreak of blue-green algae happened in Meiliang Lake and Gonghu Lake, posing a direct threat to citizens' livelihood and water safety in Wuxi. In order to ensure the safety of the river basin, Taihu Basin Authority strengthened the comprehensive planning of water resources projects, increasing water diversion from Yangtze River to Taihu, monitoring water quality, which improved the quality of drinking water of Gonghu Lake. Jiangsu provincial government attached great importance to the blue-green algae crisis, and the newly revised Regulations on Water Pollution Prevention and Control in the Taihu Basin was adopted.

(2) Formulating the Master Plan for Integrated Management of Water Environment in the Taihu Basin

The Central Committee, the State Council, the National Development and Reform Commission, Ministry of Water Resources, and Ministry of Environment Protection started the formulation of the Master Plan for Integrated Management of Water Environment in the Taihu Basin, aiming to tackle the problem. The target was to control the pollution and improve the quality of water with both engineering measures and non-engineering measures.

(3) Improving the system of water management planning in the Taihu Basin

The system of water management planning was built with comprehensive planning, flood preventing, water resources planning as focuses. The comprehensive planning would help make overall arrangement from the perspective of top-level design and provide integrated structure for the synergistic governance among Jiangsu, Zhejiang and Shanghai.

3.4.2 The initial stage of the mechanism of cross-boundary governance of water pollution of the Taihu Basin (05, 2008-2010)

(1) Formal Approval of the Master Plan for Integrated Management of Water Environment in the Taihu Basin

The plan consists of a series of measures including drinking water security guarantee, adjustment of industrial structure and layout, urban sewage and garbage disposal, monitoring systems and early warning system construction and so on. The Plan is the guideline and fundamental basis for the comprehensively harness of water environment in the Taihu Basin in a future period. Meanwhile, local government can make decisions or introduce plans according local conditions.

(2) Promoting the establishment of the information-sharing mechanism

In 2008, a significant amount of preparatory work was done, such as water diversion from Yangtze River to Taihu, monitoring water quality, blue-green algae salvage, legislation construction, and information sharing. Taihu Basin Authority, along with Jiangsu, Zhejiang and Shanghai, completed the compilation of The Health Status Report of Taihu for reference of management departments of all levels and people concerned about Taihu. Taihu Basin Authority stipulated that information sharing platform and communication mechanism of comprehensive governance should be established. The Provincial Development and Reform Commission, the Department of Water Resources, and the Department of Environment Protection of Jiangsu, Zhejiang, and Shanghai communicated with each other about the technical plan of building information-sharing platform. The establishment of information-sharing platform could help the local government in the process of collaborative governance clearly grasp the impact of the pollution on other regions, as well as whether other areas' pollution would produce influence. Data of the governance planning process, and performance can also be known to each other. In addition, the advanced governance experience can also be timely learned and promoted.

(3) Establishing coordination group of comprehensive governance of the Taihu Basin

In August, 2008, coordination group of comprehensive governance of the Taihu Basin was set up by Ministry of Water Resources, Jiangsu, Zhejiang and Shanghai. Since then, the coordination group intended to divide the labor, clarify the duty and arrange the governance process as well as resolve the conflict to provide support for the cross-boundary governance.

(4) Promoting the legislation of Management Regulations of the Taihu Basin

Management Regulations of Taihu Basin is the first comprehensive administrative regulations targeting the governance of Taihu, focusing on the aspects of drinking water, water conservation, water pollution control and other provisions. It became the nation's first water basin management regulation, which includes clear partition management, pollutant carrying capacity emissions volume limitation, construction projects as well as the river outlet supervision and management. It provides the institutional guarantee in the strengthening of the collaborative governance among local government.

(5) Jiangsu Province introduced the double river chief system

Leaders of Jiangsu provincial government, members of the provincial Taihu Basin Pollution Control Committee act as the river chief on the provincial level, and local government within the river basin act as the river chief on local level. The main responsibility of the river chief is to formulate and implement the comprehensive planning of the water environment, coordinate contradictions, solve problems, and strengthen supervision and inspection in order to promote the further progress of water pollution control. Provincial and local river chiefs would cooperate to speed up the pace of comprehensive management of Taihu, improve river regulation, reduce endogenous pollution, coordinate and balance the interests of the river chiefs so as to achieve the overall effect of synergistic governance.

3.4.3 The rapid development of cross-boundary governance of water pollution of the Taihu Basin (2010-2015)

(1) Promotion of the information-sharing

In 2011, the database and software system on comprehensive management of water environment in the Taihu Basin were introduced. The assessment of the health status of Taihu was conducted. Annual statistics about water resources, water environment, water ecology and the comprehensive management process of Taihu were analyzed. At the same time, the Taihu Basin Management Authority provided necessary data to assist the governance of the river basin. Each department can utilize modern network technology across time and space barriers to achieve resource sharing, and thus form a dependent and dynamic network system in order to build a flexible and collaborative governance system.

(2) The introduction and implementation of the Taihu Basin Management Regulations

The Taihu Basin Management Regulations was formally approved by the State Council with the implementation from November 11th, 2011. This is the first national regulation about comprehensive management in river basin, which clearly stipulates the implementation of the management system

which combines watershed management and partition management together, indicating that the water pollution control would be determined by the actual situation instead of the administrative region to strengthen cooperation.

(3) Implementation of Water Resources Management System

In 2012, the State Council issued the Opinions of the State Council on Implementing Water Resources Management System. The document put forward “three red lines on water over exploitation, water usage efficiency and pollution control”. Government of Zhejiang, Jiangsu, and Shanghai also introduced relevant policies to determine the total amount of water, strengthen supervision and management in water functional areas, speed up the water resources allocation project and water resources monitoring capacity.

(4) The further improvement of the system of water management planning in the Taihu Basin

In March 2013, the Comprehensive Plan for the Taihu Basin (2020-2030) was officially approved by the State Council and became the fundamental basis of developing, utilizing, saving, protecting and managing as well as the prevention and control of water disasters in the Taihu Basin in next period. The comprehensive plan intends to establish a better flood control system, a preliminary water ecological environment protection system, a basic uniform management system, a complete water law and regulation system, a complete water resource dispatch system and a complete water resource management system combined by quantity control and quota management. The target is to coordinate the relationship between the provinces, upstream and downstream, left and right banks, watersheds and regions as well as relevant industries in order to realize various functions and comprehensive benefits of Taihu, and help local governments cooperate better when coping with the cross-boundary pollution. In 2012, the Taihu Basin phased out 284 outdated production capacity projects.

3.4.4 The maturity phase of cross-boundary governance of water pollution of the Taihu Basin (during period of the 13th Five-Year Plan)

(1) Promoting the implementation of the river chief system in the Taihu Basin

In order to carry out the implementation of the river chief system nationwide, Taihu Basin Authority plans to establish provincial, municipal, and county- and township-level river chief systems in advance by December, 2017. If possible, the plain river network areas should actively explore the expansion to the village (community), and strive to build the five-level river chief system.

(2) Seven cooperative approaches to the governance of Taihu

Taihu Basin Authority of the Ministry of Water Resources held a work conference in 2017, putting forward the future direction of local government co-governance of Taihu: First, to improve the emergency management, to strengthen flood control and water security; second, to implement the strictest water resources management system, accelerating the ecological conservation; third, to establish the river chief system, and vigorously promote the reform and innovation of management system; fourth, to further implement Management Regulations of Taihu Basin; fifth, to take the acceleration of the governance of the Taihu Basin as an opportunity to improve the water network system; sixth, to speed up monitoring of water resources and construction of early warning system; seventh, to consolidate the basic work, and continuously improve the comprehensive management capacity of the river basin.

4 Analysis of mechanisms of cross-boundary governance of water pollution of the Taihu Basin from of synergy perspective

4.1 The construction of model in managing water pollution of Taihu

Based on the successful experience of local governments in the Taihu Basin, this research analyzes the concrete methods in the governance of Taihu, and constructs model of cross-boundary water pollution governance of Taihu from the following dimensions: the internal level is divided into two dimensions, namely, ideological dimension and labor dimension; local governments need to trust each other first, then assign mission and clarify responsibility to establish accountability and supervision system based on the full analysis of the water environment; then local governments need to establish a unified management agency, members from different provinces should avoid the influence of self-interest and pursue fairness and justice ^[18].

In addition, the external level is divided into three dimensions: on the institutional dimension, to implement the strictest water resources management system, and adhere to the combination of watershed management and partition management; on practical dimension, legal, financial and information-sharing mechanism should be established in order to provide clear legal and financial support as well as adequate data and information. Finally, on incentive dimension, necessary motivation to promote the local government in the cross-boundary governance is indispensable, such as the assessment of accountability mechanism and incentive system, and the effective management of local government should be shared^[19]. Figure 6 shows the model as follows:

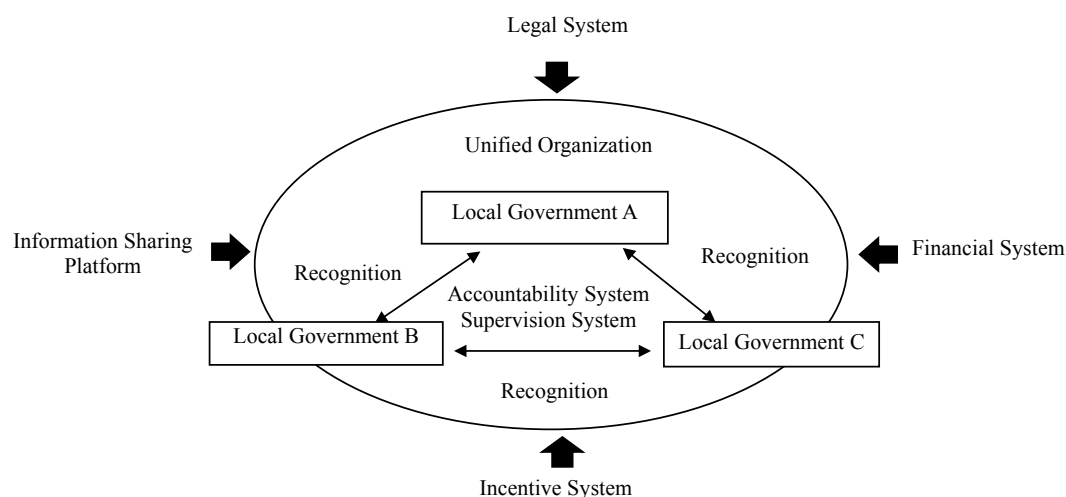


Figure 6 The mechanism of cross-boundary governance in water pollution of Taihu

4.1.1 Ideological dimension—recognition and mutual trust among local governments

The division of the administrative regions is an objective reality, and is difficult to change. Therefore, in the process of synergistic governance, the division of the administrative regions will pose grave challenges to cross-boundary pollution. The recognition and mutual trust among local governments is the cornerstone of cross-boundary governance. Local governments should establish a synergistic concept of “win-win” and “cooperation” at the ideological level to break the inherent administrative line, overcome localism and departmental selfishness in order to lay a solid foundation for the governance of cross-boundary pollution. The governance of the Taihu Basin could be attributed to the collaborative efforts of Zhejiang, Jiangsu and Shanghai. From domestic and foreign experience, the governance of Lancang River-Mekong River Basin is also the result of the cooperation of six neighboring countries. Therefore, in the process of cross-boundary water pollution control, it is necessary for local governments to interact with each other in terms of arrangements, governance responsibility division, introducing water quality monitoring standards, sewage management and other activities^[20].

4.1.2 Labor dimension—establishment of unified management department in watersheds

When it comes to the governance of cross-boundary water pollution, in addition to the central government’s guidance, supervision and expenditure, the regional cooperation and collaborative actions of local governments are also significant. This type of collaborative action is achieved by the transfer of administrative jurisdiction among local governments, namely, local governments or government departments involved in the cooperation will transfer power, or a certain part of the power (decision-implementing, supervision, etc.) to a regional regulatory department to form one or more regional jurisdictions^[21].

Through such a transfer of administrative jurisdiction, local governments would sign a cooperation agreement or establish cooperative organizations to form cross-boundary power. The main carrier of the power transfer of local governments is to build cross-regional cooperation organizations. For example, the management of the Taihu Basin needs overall planning and implementation of

Zhejiang, Jiangsu and Shanghai. The establishment of Taihu Basin Authority of the Ministry of Water Resources has mobilized the local resources to play an important role in the formulation of objectives, division of responsibilities and coordination, reducing the cost of information-sharing and negotiation among various members in the region, as well as the cost of implementation or monitoring.

4.1.3 Practical dimensions

(1) The legal protection of the synergistic governance across geographic boundary

At present, under the background of territorial governance, water pollution control has faced serious challenges such as fragmentation, low efficiency of management, cross contamination, repeated governance, and the frustration of local government's positivity. Therefore, the government should actively improve the water environment management laws and regulations to build legal protection system^[22]. The areas within the river basin should, according to the actual situation, review and update relevant laws and regulations under the basic framework of the Constitution of the People's Republic of China and Law of the People's Republic of China on Prevention and Control of Water Pollution to establish and improve the legal system of regional environmental governance. The system should clarify the provisions and rules of regional cooperation and relevant economic loss so as to standardize governments' behaviors. The introduction of Management Regulations of Taihu Basin is a great way to regulate the local government's activity, and its implementation of watershed management and administrative management not only mobilize the local governments' enthusiasm of coping with regional pollution, but also effectively promote the synergistic governance among governments.

(2) The financial system of cross-boundary synergistic governance

Financial investment is essential to local government's cross-boundary governance of water pollution so the government investment mechanism should be improved. The concrete methods include: expanding the sources of investment in governance, strengthening the financial support, gradually increasing the proportion of expenditure on governance of environment protection, and building the legal system to ensure financial stability by law^[23]. The Master Plan for Integrated Management of Water Environment in the Taihu Basin is approved by the State Council, stipulating a total investment of 58.3 billion yuan, including 11 categories with 662 projects. Jiangsu designed a total investment of 108.3 billion yuan, including 11 categories with 1602 projects. According to statistics, Taihu governance contains provincial investment of more than 20 billion yuan from Jiangsu, attracting social investment of more than 100 billion yuan and intending to implement more than one million projects.

(3) The platform of information-sharing

Information technology is the basis and effective approach to the synergistic governance, and building a modern information platform could provide technical support to achieve the coordination of government governance. According to the status quo of the construction of information platform about water pollution control in China, a digital and networked database should be built to provide significant basis for water pollution governance^[24]. Secondly, under the premise of unified planning and top-level design, the construction of e-government in China needs further improvement to give full play to its positive role in the collaborative management of water pollution. In the process of co-governance of Taihu in Zhejiang, Jiangsu and Shanghai, the database and software system of information-sharing about comprehensive management are developed. Meanwhile, assessment of health status of Taihu is actively carried out. Besides, the integration work of key water functional areas and water quality of the Taihu Basin is done properly, which provides basic data for the management of water functional areas. These measures effectively promote the communication of local governments in order to make targeted methods and avoid "information fragmentation" or "information island" phenomena, so as to provide intelligent support to overall planning, management and decision-making.

4.1.4 Institutional dimension—management system combining watershed management and partition management together

Due to the conflict between administrative divisibility and the basin integrity, the water environment faces the "tragedy of the commons". The sewage of the upper reaches will affect the downstream areas, and even adjacent areas are influenced by proliferation of pollution. Therefore, how to keep a balance between administrative divisibility and the basin integrity is the key to the current

government's cross-boundary governance of water pollution. Management Regulations of Taihu Basin is a good example for reference, emphasizing on combining watershed management and partition management together. The local government can cooperate on the overall level from aspects of introducing water pollution standards, putting forward illegal sewage disposal measures and introducing regulations on water pollution prevention and control. Besides, based on overall planning, local governments can adapt targeted governance according to pollution in the region and local conditions.

4.1.5 Incentive dimension-incentive system in synergistic governance among local governments

Incentive Mechanism in synergistic governance is quite dispensable, which could mobilize the enthusiasm of local governments to cooperate. In May 2009, the general office of the State Council put forward The Assessment Methods on Specialized Planning Implementation of Water Pollution Control in Major Areas. The water quality indicators and pollution-control project targets were taken as the main contents of the assessment, and results as the basic indicator in assessing government leaders. Subsequently, many provincial governments have introduced the appropriate assessment methods.

The formulation and introduction of the assessment methods has played an important role in promoting the local governments to take the responsibility for the control and prevention of cross-boundary water pollution. However, due to the externality of water pollution, the divisional assessment and management system is not conducive to the comprehensive management of water pollution [25]. Therefore, in addition to establishing the important status of scientific and feasible environment-protection performance assessment indicators, a synergistic collaboration performance assessment system based on common interests is also indispensable which could measure the level of collaboration. For instance, indicators including whether each department can help other departments complete the tasks, whether the relevant departments can provide timely, accurate and necessary information, and whether a department can communicate with other departments effectively can stimulate each department to actively participate in the entire process of synergistic governance and play a positive role.

4.2 Reflections on the mechanism of cross-boundary water pollution control in the Taihu Basin

From the outbreak of the blue-green algae crisis in 2007, Zhejiang, Jiangsu and Shanghai have achieved remarkable success in exploring synergistic model of cross-boundary water pollution control. However, the synergistic mechanism is not perfect, and there is still room for improvement. First, the nutritional index of Taihu slightly has fallen from 62.3 in 2007 to 61.0 in 2015, but the decline is not obvious, the polluted areas are still large which needs further cooperation including physical control, chemical control, and biological control and co-governance of the basis of sharing advanced experience and technology. Second, the government should promote the construction of information sharing platform. Information sharing is the basis of cooperation, and poor communication will lead to collaborative governance crisis. Therefore, the government should strengthen the top-level design, promote big data technology, cloud computing, and mobile Internet. The use of modern information technology and other advanced scientific and technological methods will further improve the efficiency and effectiveness of synergistic governance among local governments. Finally, the construction of Taihu Basin Authority should be strengthened. Taihu Basin Authority is the leading group which should play a greater role in the division of tasks, staff deployment, and department coordination.

5 The experiences and lessons of synergistic governance in managing cross-boundary water pollution among local governments in China

Throughout the governance process from 2007 to 2016, the effectiveness of Taihu water pollution control owns to the synergistic governance among Zhejiang, Jiangsu and Shanghai. Due to the administrative divisibility and local differences, local governments need an effective mechanism to coordinate the work among governments, so that each part will work together towards a common goal. In this research, the mechanism of cross-boundary water pollution control in the Taihu Basin has been constructed to summarize its successful experience and provide methods for water pollution control in China.

5.1 Practical goal and mutual trust among local governments

Local governments must first realize the necessity of synergistic governance in managing cross-boundary water pollution, and set practical goal based on the overall interests of the region to provide a common direction for further work. Then, local governments have to strengthen the mutual recognition and trust. The difference in the level of development is an existing reality. Therefore, in the process of synergistic governance, it is necessary to share experience with each other, and promote advanced technologies in order to achieve the effectiveness as well as safeguard the overall interests of the region ^[26].

5.2 Unified organization of synergistic governance

The transfer of power is an important feature of cross-boundary organizations. The local governments will transfer part of their power to the cross-boundary governance organization to ensure that they are not influenced by administrative interference. Therefore, the unified organization has the power and ability to carry out regional regulation independently. And a unified leading group should have representatives from each region in order to help the organization analyze pollution conditions and introduce measures ^[27].

5.3 Legal support of synergistic governance

The law of regional synergistic governance can help administrative regions gain legal support in the process of synergistic governance which contains clear disciplines on the division of responsibilities. Two key points need consideration. First, consider the overall ecological environment and economic environment of the region to avoid one-sided legislation; second, emphasize synergistic governance and coordination in water pollution control. The key to break the administrative barriers in environmental management lies in the coordination of governance and the legislation of behaviors.

5.4 Financial support of synergistic governance

Adequate financial resources need to be collected in the process of synergistic governance of cross-boundary water pollution ^[28]. Providing advanced technical equipment, carrying out regular survey, train or hire talents on water pollution prevention and control should get financial support. The source of funding can stem from the central government's annual budget, or donations from NGOs or charities.

5.5 Information-sharing platform

Information technology is the basis of synergistic governance and governance and the establishment of a modern information platform is the technical support to achieve the coordination of governance. The information-sharing mechanism can provide intelligent support including overall planning, management and decision-making in the governance of cross-boundary water pollution ^[28]. The methods include establishing and improving the digital network of information database, and promoting the construction of e-government in order to avoid "information fragmentation" and "information island" phenomena.

5.6 The system of combining watershed management and partition management

The system combining watershed management and partition management helps the decentralized administrative areas balance the integrity of basin and the liquidity of pollution. Local governments can cooperate on the overall level such as the introduction of water pollution standards, illegal sewage disposal measures ^[29]. In addition, under the overall planning, the local government can implement targeted governance according to local conditions.

5.7 Incentive mechanism of synergistic governance

Incentive mechanism can effectively improve the initiative of synergistic governance of cross-boundary water pollution. Therefore, government should establish and improve the performance appraisal system, accountability assessment system and incentive system ^[30]. From the perspective of synergistic governance, the collaborative performance appraisal system should base on the common interests to measure the degree of mutual cooperation in resolving problems.

6 Conclusions

Based on synergy theory, this research starts from the analysis of the dilemma faced by the local governments in governance of cross-boundary water pollution, and takes the governance of the Taihu

Basin as an example. On the basis of summarizing the successful experiences, this research constructs the mechanism of synergistic governance of the Taihu Basin to provide structural support for the settlement of cross-boundary water pollution problems in China. In the governance process from 2007 to 2016, local governments conducted a number of explorations, from the initial self-governance to final cooperation, which is attributed to joint efforts. Meanwhile, Zhejiang, Jiangsu and Shanghai improve the legislative protection, promote the construction of information sharing platform, and set up unified organization to safeguard the coordination of governance so local governments could maximize their respective advantages to achieve “1+1+1>3” effect (the combination of Zhejiang, Jiangsu and Shanghai is better than independent work).

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Identifying the Economic Effect of Privatization on Health Sector

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Abstract Privatization has made great macro and micro economic impact all over the globe. This essay is concerned with the impact of privatization on the health sector of Jaipur, a city in Rajasthan, India, and its influence on different objectives of the economy i.e. Economic Growth and Employment. Medical Tourism and its impacts are evaluated in context of effectiveness of privatizing the health sector.

The introduction portrays the opportunities with the sector to expand through a private sector means. Though there are certain cons of healthcare sector expanding its footprint over private sector, like high price charged for surgeries, whose solutions are embedded under the essay's conclusion.

Pricing structure is put up through a primary research which justifies that which of the hospital is charging more, whether it is the government or the private. It will be identified that whether the consumers' demand has shifted forward or backward which is determined in order to cater whether the pricing strategies are justified or not. The opportunity over medical healthcare services is also identified and the competition will justify the lowering price.

Later the impact of privatization over the two macro economic objectives are appraised i.e. measure of employment and economic growth. The boom in the sector is validated and identified through facts and figures and an economic diagram is established in order to extrapolate the data and make it precise. Role of medical tourism will also be adhered which brings foreign money to the economy. This all will be encompassed in a conclusion and it will help to determine whether the hypothesis made is justify or not . Conclusion will also state certain policies that other countries have executed in order to overshadow the cons in privatized health care sector.

Key words Employment, Economic growth, Health care, Medical tourism, Privatization

1 Introduction

Privatization is the legal transfer of ownership of businesses and properties from government body to a private entity. In Jaipur the capital of Rajasthan the north- western state of India, healthcare sector is one of the fastest growing industries, where it has a compounded annual growth rate of about 15% during 2011-2017. There is an immense scope for enhancing healthcare services penetration through privatization in India.

Working in an economic depression, Indian healthcare sector is least affected and thereby has a great scope of aiding the economy with growth and development. Areas where private hospitals can be proved very beneficial are-

- Infrastructure Development to portray a better economic condition and keep hygienic facilities.
- Capacity building and training which helps the employees to be flexible.
- Financing technology required making the sector more productive.
- Materials Management, which keep a check on development and maintenance of supply chain in the sector.

Privatization has a dark side too. Privatization neglects the Concept of welfare society, which is a reason why government intervenes in private sector and thereby government is reluctant to privatized healthcare sector, as it is the most important sector to ponder upon. Still, government has a scope of privatization but with as take in privatized healthcare institutions, which would be important for the execution of policies, passed by the government with a view of welfare of society thereby benefiting the economy with economic growth in long-run.

Hypothesis

A hypothesis is been made that concludes- privatization of health sector in India has made an overall economic growth where all the parties within the economy have a wide surplus which they enjoy.

Methods of data collection

Both, primary and secondary researches are utilized in order to collect authentic data. The secondary researches are given in the bibliography section. Being restricted to a district the cost of treatments in two government hospitals (Sawai Man Singh hospital and Jeevan Rekha Critical Care) and two private hospitals (Santogba Durlabji Memorial Hospital and Monilek Hospital) is taken in order to justify that where a consumer is likely to move in and further the hygienic facilities are compared in projection to the whole country.

To investigate the research question thoroughly, a primary research was conducted to determine the prices charged, infrastructure and facilities provided by privatized as well as public healthcare sector. Initially, demography of India was studied in order to identify the scope of healthcare sector in the country which brings about an incentive for private firms to invade in the sector. Pricing Strategies of treatment in each hospital was analyzed through primary study. Infrastructure was extrapolated by mathematical calculations as per the wards, nurse, beds and paramedical staff person in hospital which compared public to private hospitals.

Secondary research was utilized to explore the role of privatization in the economy, medical tourism importance, employment made by the sector, spending made by the economy on healthcare sector and the pricing strategies used in pharmaceutical retail outlets.

Data and analysis

Scope in Healthcare Sector

The Data in Table 1 reveals the demographic structure of India in order to know the scope of Healthcare Sector through economic point of view.

Basically, Table 1 and Figure 1 justify the ageing population in India.

Table 1

Age/Years	0-14	15-29	30-44	45-59	60+
2007	35%	27%	20%	11%	7%
2010	32%	28%	20%	12%	8%
2013	29%	29%	20%	14%	8%
2017(Expected)	27%	28%	21%	15%	9%

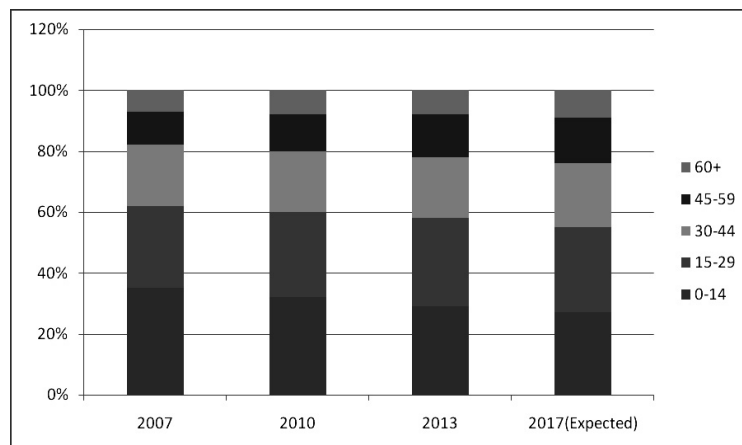


Figure 1

Source: <http://www.ibef.org/download/PolicyPaper.pdf>

After extrapolating Table 1 data, Figure 1 is proposed. Demography has changed in a lag of three years; the aged people have increased in the economy which leads to an increased demand for the healthcare sector.

In 2007, the younger age group i.e. of healthy teenagers has decreased and the elders are

increasing their footprints. This portray two concepts, first one is, the demand of healthcare sector has increased due to aging population and second, the healthcare sector has shown improvement with increased the life expectancy of the population. Increase in aged population display an increasing demand and better life expectancy predicts further growth and development in the healthcare sector.

Since, diseases spread from person to person, Healthcare sector makes hygienic conditions and thereby no third party is negatively affected. This improvement has shown a positive externality of production, explained below in Figure 2.

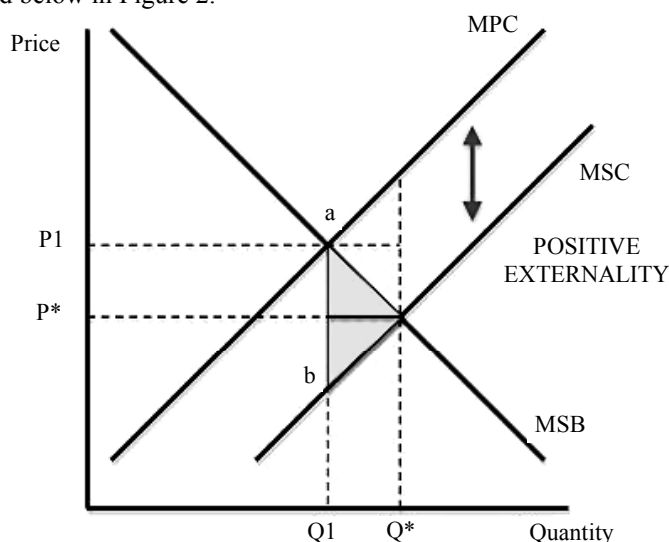


Figure 2

The positive externality of expanding healthcare sector is demonstrated as a gap between social costs and the private costs i.e. a and b. Marginal Social Cost (MSC) is lower to Marginal Private Cost (MPC); this is because MSC includes the cost to the third party as well. Thus, at the equilibrium price of P1, there appears to be too little to be produce

At P1, MPC projects private cost at point a, where MSC indicated much lower cost to be at point b. The expansion has brought indirect benefits to the third party.

In present condition the healthcare sector spending is majorly contributed by the private sector rather than the government. It is justified by the figures given below, Figure 4 and 5.

Rationale to identify this kind of data is to match whether the healthcare sector in India is doing well or not. If the sector is doing well under private firm's influence then privatization in this sector has been beneficial and if not then it has not been beneficial and since this essay is on behalf of welfare of the economy and society, potential solutions will be given in order to tackle the problems carved by privatization if the case is so.

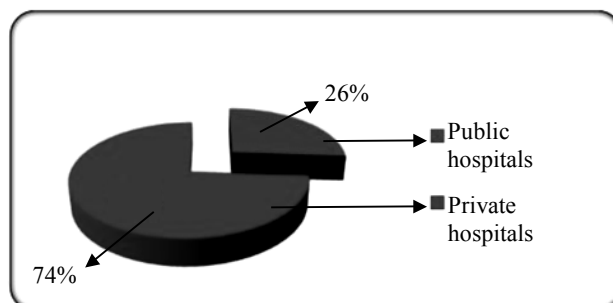


Figure 3 Private V/S Public Hospitals In India

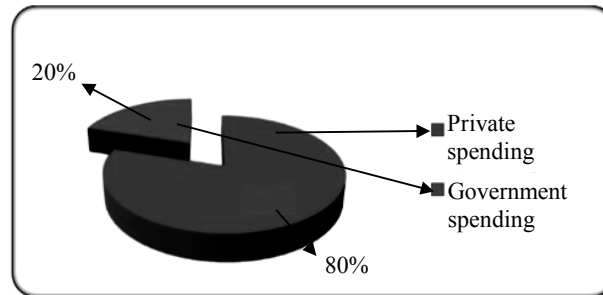


Figure 4 Private V/S government spending in India

After analyzing the graph it is well understood that private sector has been the leader in the healthcare sector of the economy

Medical tourism

Medical tourism has played a positive impact on the economy. Medical tourism, alternatively called health tourism, is a term that has come up from the rapid growth of an industry in where people from all around the world are travelling to other countries to obtain medical care while at the same time, vacationing and fully experiencing the attractions of the country that they are visiting. It has boosted the foreign wealth coming to India. Reason for increased medical tourism in India is the premium quality of the private hospitals and the lower rates charged.

Table 2 Price comparison of India and U.S. And U.K.

Treatment	Approximate cost in India(\$)*	Cost in other major healthcare destination (\$)*	Approximate waiting periods in USA/UK (in months)
Open heart surgery	4,500	>18,000	9-11
Cranio-facial surgery and skull base	4,300	>13,000	6-8
Neuro-surgery with hypothermia	6,500	>21,000	12-14
Complex spine surgery with implants	4,300	>13,000	9-11
Simple spine surgery	2,100	>6,500	9-11
Simple brain tumor			
-Biopsy	1,000	>4,300	6-8
-Surgery	4,300	>10,000	
Parkinsons			
-Lesion	2,100	>6,500	9-11
-DBS	17,000	>26,000	

Source: <http://www.indian-medical-tourism.com/medical-tourism-india-price-benefits.html>

An open heart surgery in India costs \$4,500 whereas maximum \$18,000 is charged by the other major healthcare destinations. Perhaps, India is much affordable for foreigners, raising their consumer confidence.

Other alternative justifications that why India is leading in Health Tourism Industry are as follows:

- 1) Presence of alternative therapies exclusively in India
 - Naturopathy
 - Aayurveda
 - Yoga
 - Kerala Health Therapy
 - Meditation
 - Yunani Medicine

2) Minimal Waiting time—Is an advantage to foreigners in India is very minimal or hardly any waitlist. Being 5000 years old civilization, India has been a centre of attraction for tourists. Its rich heritage and culture has been a trade mark.

3) Cost of Living—In India during the treatment time is also very low compare to other countries. India offers not just treatment but also mental and spiritual healing therapies.

Around all of the people engaged in Medial Tourism move in private hospitals because government hospitals lack in facilities and therapies. This has directly enticed the corporate constituents to this sector and the services are facing a monetary increment.

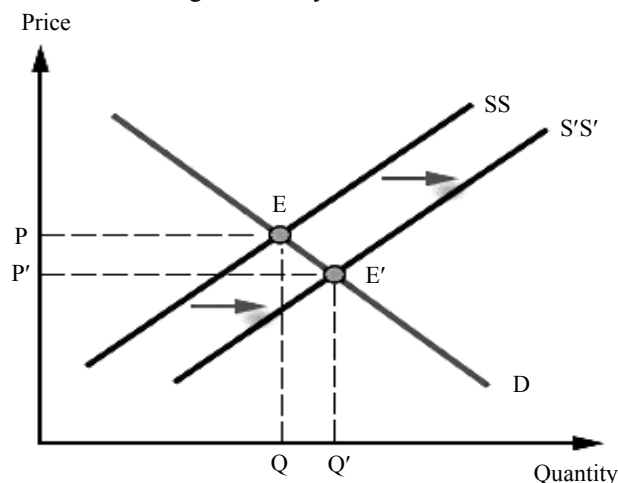


Figure 5

Figure 5 represents this increment by a forward shift in the supply curve from SS curve to S'S' curve.

This forward shift has led to an amplified competition in the country and with respect to this the number of Healthcare infrastructure has increased from Q to Q' and corresponding decrease in Price has taken place i.e. from P to P' which leads to a shift in the Equilibrium, from E to E'.

There are many disadvantages in the Jaipur's Capital State of Rajasthan's government hospitals as per visits in Sawai Man Singh hospital and Jeevan Rekha Critical Care which prove to be one of the best public hospitals in India have lots of doctors, normally from reserved seats who are not that professional, who have passed the MBBS course with a great difficulty and unfortunately cannot treat the poor patients in a required way. Though these hospitals boast of not being inclined towards profit, the political wickedness has made it difficult for the public, associated to lower caste, to take public service advantages. These hospitals do not have effective technologies to counter risky surgeries (refer to appendix 1). As per the primary research took place to identify the technical background of both, private and public hospitals, the results were abrupt. 8 basic technical surgeries lack in public hospitals than compared to private ones.

Employment contributed by Healthcare Sector

Privatization has made an opportunity for employment. This sector is the largest industry in terms of revenue and second largest sector in terms of employment. More than 4 million people are employed by this industry. According to the Department of Industrial Policy and Promotion (DIPP), FDI (Foreign Direct Investment) worth US\$ 4.34 billion has been enticed by the pharmaceuticals and drugs sector in April 2000- March 2017. Also the Union Budget 2017-2018, the overall health budget increased from INR 39,879 crore (US\$ 5.96 billion) (1.97% of total Union Budget) to INR 48,878 crore (US\$ 7.3 billion) which is 2.27% of the overall health budget which leads to growth in employment in healthcare sector in India.

Relating employment with the term 'privatization' is the main criteria for the essay that must be adhered as unemployment is a Macro economic objective for an economy.

Public sector have a lot of other priorities which must be taken care of and the economy is expected to run in fiscal deficient for years, thereby, the burden of expenditure made by government is intense and it becomes difficult even for a government healthcare department to take care of the sector. It is not possible to increase spending in this sector for employment purpose.

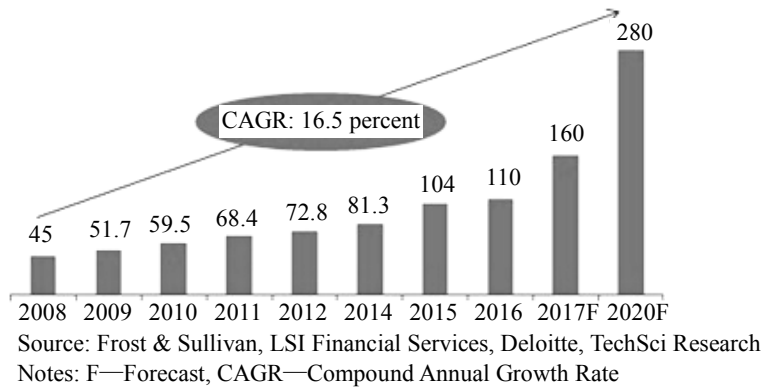


Figure 6 Healthcare sector growth trend (US\$ billion)

Government hospitals do not provide training and development programs that make it difficult for the employees to cope up and fewer opportunities are available.

The infrastructure and the wage rates are low in government hospitals which make out difficult living of its employ in inflation.

Introduction of private hospitals have brought up an increase in labor demand in the labor market. If privatization would not have been in the healthcare sector then unemployment would come up to a great extent.

This is represented by Figure 7.

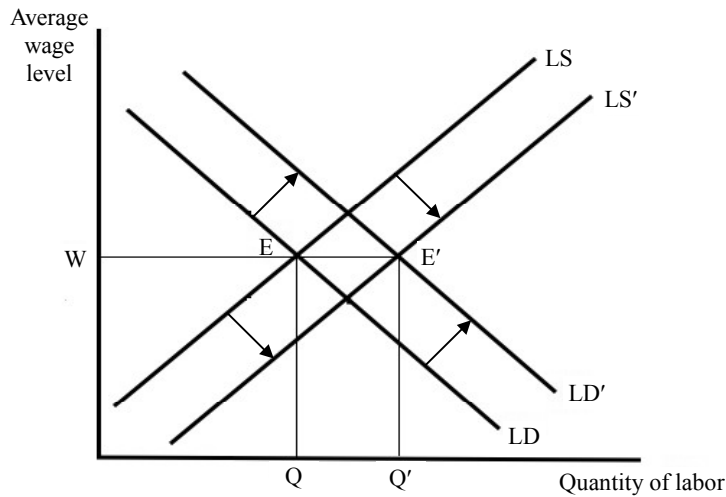


Figure 7

This represents two conditions—

- 1) Labor market in absolute presence of public sector in healthcare service.
- 2) Labor market in great influence of the private sector in Healthcare service.

Only government involved in healthcare service-

Keeping this in mind, employment by healthcare sector would beat a stage where the wages are at

Wand with a full employment at Q. Here, the workforce is unwilling to expand their footprint in healthcare sector, reason being, very less Healthcare centers present in the economy related to health service.

Only government involved in healthcare service—

Keeping this in mind, employment by healthcare sector would beat a stage where the wages are at Wand with a full employment at Q. Here, the workforce is unwilling to expand their footprint in healthcare sector, reason being, very less Healthcare centers present in the economy related to health service.

Great influence of private sector—

Private sector would shift the Labor Demand (LD) from LD to LD' and Labor Supply from LS to LS' and thereby the Wages will remain static or may change with less proportion but the quantity of labor will increase to Q'.

This justifies the importance of privatization in Labor Market.

Services provided by government and private

Hospitals

In comparison between government and private hospitals according to the primary research on Public Hospitals (Sawai Man Singh hospital and Jeevan Rekha Critical Care) and Private Hospitals (Santogba Durlabji Memorial Hospital and Monilek Hospital).

Comparison is made in terms of the following—

- And deaths per year
- Facilities and infrastructure.

Table 3 (Primary Research)

Deaths per year	2010	2012	2014	2015	2016
Public Hospitals					
Sawai Man Singh Hospital	820	1245	945	1147	1078
Jeevan Rekha Critical Care	956	1763	1107	1118	1124
Private Hospitals					
Santogba Durlabji Memorial Hospital	642	945	698	642	674
Monilek Hospital	420	854	642	845	667

As analyzed by Table 3 death rate in public hospitals are sky high than compared to private hospitals. This supports the argument that Public Hospitals does not have enough facilities to cater the patients. Majority of Private Hospitals have got all 31 out of 31 facilities where as majority of public hospitals have got 23 out of 31 basic services according to the survey made through primary research (refer appendix 1). This justifies that public services are way behind than compared to private.

Comparing the infrastructure for private and public Hospitals

Table 4 (Primary Research)

Public Hospitals	Sawai Man Singh Hospital	Jeevan Rekha Critical Care
Wards	45	40
Nurses	800	680
Beds	1609	1073
Paramedical Staff	1200	1000

Table 5 (Primary Research)

Private Hospitals	Santogba Durlabji Memorial Hospital	Monilek Hospital
Wards	56	44
Nurses	1223	860
Beds	2120	1800
Paramedical Staff	1460	1290

On extrapolating the data given in table3, we conclude that Private Hospitals has all of the technologies required to carry out specialized treatment than compared to public hospitals. Table 4 and 5 represents the infrastructure and staff within both Private and Public hospitals deducing that Private Hospitals have greater infrastructure than Public ones.

In India, public healthcare sector accounts for only 20% of the total industry expenditure, representing around just 1% of the GDP which is termed amongst the lowest in global point of view. India's public health care is under-funded and is small in size to complement the population's exponential growth and to meet the current health needs of the country.

One can't suppose of planned economy in healthcare sector because this would have lead to hazardous effects on the economy in both perspectives, social as well as economical point of view.

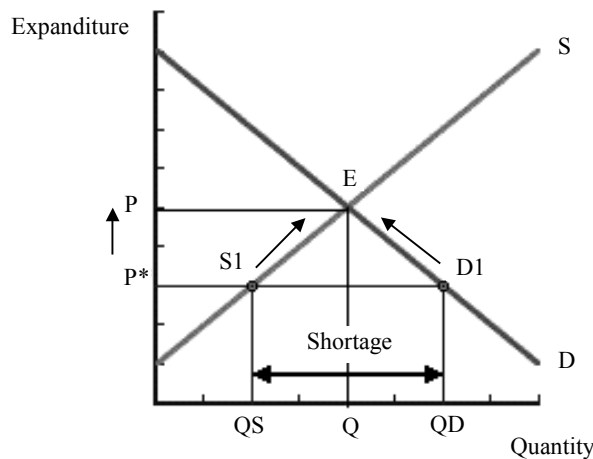


Figure 8

In Figure 8 the demand curve D represents the demand for health care in the economy whereas the S curve portray the expenditure made by the economy on the healthcare sector and they- axis too represents the expenditure rather than price because in India the price of general health care activities are decided by the government under certain policies. Initially if we talk of planned economy working in the health sector then the expenditure proposed will be low intersecting Sand D curve at S1 and D1 respectively displaying the shortage in the market of Healthcare Institutions. The gap between QS and QD shows the percentage of population which will be ignored due to less expenditure made by the government. Economic terms this is determined as shortage or excess demand but in this critical situation this is determined as the ignored population which was in need of health care facilities. The graph is in context of the population because this under-funding will have an adverse aggregate impact. People all over the country would have suffered from several diseases and its spread will have a great effect on growing population, the death rates would have touched heights with Infant Mortality Rate (IMR). This is social point of view; the next economic crisis that stands on the way is shrunk in the labor market which would have brought the economy on the brick of being demolished.

Figure 9 is the resultant of Figure 10 which displays the situation of a labor market. Here, the aggregate supply AS has taken a backward shift to AS2 in response to adverse hygienic conditions. The equilibrium has shifted from E to E2 with corresponding decrease in the quantity of labors and an increase in average wage rate. The scenario has created a negative impact on the economy that is reflected as a backward shift in LRAS and SRAS to LRAS2 and SRAS2 respectively. This has correspondingly created a decrease in national output from Y to Y2 and increased average price, i.e. from P to P2. This makes the economy to suffer through huge crisis.

This has justified that privatization is required in the economy seeing the population growth.

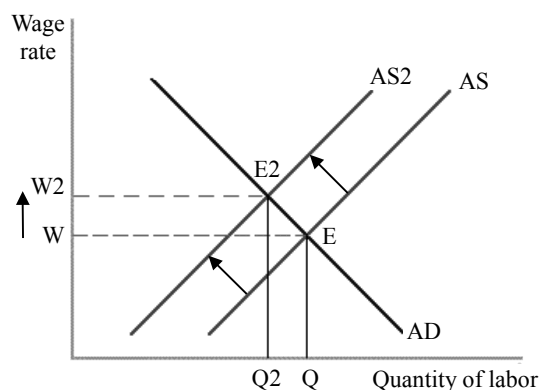


Figure 9

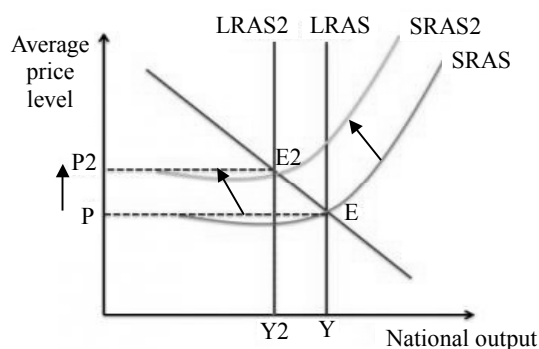


Figure 10

Drawbacks of privatization in Healthcare sector

It is important to determine the drawbacks of privatization in Healthcare services in order to make a justified and non biased conclusion in an attempt to suggest certain policies that can enhance the industry and boost privatization. These suggestions will be taken as to counter the disadvantages of privatization in the industry.

The main drawbacks in privatized healthcare sector are-

- High Pharmacy price
- High Surgery/operation price
- No Generic Medicines

India is facing another threat in the healthcare sector which is posed by 'Branding of Pharmacy'.

The cost of production of most of the medicines is many times less than the maximum retail price (MRP) printed on it.

Even after being the world's third-largest pharmaceutical industry, WHO (World Health Organization) claims that in India, after 65 years of independence, 65% of natives does not have access to basic health care facilities due to high costing of medical services in private owned organizations.

Figure11 shows the black marketing created by the industry itself. Here actual price of medicines is expected to be at P inclusive of all taxes and profit margins. Drugs, being a necessity good, have greater demand i.e. at Q2 striking the demand curve at QD. Industry takes advantage of providing necessity goods and charges more at P2 with an increased supply of QS. The gap between QS and QD is termed as Black Marketing. The difference between P and P2 is the black money which is hidden from the economy.

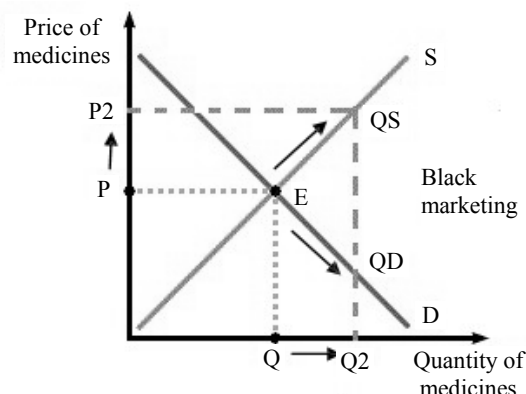


Figure 11

Table 6

Trade name of medicine	Pharmacological name, strength and dosage form	Manufacture	PTR(1×10)	MRP(1×10)	Mark-up (retailer)
Alerid tablets (B)	Cetirizine HCL 10mg/tab	Cipla	INR 27.16	INR 35.31	30
Cetcip tables (B/G)			INR 2.24	INR 25.00	1016
Fludac capsules (B)	Fluoxetine HCL 20 mg/cap	Cadila	INR 29.80	INR 37.26	25
Cadflo capsules (B/G)			INR 6.00	INR 28.00	367
Ciprobid tablets (B)	Ciprofloxacin 500 mg/tab	Cadila	INR 54.84	INR 68.56	27
Ciprodac tablets (B/G)			INR 15.00	INR 68.56	357
Lanzol-30 capsule (B)	Lansoprazole 30 mg/cap	Cipla	INR 42.36	INR 53.77	27
Lansec-30 capsule (B/G)			INR 15.68	INR 47.25	201
Restyl tablets (B)	Alprazolam 0.25 mg/tab	Cipla	INR 11.85	INR 14.82	25
Tranex tablets (B/G)			INR 2.20	INR 11.34	415

Branded medicine (B) Branded-generic medicine (B/G), Price to the retailer (PTR) Maximum Retail Price (MRP)

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3081449/>

In Table 6, PTR represents the Price to The Retailer; it is the price that wholesaler charge from Retailer and MRP is the maximum retain price that a retailer could charge from the patients but they charge high above expected from MRP i.e. at Mark-up price. For instance, 10 Cetcip tablets charged to a retailer is PTR 2.24 Rupees with an MRP of 25Rupees but the end user(patients) receives it at Mark-up cost set by the retailer which costs1016 rupees. This high difference may lead patients to go without.

The major negative counterpart among the private hospitals in the price they charge for the surgeries. According to are search in private and public hospitals certain results were discovered—

Table 7(Primary Research)

Common Treatments	Santogba Durlabji Memorial Hospital(Private Hospital)	Sawai Man Singh Hospital (Public Hospital)
	Charges(in INR)	Charges(in INR)
E.N.T operations	2000-15000	150-5000
Gynaecology	2500-17000	120-2000
Paediatric Surgery	15000-22000	3000-11000
Thoracic Surgery	15000-25000	6000-12000
Urology	8500-25000	2000-18000
General Surgery	2500-27000	1500-16000

The above two comparative data proves that the price of private hospitals is comparatively

extremely high than compared to government hospitals. This has been a drawback of privatization, though it has simultaneously contributed to hygienic conditions in hospitals. Interview with the doctor Sawai Man Singh Hospital has identified that crowd of customers (patients) has contributed to unhygienic conditions in the hospitals. This is one of the reasons which ponder upon high price charged by the private firms in the sector.

Conclusions

Privatization in Healthcare sector has created a lot of opportunities for the economy but it too has drawbacks. Privatization has raised employment and has the potential to expand all over with greater facilities than provided by the government. As privatization will expand healthcare sector government will be relieved out of expenditure made by them as it will be offset by the private sector. With better infrastructure and a great scope in future the spending in this sector will turn out to be an investment which will be profitable in view of economy as a whole.

A common drawback within every private healthcare center is the fee it charges from the public which tends to be so high that people prefer government over private controlled healthcare centers thereby increasing crowd which pertains to unhygienic conditions and harms the infrastructure. Certain policies must be executed by the government to regulate the prices charged by the private healthcare centers. There are some countries that have taken special steps to boost the healthcare sector.

- In USA, price ceiling policies are initiated to control the price charged by Private Hospitals in the United States. Price Ceiling is a government imposed price control on how high a price must be charged. US has subsidized their pharmacy industry in order to create an access to medicines to every native of the country.

- In Canada, Medicare sector is cost-effective partly because of their administrative simplicity. In each province of the country every single doctor handles the health insurance claim against the provincial insurer. There is no need for consumer, assessing healthcare to be involved in reclaim and billing.

- In Singapore, government ensures affordability in healthcare sector, especially the privatized healthcare systems, through a system of compulsory price controls, subsidies and savings.

- Hong Kong P.R.China has one of the best healthcare sector all over world because of its professional health services, health education and well developed healthcare and medication system.

The purpose of analyzing the policies like such is to identify methods that India can implement to alter the drawbacks of privatization in healthcare sector. Indian government can create policies like price flooring can be used to regulate the price charged by Private Healthcare centers. BPL (Below Poverty Line) cards are introduced by Indian government to look after those people who are critically in need of government aid. Government provides the BPL card Holder to get a treatment in very low rate; due to poor administration, the checking is not made. Since private firms operate to maximize profit, government has to fund the institutions for BPL card holders and checking must be made on a regular basis.

Private Hospitals' pricing policy can be controlled by implementing taxation techniques. Hospitals' that charge high to BPL cardholders must be taxed high enough which will force such Hospitals' to lower their pricing policy for BPL cardholders. The execution of these laws must be monitored by government regulatory bodies.

Strict actions must be taken to control Mark-up price rated by the retailers. Generic Stores must be established providing generic drugs. Generic drugs can provide major savings in healthcare expenditure made by the government since they are substantially low in price in comparison to innovator brands. Both, Generic drugs and branded drugs have equivalent contents i.e. quality though branded medicines are priced high because of black marketing. Establishing generic stores will abolish black marketing that take place in Pharmaceutical Retail Outlets.

Every economic concept has its own advantages and limitations; even though if the policies are implemented to overshadow the limitations, disadvantages will still be there but the important criteria is to deliver affordable and quality healthcare services to the nation. Once the nation has achieved privatization in healthcare sector with government intervening by policies to maintain social welfare

and offsetting the dark side of privatization, the economy will experience high rates of economic growth in a long-run.

Appendix 1

FACILITIES	Private Hospitals	Public Hospitals
Anesthesia	√	√
Chestand T.B.	√	√
Dietetrics Department	√	√
ENT	√	√
General Medicine	√	√
Neuro Surgery	√	√
Ophthalmology	√	X
Paediatrics	√	X
Physiotherapy	√	√
Radiology	√	√
Urology	√	√
Cardiac Thoracic Surgery	√	X
Dentistry	√	√
Emergency	√	√
G.I. Surgery	√	X
General Surgery	√	√
Neurology	√	√
Orthopedic	√	√
Pathologyand Transfusion Medicine	√	√
Plastic Surgery	√	X
Rehabilitation and Limb Fitting Centre	√	√
Cardiology	√	√
Dermatology	√	√
Endocrinology	√	X
Gastroenterology	√	X
Nephrology	√	√
Obstetricsand Gynanecology	√	√
Pediatic Surgery	√	√
Pediatic Neurology	√	√
Psychiatry	√	X
SpeechTherapyand Audiology	√	X

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The “Top-level Design” Mechanism in the Process of China’s Policy Making

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Abstract Chinese governments are facing great decision-making pressure due to the accumulation of problems concerning social inequalities, economic downturn, political development, environmental deterioration and other problems. Despite the fact that further reforms are needed, they are encountering some pretty strong resistance from mighty elite alliance, and there also seems to be a lack of motivation for public sectors or local governments to push forward the reforms. In order to tackle vital problems and wicked issues like these, the “top-level design” mechanism is adopted. The central government has made a series of top-level designs to direct the next-step reform and to provide an overall layout. The Central Leading Group for Deepening Overall Reform, the Central Committee of the Communist Party of China, the State Council and its ministries has successively issued a range of policies. It cannot be denied that the top-level design in China is bearing a tendency of generalization currently. What also needs to be pointed out is that governments and their departments tend to regard the top-level design as a new form of leadership. However, relying too much on top-level design may also lead to some new problems generated by bureaucracy and formalism.

Key words Top-level design, The Central Leading Group for Deepening Overall Reform

1 Introduction

The “top-level design” mechanism in the government process of China refers to the concurrence of top-level design in the policy making. In the context of this paper, top-level design has two meanings: one stresses the overall plan and the general developing strategy generated by central authorities on the fundamental goals and paths of national development, as well as the basic solutions to vital issues in major domain. The other refers to the top decision-making process of governments or relevant public sectors. The main feature of top-level design is its top-down process in policy making, but it also experiences a bottom-up process when it comes to the consulting process. What worth mentioning is that whether the top-level design can fully function depends heavily on the Chinese political system and administrative system? Besides state governance, the expression and integration of different interest are also important functions of the Party and government system to undertake. And such dual functions of top-level design ask for a quicker respond from government to citizens’ need and more prompt decisions.

2 Characteristics of the top-level design

The most important top-level designs in these years are made by the Central Leading Group for Deepening Overall Reform (CLGFDOR) and other special central leading groups. While the national level’s designs are made by the CPC Central Committee, the State Council, the NPC Standing Committee and other state organs of power. In this article, the CLGFDOR and the accelerating decision-making process of central ministries are taken as examples, to analyze the characteristics of the frequently used top-level design.

2.1 CLGFDOR is a kind of quasi entity organization

According to the administrative structure of China, leading groups belong to consultant and coordinating bodies. Their usual way of working is “One Project One Discussion”, and does not need a specialized system of the entity organization. However, the organizational developing degree of the CLGFDOR is higher than common consultant and coordinating bodies. Because of its internal three levels of structure, which are “the leading group-special teams-the office”, the group has a part of the entity organization’s characteristics. However, the common consultant and coordinating body only has two levels of structure, which are “the leading group-the office”. Generally speaking, only permanent institutions will set up working systems. But since its inception, the group has formulated its own

system of operation, which “Working Rule of the Central Leading Group for Deepening Overall Reform”, “Working Rule of special teams of the Central Leading Group for Deepening Overall Reform” and “Working Rule of the office of the Central Leading Group for Deepening Overall Reform” adopted at the first meeting. This is another evidence of the group’s special characteristics. What’s more, consultant and coordinating bodies don’t have to work out annual work points because it might have temporary jobs. But formal institutions or entity organizations must have annual work plans. Then, the CLGFDOR will work out the main points for this year at the beginning of each year.

2.2 Meeting of CLGFDOR is a kind of “super joint conference”

The group’s participators include person in charge of the CCP, the government, the PLA, the NPC and CPPCC, Police, Procuratorates and Courts at national level. This shows that the group is the supreme leader of major organs of authority, which is equivalent to a joint conference of the highest organ of state power. The “super joint conference” has the advantage of implementing its policies strongly. Because the party’s leadership gives legitimacy to the group, major organs of authority must implement its decisions. The group’s decisions are directly implemented by various organs of power and departments of the party central committee. Therefore, costs of decision-making and execution both are saved, and the efficiency of decision-making is improved.

In order to get through the tough period, China’s reform needs to concentrate on resources and power in a short time. In order to achieve this goal, the party central committee needs to concentrate power on top-level design and implement it from the top. The advantage of the leading group mechanism is that it can transcend the specialized division of labor among the various organs of power, concentrate on the overall objective, and form the resultant force to the utmost. As a kind of task-oriented organizations, the leading group is different from the conventional organization in the aspects of resource acquisition, organization structure, operation mechanism, manpower and material resources arrangement and methods of management.^[1]

2.3 leading groups’ work is problem-based

When it comes to deepening reform, Premier Li Ke-qiang put forward that “we need to focus on areas where the public call for reform is strongest, the most pressing problems hindering economic and social development, and links on which there is extensive public consensus” in Report on the Work of the Government 2014. This shows that the reform should start with those very serious problems. China’s policy process shows a “forced” mechanism. Problems that have been accumulated over a period of time, which damaged the society and economy seriously, and have reached the point that, cannot be ignored. Only the central government can solve these problems which involve fundamental institutional adjustment or major changes in policy, so the decision pressure is concentrated in the central government. It is for this reason that the masses have repeatedly called for China’s reform and development needs top-level design. In Speech at the Symposium on philosophy and Social Sciences, Xi Jinping pointed out that “Adhering to the problem orientation is the distinctive feature of Marx’s doctrine. The innovation roots in problems and is drive by problems”. The establishment of CLGFDOR has a clear pertinence. Its decisions directly point to the major issues currently, which has been the main public concern, making the top-level design has political legitimate and supported by the masses.

2.4 CLGFDOR is a promotion to the leading group mechanism

The leading group is a kind of consultant and coordinating body in the government process of China. Usually, the leading group is made up of elated organizations. What the leading group leads is the “system”, and the following parts of the system are related ministries of the Party Central Committee or the government and their affiliated institutions.^[2] However, CLGFDOR treats the whole country as a “system”. It is the coordination mechanism of the highest organs of power within the national leadership system.

2.5 Motivations of the frequent decisions of the central ministries and commissions is mainly from the following aspects

First, the top leadership has accelerated the transmission of reform initiatives. As departments directly under the leadership of the Central Committee of the Communist Party of China, they directly felt the determination of CLGFDOR in a comprehensive way. Under the influence of the Pressurized

System, central departments of the Party, the State Council and its departments accelerated the speed of making decisions under the pressure of frequent top-level design made by CLGFDOR. The number of policies has increased markedly.

Second, the central authorities' sense of responsibility has increased. In the context of increasing anti-corruption efforts, holding to account officials who are indolent, sloppy, or neglectful of their duties has become a new focus of the national administration. To this end, the party and government have introduced a number of measures, of which the highest degree of institutionalization is the list of power and responsibility developed and published by government departments. By defining the boundary of power, "things that are not authorized by law cannot be done" becomes the power boundary of government action. By defining the division of responsibility, the government is required to "must fulfill statutory obligations". In order to avoid being accused of inaction, officials will take the initiative to perform their duties.

Third, the main function of the central department is to formulate policies. According to the division of labor in the policy process, the responsibility of the central government is to formulate national policies, which are not usually carried out by the central government, and the implementation of policies requires formulations of rules or plans for implementation at the local and lower levels. Therefore, the evaluation criteria for the central departments are mainly whether they have introduced policies, rather than whether they have implemented policies. This kind of assessment mechanism makes central departments pay attention to decision-making, but ignore the implementation, and only pay attention to the speed and quantity of decision-making, pay no attention or less attention to the feasibility of policies.

3 The applicability of the "top-level design" mechanism

Top-level design is the tool of the policy process in China, which has his special effects as well as his scope of application and need to consider the applicability when using it.

3.1 To avoid top-level design being over-used

In recent years, all levels of leadership focus on top-level design, not only the government and its departments have been engaging in, institutions and enterprises have also been engaging in the top-level design. There has been a trend towards top-level design for everything. In fact, not every level or unit needs top-level design. Top-level design, as the name suggests, should be carried out by the highest level of decision-making, and with the administrative level down, the need for top-level design becomes less and less. Taking the macro-economic control as an example, only the provincial governments share parts of macro-control responsibilities with central government, and the government below the provincial level does not have the power in this regard. When it comes to legislative power, apart from the NPC and the provincial people's Congress, only city governments with administrative districts below the provincial level have part of the local legislative power. Therefore, the top-level design in low level governments is only a holistic or long-term policy of the region. Since most of local policies are based on the implementation of higher-level authorities' policies, there is not much to do with top-level design. Compared to higher-level governments, local governments' policies are less stable. Once the high-level governments' policy has changed or been adjusted, local policy must make adjustment accordingly or even change a lot than changes made in higher-level government. Therefore, the local-level governments' policies are not real top-level design.

One reason for overused top-level design is that the government and its departments see top-level design as a new way of leadership. In recent years, the emphasis on top-level design has become an excuse for local governments to strengthen the ability to lead, use, or distribute resources centrally. In order to emphasize their capability for good governance, not only the government and its departments, even government-affiliated institutions are frequently create "top-level design". In fact, they make plans only for the sake of planning in many cases. One representative performance is the frequent introduction of various types of planning. On one hand, the number of various planning increased significantly in recent years. For example, from 2006 to 2011, 71 policy documents and regional planning about local development were introduced, with an average of 2 or more formulated in every province.^[3] On the other hand, there are too many Five-Year Plans. Five-Year Plans are not only being

created by large administrative units, but also for small-scale institution. There is a large overlap between those small plans and the big one. Among them, it is difficult for local governments to create fresh content compared to the big plans. In addition, different departments are also frequently engaged in planning, most of which are repeated or overlapping, and some even conflict. For example, zone planning and urban-rural planning are made by different departments. As reported by People's Web in early 2016, one county applied 67 different types of planning.^[4]

In fact, planning is not the more the better, nor is it necessary for every unit to plan. For example, Five-Year Plans are not necessarily needed in local-level government or small organizations, which are mainly responsible for implementing those planning and policy devised by higher authorities, breaking down superior policy, specifying and localizing the top-level design. This is similar to the policy process. Plans of low-level governments or small organizations are bound by higher governments' planning, and low-level governments or small organizations must adjust their plans accordingly if high-level governments' planning changes. This violates the rule that planning cannot be changed frequently, so that low-level governments and small units' planning without authority, and become a decoration. In addition, if different levels and departments are planning on the same matter, not only will lead to conflicts between the planning, but also make it difficult to implement those plans. Low-level governments are busy with their own planning, ignoring the implementation of the high-level planning. They only pay attention to planning, but ignore how to implement the plan. This leads to planning as a blueprint that is not really going to be implemented.

3.2 To avoid new formalism

After the top-level design has been generalized, governments at all levels and institutions have obviously accelerated the decision-making within their own jurisdiction, and the number of policies has increased significantly. For example, policies promulgated by the current State Council ministries and commissions are significantly more than the Eleventh government. From the convening of the 18th National Congress of the CPC to September 30, 2016, ministries and commissions which introduced policies, examined and approved documents more than 100 are the following: Ministry of Housing and Urban-Rural Development (3979), Ministry of Civil Affairs (2362:2014.1-2016.10), Ministry of Education (2144), Ministry of Industry and Information Technology (1420), Ministry of Transport (1000+), Ministry of Land and Resources (928), National Health and Family Planning Commission (922), Ministry of Commerce (912), Ministry of Human Resources and Social Security (299), Ministry of Science and Technology (260), Ministry of Agriculture (201), Ministry of Environmental Protection (169), National Audit Office (120)¹. Local governments have also followed the pace of the central government to speed up the introduction of local policies. Judging from the current situation, there is a tendency to blindly pursue speed and quantity, but no concern the quality. Some places or departments publish a new policy every ten days, as well as implementation plan of the policy. Cadres at the basic level complain that they are not only unable to implement these policies, but also have no time to read document of them.^[5]

Another problem is that some departments make decisions only for the sake of decision-making, regardless of whether the policy can be implemented. Some departments ignore the investigation before the decision, and seldom seek the opinions of the grass roots and the parties concerned, which leads to the fact that the policies formulated by them are divorced from reality and are not feasible. Some policies are too complex and difficult to execute. Some policies make it difficult for the executive to understand, and also affect the speed and effectiveness of implementation. Decision making is the basis for effective implementation of policies. Decisions cannot be effectively implemented if decisions fire into the wrong flock or the quality of the decision is poor.^[6]

If the government ignores the scientificity of decision making and implement it from top to bottom forcefully, it will lead to the low-level government to implement high-level's policy formally, such as the phenomenon of "implementing policy by policy". Some local governments are eager to implement the policy of the Central Committee. Before they have made clear what the central policy meaning, they are busy formulating local policies, resulting in policy's "own goal". For example, in order to accelerate the implementation of central government's policy of "de-stocking" about real

1 Adapt from related ministries' websites.

estate industry, Shenyang announced the “Executive Opinions of the General Office of the Shenyang Municipal People’s Government on Promoting the Healthy Development of the Property Market” on the afternoon of March 1, 2016. It offers support for college and secondary vocational school students, as well as new graduates to buy housing without the down payment. This new policy has been spread to “college students can buy housing without the down payment”, causing heated debate. But it was canceled in less than half a day. On the evening of March 1st, Shenyang released official news that the “zero down payment” temporarily is impracticable.^[7]

3.3 To avoid the isomorphic responsibility being strengthened

In China’s vertical intergovernmental relations, the question of “isomorphic responsibility” exists all the time. From the central to the grassroots, governments do the same things as there are no differences between governments’ functions at all levels. Governments at all levels have set up the same departments, and have formed a kind of “linear-shaped” intergovernmental relation.^[8] The requirement of the system characterized by “dual top-level” operating mechanism is coincide with the isomorphic responsibility in the vertical intergovernmental relations. In particular, the operation of top-level driving would be effective with the assist of “strips” in the vertical intergovernmental relations to promote the central policy from the top to down. In this system, the superior government and the low-level government share the same duties and function, the low-level department is the superior department’s “legs”, and must execute the superior’s order. Because of the same function, the subordinate is easier to understand the superior’s instruction, and instructions of the superior are easier to be executed. On the other hand, “isomorphic responsibility” also allows the superior inspects the subordinate expediently. Donald Van Meter & Van Horn put forward some elements of policy implementation in “The Policy Implementation Process: A Conceptual Framework”, exactly correspond to subordinate relations between the superior and the subordinate, the guidance relationship between the high-level and low-level governments, governments and departments at all levels have the same functions in intergovernmental relations in China. These structural features facilitate the implementation of high-level instructions and organizational communication, and can encourage policy implementation. These are in line with what Donald Van Meter and Van Horn point to as a necessary condition for policy implementation.^[9]

Another kind of phenomenon associated with “isomorphic responsibility” is the high concentration of power within the organization. In each level of government, every government department, and even every institution, the decision-making power is concentrated at the top, especially the hands of “the head”. This pyramidal power structure allows each level of government or every unit to think that the top-level design task is natural. This mindset leads to the tendency of subordinates to be lazy. They are used to waiting for the superior’s decision and losing their initiative. Top-level design is usually a decision made by a small number of people, and its participation is very narrow. If the government relies on top-level design too much, it may ignore the democracy of decision-making and ignore the decision-making ability of subordinates. When it comes to the relationship between the central and local, if the government relies on top-level design too much, it may lead to the local government depend on the central government too much, causing local governments to avoid decision-making responsibility and push the problem to the central government. As a result, local problems may rise to national problems and become more difficult to solve.

4 Conclusions

From the fundamental sense, the purpose of avoiding the overuse of “top-level design” mechanism is to clarify the government-market relationship and to solve the problem of imposing too much under control. After the top-level design task is finished, we could not apply it into everything. The use of “top-level design” mechanism is always a supplement to the normal policy process.

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Research on the Mechanism of University Think Tanks Influencing Public Policy Process in New Media Environment —A Case Study of “The Belt and Road” Initiative*

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Abstract As a critical component of Chinese think tanks, university think tanks of China have become an important bridge between policy communication and academic research for their professional research capacities and positive social influence. Hence, university think tanks, which have significant influences in the research field of “the Belt and Road” policy, were selected as the subject of this paper, in which their research orientations, research findings, and academic trends are analyzed from the perspective of new media. On this basis, the participation mechanism of university think tanks in “the Belt and Road” policy field is summarized according to the research features and functions of different types of university think tanks, such as think tanks established by comprehensive universities, foreign studies universities, or other local universities.

The research findings reveal that university think tanks tend to spread their opinions and suggestions to the public or decision makers through various media methods (e.g. website, microblog, WeChat, forum construction, and news reports), mainly aiming at influencing public opinions and decisions. Furthermore, new media and university think tanks can have effective communication with the public and the government in accordance with their specific features, thus creating a mutually accessible and influential policy network structure. In this network structure, media exposure and public opinions become the problem flow during the research on “the Belt and Road” policy. Then, university think tanks and media comments put forward feasible solutions in response to relevant problems, thus forming the policy flow. Next, related policy suggestions driven by public opinions and social interest groups will become a political flow to affect policy activists. Eventually, strategic decisions will be made, realizing the expression of public opinions and the communication of policy output.

Key words New media, University think tanks, Policy process, The Belt and Road, Multiple streams

1 Introduction

Since 2008, the number of global think tanks has shown a rising trend, and the globalization is also affecting China. According to *Global Go To Think Tank Index Report 2016*, there are totally 6846 think tanks in the world. The United States ranks the first, which has 1835 think tanks. China has maintained its second place since 2008. In 2016, the number of China’s think tanks has reached 435, and nine of them are listed as World Top Think Tanks. However, this proportion is still less than 1/4 of that in the United States. Domestic statistics have shown that the current number of China’s think tanks may have exceeded 2500^[1]. This estimation may be different from international statistics. But the big difference showed that, although China has a large number of think tanks, the influences of most think tanks are not recognized internationally, and the development of China’s think tank is still at the start-up stage compared with the United States who ranks the first either in quantity, quality or influence.

In early 2017, CTTS of Shanghai Academy of Social Sciences released 2016 Chinese Think Tank Report: Influence Rankings and Policy Suggestions, which divided think tanks into four types according to the growing environment and properties presented during the operation of the think tanks. These four types are government and military think tanks, social sciences think tanks, university think tanks and folk think tanks. Government and military think tanks, and social sciences think tanks are official think tanks, which have strong dependence during the administrative process, and are quite

*Financed by National Social Science Funding “The Role of Think Tanks in the Policy Process in China” (Project No.: 15BZZ046).

closed; folk think tanks are of insufficient information sharing mechanisms, and lack long-term and stable capital resources. On the whole, these three types of think tanks are in short of independence. Compared with official and folk think tanks, university think tanks present more autonomy in research field and orientation. Additionally, they can also enjoy the financial support from the country. Hence, university think tanks have the advantages of independence and durability.

With the development of internet technology, new media such as microblog, WeChat and forum have become new ways for the public to express their opinions, to proceed with social mobilization, and to participate in policy researches. As an auxiliary body for policy decisions, university think tank plays a crucial role in political spreading. Hence, it has become a new subject for think tank construction and political spreading of how to make an effective use of university think tanks to involve public opinions into formal political structure to arouse the attention of policy makers and public administrators in new media environment. During the process of public policy making and political spreading, China not only needs to learn from advanced overseas experience, but also needs to consider the new media environment based on the national conditions of China to give full play of the influence of think tanks on policy making and spreading.

2 Policy research advantages and development situation of university think tank

Since the 18th CPC National Congress of China, the new session of the CPC central committee has attached great importance to think tank construction. Xi Jin-ping, the General Secretary of the Party, also made a series of important instructions on the construction of think tanks with Chinese characteristics. During the deliberation of the Opinions on Strengthening the Construction of New Types of Think Tanks with Chinese Characteristics at the 6th meeting of the Central Leading Group for Comprehensively Deepening Reform in 2014, Xi Jin-ping called for an integration of wisdom and power from all walks of life when managing state affairs, and the construction of new types of think tanks with Chinese characteristics has set off a national craze, of which the university think tank serves as one of the important carriers.

The construction of new types of think tanks with Chinese characteristics should emphasize the establishment of modern think tanks. The openness, interactivity, independency and public opinion characteristics that can guide social topics of think tanks should be emphasized and cultivated for the construction of modern think tanks. First, the construction of modern think tanks requires independency of think tanks. Different from official think tanks and social sciences think tanks, university think tanks do not have independent corporation position. However, they do not rely on the Party and government authorities, and are seldom restricted or interfered by the government. Thus, they can maintain the objectivity and independency of policy researches to the maximum. Meanwhile, university think tanks are also different from folk think tanks which are completely separated from the government and exist in a drifted state. Owing to the personnel management system, project cooperation and business connection with the government, university think tanks normally have a good relationship with the government, and have the advantages of obtaining the overall situation, data information, micro dynamics and information feedback, etc. The unique characteristics of both independence and friendliness with the government of university think tanks have provided a good policy research environment during the policy research process of university think tanks. Secondly, university think tanks are also featured with complete subjects, a galaxy of talents, well-equipped science and research facilities and extensive external exchanges, which can help university think tanks conduct independent and autonomous researches, form objective and evidence-based research results, and spread the results widely through various forms of mass media such as magazines, periodicals, forum and networks, etc. In this way, a wide range of interaction between university think tanks and social groups can be realized. As a result, the real opinions of the public can be timely transferred to the researchers of university think tanks, helping them further improve their research capability and recognition for their research achievements. During the process of repeated conveyance of public opinions, university think tanks can get dependence and obtain actual discourse power. Hence, university think tanks are featured with strong information openness and social interactivity, which can guide public opinions, expand the influence, and provide effective intelligence and manpower support

for government's decision-making as well as the social development.

According to *Global Go To Think Tank Index Report 2016*, nine Chinese think tanks are listed among World Top 175 Think Tanks. Six of them are official think tanks, two are university think tanks and one is folk think tank. Research findings have shown that the number of official think tanks and university think tanks accounts for 95% of China's think tanks, while the rest 5% are folk think tanks. *2016 Chinese Think Tank Report* ranked think tanks based on their comprehensive influence, itemized influence, intra-system influence and professional influence. Among the top 30 comprehensive influence think tanks, university think tanks hold four seats; in the top 10 system influence think tanks, National School of Development at Peking University (NSD), Institute of Contemporary China Studies of Tsinghua University, Chongyang Institute for Financial Studies of Renmin University, and National Academy of Development and Strategy of Renmin University are the top four university think tanks; in the eight-classes ranking of professional influence think tanks, there are 15 university think tanks; in the four-classes rankings of itemized influence think tanks, there are 5 university think tanks.

The above data shows that, although university think tanks are less influential in decision-making compared with official think tanks, they have huge social influence. First, university think tanks ranked highly in professional influence and itemized influence rankings with a large proportion; secondly, the first *Chinese Think Tank Report* is made and released by Shanghai Academy of Social Sciences in 2013. This report only listed five seats for professional influence think tanks, while *2016 Chinese Think Tank Report* listed at least five seats, including many new university think tanks such as Chongyang Institute for Financial Studies of Renmin University, National Defence University of People's Liberation Army, NDU, PLA, Party School of the Central Committee of CPC. and National Academy of Development and Strategy, RUC; at last, university think tanks frequently appeared in various rankings. For example, National School of Development at Peking University (NSD) repeatedly appeared in seven rankings, National Academy of Development and Strategy, RUC repeatedly appeared in three rankings, and Chongyang Institute for Financial Studies of Renmin University of China repeatedly appeared in two rankings; this shows that the influence of university think tanks is growing, with a wide penetration.

3 Current situation of university think tanks using new media

The forms of media mainly include traditional media, new media, we-media and all-media. All-media is a macroscopic description of current media forms; we-media is a description of how individuals participate in media activities from the perspective of microstructure; new media is a contrast to traditional media. Traditional public affairs consultation and discussion as well as citizens' opinion expressions are realized mainly through traditional media such as newspaper, television and radio. The expressions of public opinions are facing various problems as limited channels, ineffective communication and time lags. Moreover, in modern market economy, traditional media is bound by their own interest demand and value guiding responsibility, which cannot adequately and completely reflect real public opinions and value preferences of the public. Compared with traditional media, new media has turned from "send-receive" unidirectional information transmission to bi-directional communication and sharing, which changed the one-way information transmission status of the traditional media age^[2]. In new media environment, people can get the latest information of the formulation and implementation of the public policies made by relevant authorities through various carriers such as outdoor mobile LED display, bus-mounted LED screen, microblog online and offline activities, information push of official microblog or WeChat. The public can use fragmented words, cyber-words and network onlooking to express their own opinions and standpoints. This way, the communication and feedback between the public and the executive body can be strengthened, and policy bodies can be aware of the public's interest demand timely, which can reduce the difficulties during the policy execution as well as the violations of law and regulations caused by enforcement of policies. It can also enhance the change of public agenda and assure smooth execution of policies. Through new media, the public can connect the mass communication and interpersonal communication tightly during the execution of public policies, and create a new phase of public policy-making.

Dr. James G. McGann, director of the Global Go To Think Tank Rankings launched by the University of Pennsylvania, believed that social media is a common way for think tanks to transfer and

publish their research achievements^[3]. Think tanks from the United States showed that the primary purpose of think tanks is to influence government's decision-making. To realize this, they should first influence the media, let decision-makers and the public know the policies and opinions made by the think tanks through media buildup, spreading and guidance, and form strong public opinions indirectly to put pressure on decision-makers. There are over 2000 think tanks in China. With respect to website construction, most of the think tanks have established their own website. Although the websites have different layouts and contents, related information about think tanks can be easily obtained through search engines. Regarding the website construction of university think tanks, Chongyang Institute for Financial Studies of Renmin University set out its website construction in January 2013, and launched the website in March 2013. After one year of operation, they upgraded and revised the first version of their official website. Now the new website has a specific classification and clear entries, which mainly focuses on real-time comments and the opinions of institutes with research achievements and projects as its hefty support. Now the website is highly ranked among the domestic think tank websites, only behind the websites of Chinese Academy of Social Sciences, CASS and Development Research Center of the State Council. As for forum construction, the NBER-CCER Annual Conference on China and the World Economy held by the National School of Development at Peking University (NSD), "CMRC China Economic Observer (CEO)" Quarterly Seminar Annual Conference, and HSBC-PKU Economic Forum have great professional influences^[4]. According to the investigations on the organizations of forums and university official websites by highly ranked university think tanks, influential university think tanks all have their own official website and have organized forums (see Table 1).

Table 1 Public opinions transmission ways of China's university think tanks

University think tanks	Forum	Website	Microblog	WeChat
National School of Development at Peking University (NSD)	NBER-CCER Annual Conference on China and the World Economy, "CCER/CMRC China Economic Observer (CEO)" Quarterly Seminar Annual Conference, HSBC-PKU Economic Forum, etc.	http://www.nsd.pku.edu.cn/index.html	Microblog @ National School of Development Peking University (2796 followers)	Official account "National School of Development Peking University" was created and approved in 2016
Institute of Contemporary China Studies of Tsinghua University	None	http://www.sppm.tsinghua.edu.cn/	None	Official account "Institute for Contemporary China Studies, Tsinghua University" was created and approved in October, 2016
Chongyang Institute for Financial Studies of Renmin University of China	"To strengthen global economic growth" Forum, "Southeast Asian Economy, Social Status, and China" Chongyang Forum, Second Annual G20 Think Tank Summit, etc.	http://rdcy-sf.ruc.edu.cn/	Microblog @ RDCY (970,000 followers)	Official account "RDCY" was created and approved in October, 2013

University think tanks	Forum	Website	Microblog	WeChat
National Academy of Development and Strategy, RUC	“Asian Political Development: China’s Thinking Under Comparative Studies” Biweekly Forum, “China’s Religion & Rule of Law” High-end Forum, etc.	http://nads.ruc.edu.cn/	Microblog @ National Academy of Development and Strategy, RUC (372 followers)	Official account “National Academy of Development and Strategy, RUC” was created and approved in May, 2017.
The Institute of International and Strategic Studies (IISS), Peking University (PKU)	The Third Annual Meeting of “North Pavilion Dialogue”	http://www.ciss.pku.edu.cn/	None	Official account “Institute of International and Strategic Studies Peking University” was created and approved in May, 2017
The Institution of Modern International Relations (IMIR), Tsinghua University	The 6th World Peace Forum on Challenges to International Security: “Joint Efforts, Responsibility, and Reform”, The 15th Tsinghua International Security Forum: “Rise of Great Powers and International Support” Seminar, etc.	http://www.imir.tsinghua.edu.cn/	None	None
The Center for American Studies (CAS), Fudan University	None	http://www.cas.fudan.edu.cn/view.e_n.php?id=2569	None	Official account “The Center for American Studies, Fudan University” was created and approved in May, 2017
The Center for China in the World Economy (CCWE) at the School of Economics and Management of Tsinghua University	The Forum for the 30 Years Reform and Opening-up of China, The 31st CCWE Macro Economy Forum, etc.	http://www.ccwe.tsinghua.edu.cn/	None	Official account “CCWE” was created and approved in March, 2015
Yangtze River Delta Economic and Social Development Research Center, Nanjing University	High-end National Seminar on the Socio-economic Development of Yangtze River Delta Region	https://nubs.nju.edu.cn/	None	None

University think tanks	Forum	Website	Microblog	WeChat
Institute of International Law, Wuhan University	The 23rd Lecture of Yangtze Tribune	http://translaw.whu.edu.cn/	None	Official account "Institute of International Law, Wuhan University" was created and approved in April, 2017
Fudan Development Institute	2017 Shanghai Forum: a Focus on Cross-strait Relations and Peace in East Asia	http://fddi.fudan.edu.cn/	Microblog @ Fudan Development Institute (1658 followers)	Official account "Fudan Development Institute" was created and approved in June, 2014

Note: the university think tanks listed in Table 1 are the top 10 most influential university think tanks presented in *2015 China Think Tanks Report — Influence Rankings and Policy Suggestions* published by Shanghai Academy of Social Sciences.

Although forums and official websites can enlarge their influences on public opinions, they have limited interactions with the public. For example, some audio or video modules on the website cannot be watched or listened normally; most policy reports are presented in form of official documents; although some websites have interaction or communication modules, there are very few comments and the date information of the comments is also not found. This shows that the function of interaction and communication of these online interaction platforms are invalid. Young students are the main audiences of the official website of National School of Development at Peking University (NSD), but the website still lacks spreading interactivity. In the era of social media, microblog and WeChat are popular new media for the spreading of public opinions which are of good interactivity. From 2013 to 2017, the top ten university think tanks have created their own WeChat Official Account (see Table 1). According to TNS's investigation in 2017, the popularity of WeChat among Chinese netizens aged from 16 to 65 has reached as high as 68.6%, which shows that WeChat is an effective way of the communication between think tanks and the public; compared with WeChat, microblog presented weaker performance in construction and spreading ways. Among the top ten university think tanks, only three have established their own microblogs. Of them, the microblog of Chongyang Institute for Financial Studies of Renmin University has attracted almost one million fans. Totally 9599 microblogs were published from its foundation in January 2013 to July 2017, showing that the construction and interaction with its fans are stable; National School of Development at Peking University (NSD) has initiated its official microblog since 2010, but the number of its fans is less than 10,000. Only 120 microblogs were published before 2012. The official microblog stopped updating on August 21, 2012 but restarted on September 14, 2015. Till now, the total number of microblogs published is 350. Microblog is supposed to be a social media with wide content, high timeliness and interactivity. But they are not well used by university think tanks.

4 Research trends of university think tanks in "The Belt and Road" strategy realm

The global economic crisis in 2008 completely disclosed the dependence of Chinese economy system on overseas market demands, which is a caution that China should overcome the problem of excess production capacity and enhance technological competitiveness in global market during the new round of economic development^[5]. On this basis, Chinese President Xi Jinping proposed a well-known development strategy about "the Silk Road Economic Belt and the 21st Century Maritime Silk Road", also known as "the Belt and Road Initiative" or "the Belt and Road", in September and October 2013 during his visits to Central and southeastern Asian countries. The exploration into "the Silk Road Economic Belt" (SREB) dates back to the late 1990s when some government officials and scholars made appeals to strengthen the communication and cooperation between relevant domestic areas and

overseas economies through the construction of Silk Road. The research into “Maritime Silk Road” (MSR) was first conducted in the 1980s; most of relevant literatures focus on the history and culture of MSR. New era significances are attached to SREB and MSR from the perspective of time and space in the 21st century. Silk Road is a road for the development of both economic trade and culture. Recent researches on “the Belt and Road” policy mainly focus on hot topics as development of reciprocal economic and trade cooperation, cooperation between China and Arab countries, cooperation between China and India, regional economy development, China’s economic growth, the construction of economic belt, maritime strategy layout, religion and culture exchange, synergetic development of the minorities^[6].

In the four years after the proposal of “the Belt and Road” policy, this policy has gradually gained general consensus in the world. China has signed cooperative agreements with more than 30 countries along the Silk Road and established production cooperation with over 20 countries up to October 2017. All the deployments are in execution step by step, and international organizations as the United Nations made positive response to the policy. Many of the Chinese universities have also made positive response to “the Belt and Road” policy; various research institutes are founded focusing on the Silk Road Economic Belt to study this policy in coordination with Chinese innovation centers. Incomplete statistics reveal that think tanks established by Chinese universities concerning “the Belt and Road” policy are mainly located in Beijing, Shaanxi, Fujian, Zhejiang, Tianjin, and Hainan Province. And the number of university think tanks in Beijing ranks the first. Besides, these think tanks are basically supported by “985” and “211” universities and founded in 2015 (see Table 2). This way, they can all play an effective role of scientific research institution according to their own discipline advantages. For example, university think tanks related to foreign languages mainly involve cultural communication; comprehensive “985” university tinker tanks concern cooperative innovation and integrated studies; local university think tanks mainly focus on researches into certain fields.

Table 2 Current status of think tanks involving the research into “the Belt and Road” strategy

No.	Name	University	Location	Time of establishment	No. of scholars	Research scope	No. of monograph, book series, special column, report, and publication	Representative research results
1	Silk Road Research Center	Beijing Jiaotong University (211)	Beijing	2015.5	12	Researches into strategy for economic development of the regions along the Silk Road	20 monographs	FY Satellite data have served 37 countries and regions along “the Belt and Road”; Yang Guangpu: PPP-assisted national infrastructure interconnection related to “the Belt and Road”; Risk assessment of countries along “the Belt and Road”
2	“The Belt and Road” data analysis platform	Peking University (985)	Beijing	2015.5	25	This platform is a collection of various data and information related to the politics, economy, culture, science and technology, diplomacy, and military of the countries along “the Belt and Road”	14 research reports	The proposal of “Five Criteria” for evaluating the development of countries along “the Belt and Road”, including “policy coordination”, “facilities connectivity”, “unimpeded trade”, “financial integration, and “people-to-people bond”

No.	Name	University	Location	Time of establishment	No. of scholars	Research scope	No. of monograph, book series, special column, report, and publication	Representative research results
3	China Academy of "One Belt and One Road" Strategy	Beijing International Studies University	Beijing	2015.1	6	Serve directly for the national strategy of "the Belt and Road"	7 reports	"The Belt and Road" proposes enhancement of tourism opening-up and cooperation; "The Belt and Road" investment and security forum
4	Chongyang Institute for Financial Studies	Renmin University of China (985)	Beijing	2013.1	81	Focus on global governance, the Belt and Road, relations between major powers, and the construction of think tanks	37 publications and 7,013 special column articles	To construct Silk Road economy: prospect and methods; Research into the "Go Globally" international business anti-corruption rules
5	The Silk Road Research Institute	Northwest University (211)	Shanxi	2015.1	32	Research into the history and culture of the Silk Road, the practical problems, and development strategy	2 projects and 1 book series	Book Series of the Silk Road
6	China(Xi'an) Silk Road Research Institute	Xi'an University of Finance and Economics	Shanxi	2014.12	8	Fundamental researches into the Silk Road Economic Belt, such as statistical data	2 conferences, 2 forums, and 1 academic report	International Forum on Silk Road Economy: Cooperation and Sharing; Multilateral economic cooperation strategy and game theory international academic conference based on "the Belt and Road" framework
7	Coolaborative Innovation Centre for Silk Road Economic Belt Studies	Xi'an Jiaotong University (985)	Shanxi	2015.1	Not listed on its website	Research into the cooperation and innovation of laws, politics, society, and culture during the construction of Silk Road Economic Belt	5 reports	Announcement No. 1 at the 10th anniversary of SRIICL; Announcement No. 2 at the 10th anniversary of SRIICL
8	The Collaborative Innovation Center for the Belt and Road Initiative	Zhejiang University (985)	Zhejiang	2015.6	34	To interlink with the important national strategic demands of "the Belt and Road"	15 special reports on achievements	Develop cross-border e-commerce to construct "Internet Silk Road"; Help agriculture to go globally by innovating financial support modes

No.	Name	University	Location	Time of establishment	No. of scholars	Research scope	No. of monograph, book series, special column, report, and publication	Representative research results
9	Maritime Silk Road Institute	Huaqiao University	Fujian	2014.3	5	“The Belt and Road” and free trade zone construction	8 articles about academic trends	<i>Blue Book of the 21st Century Maritime Silk Road Construction</i> ; <i>News Report of Maritime Silk Road</i> , High-end Forum for the 21 st Century Maritime Silk Road in Quanzhou, Fujian

The university think tanks listed in Table 2 are selected for the following reasons:

1. Outstanding university think tanks proposed in “2014-2015 China Think Tanks Report — Influence Rankings and Policy Suggestions”;
2. Authoritative university think tanks posed on the official website of “think.china.com.cn”;
3. All the data are collected from the Internet.

5 Basic progress and policy consulting demands of “the Belt and Road” strategy — A case study of China-Arab States Cooperation

The effectiveness of public policy relies on the validity of political communication, which mainly refers to the communication between the public and the government. New media and university think tanks are two mediators and democracy of the communication and decision-making system, namely, the perfection of the communication between the public and the government; these two mediators have distinct features. University think tanks are about group decisions, which mainly reflect the voices of elites. In contrast, the views expressed by new media are more popularized and larger in quantity, which can better reflect the value preference and voices of the public. However, the validity of communication is determined by the openness of the system. Therefore, politicians, interest groups, administrators, and the public will form supporters associations, thus creating a flat structure in which the subjects of multivariate decisions are with interdependent, cooperative, and competitive relationships, and the decisions are made through policy debate^[7]. This kind of flat structure is an effective policy network instead of an authoritative top-down pyramid structure. This way, the establishment of policy agenda will be integrated with problem flow, policy flow, and political flow, thus realizing effective linkage between the agenda of the public and that of the government. Consequently, professional and neutral mediators (e.g. university think tanks and new media) reflecting public opinions can better play their role of “bridge” and achieve effective expression of interests and output of policies.

In recent years, China and Arab states have established close cooperation in trade and energy sector owing to the rapid economic development of China. China has become the largest importing country of 12 Arab countries up to 2015. There are many complementary advantages between China and Arab countries in various fields, such as energy, infrastructure, and scientific technology. In January 2016, the Chinese government issued the *China’s Arab Policy Paper*, which then attracted the attention of the media and netizens from 22 Arab Union states. According to the statistics provided by IZP Technologies Group, there are 28.6 billion pieces of data published by the main social media, forums, and news website from the above 22 Arab states, which are directly related to “the Belt and Road”. The statistics presented by the Internet Big Data Center of National Development and Reform Commission revealed that there are 180,000 pieces of data published by various Internet channels (e.g. the main news media, forums, microblogs, WeChat official accounts, online communities) that involve China-Arab “the Belt and Road” cooperation. *China’s Arab Policy Paper* has led to strong social response; all social sectors have had discussions about the security problem, difficulty in industrial linkage, imperfect infrastructure, low facilitation level of trade, poor work efficiency. University think tanks are very important to advisory views on national affairs and cultural exchanges. Therefore, university think tanks have also conducted extensive researches into the specific problems of

China-Arab States “the Belt and Road” strategy. Liu Ying, a researcher from Chongyang Institute for Financial Studies of RUC, proposed that it is important to enhance the reputation of made-in-China products, thus creating good brand image and national image among Arab states. Li Rong-jian, a well-known professor from the Arab Research Center of Wuhan University, suggested establishing Chinese culture centers, which can perform a useful function during people-to-people diplomacy; he also pointed out that Ningxia should be selected as both the base camp for China-Arab cultural cooperation and the publishing base for publications related to China-Arab states and Islam culture^[8]. In April 2016, China-Arab States “the Road and Belt” Research Center was founded in Zhejiang Gongshang University, focusing on various economic issues as energy, capacity, and financial cooperation. The cooperation between China and Arab states not only requires the involvement of policy research groups, governments, and the public, but also needs the combined efforts of foreign trade enterprises, chambers of commerce, and other interest groups solve the problems emerging during the development process and the construction of oil gas, railway, communication, and electricity. China-Arab States Expo and the Second China-Arab States Think Tank Forum was held in Yinchuan, Ningxia during September to October of 2016. Participants in this forum include researchers and scholars from the Political and Strategic Research Center of Al-Ahram Newspaper, University of Beirut, Arabic Translators Association, Morocco Hasan I University, Chinese Academy of Social Sciences, Commerce Department, People’s Daily, Xinhua News Agency, China Council for Promotion of International Trade, and other Chinese universities. On the basis of the *China’s Arab Policy Paper*, this forum was aiming at developing specific execution plans to strengthen the pragmatic cooperation between China and Arab states, which could provide guidance on the cooperation between relevant departments and enterprises.

6 Conclusions

Currently, the development of university think tanks in China is lagging behind foreign think tanks. Although there are a large number of university think tanks in China, most of the top-level think tanks are not founded by universities. Chinese university think tanks are still at their start-up stage, and most of them have obtained comprehensive achievements in basic theoretical research. However, they are lack in methods for converting their research results into practical operational capacity. University think tanks are required to provide powerful and solid intellectual support for the foresight and complexity of “the Belt and Road” strategy. Therefore, it is urgent for university think tanks to become more professional and refined. It is known that university think tanks have the advantage of complete disciplines, large research teams, and extensive international cooperation. But the results of separate researches could be incomplete and shallow. China-Arab States “the Belt and Road” Research Center of Zhejiang Gongshang University founded in 2016 strives to solve the economic problems of Arab states, which can be seen as a good start of in-depth and comprehensive research among Chinese university think tanks. On the one hand, the research on “the Belt and Road” strategy needs university think tanks to provide detailed and in-depth studies and countermeasures. On the other, it is required to combine the research and policy initiative with actions. Hence, a good soft environment carrier should be established to transmit the spirit and cooperation idea of Silk Road, thus improving the influence of the university think tanks serving for “the Belt and Road” strategy. This kind of influence consists of many aspects, which involve political parties, governments, the public, and various interest groups. In addition, university think tanks should pay attention to decision-making departments in order to create good policy network structure; attention should also be given to public views. More specifically, Internet forums, microblogs, WeChat, and other social network should be used to conduct public opinion analysis. This way, the communication of policies can be enhanced, an impartial social environment for discussion can be created, and a general consensus can be reached through joint discussions. Consequently, the conversion rate of think tank achievements can be truly improved.

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A Study on the Effectiveness of the Supply Mode of Charitable Service in China: Based on Grounded Theory Methodology

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Abstract Charity, as a public preference, cannot reflect the quantity of its supply and demand through the market price. And, it also be difficult to obtain the total accurate statistics. Moreover, the supply mode of charitable service has a direct impact to recipients on the satisfaction of charitable services and social fairness. Here are a series of questions to answer: what is the most effective way of charitable service? What kinds of service method can increase the satisfaction of recipients? Are there a set of theoretical models in the supply mode of charitable service reflecting the quality of charitable service? Based on above questions, we take some social work organizations in China as an example to analysis, and get 42 copies of interview transcripts by deep interviews of social workers in Hebei Province, construct the conceptual model of the validity factors of the supply of charitable service by grounded theory methodology and qualitative analysis software Nvivo10, and discuss the further development of the charitable service to better fit social fairness. We found that there are three stages in the effectiveness of the supply mode of charitable service: the preparation stage, implementation stage and feedback stage. In the preparation stage, the investment of funds, social recognition and treatment are important; In the implementation stage, cooperation and self-help service supply are effective; In the feedback stage, a good communication is an important way to enhance trust.

Key words Grounded theory methodology, Social work, Charitable service, Conceptual model

1 Introduction

Charity, as a public preference, cannot reflect the quantity of its supply and demand through the market price. And, it also be difficult to obtain the total accurate statistics. Moreover, the supply mode of charitable service has a direct impact to recipients on the satisfaction of charitable services and social fairness. Here are a series of questions to answer: what is the most effective way of charitable service? What kinds of service method can increase the satisfaction of recipients? Are there a set of theoretical models in the supply mode of charitable service reflecting the quality of charitable service?

The largest advantage of the Grounded theory methodology is derived from the practice, it is a good way to sum up the effective factors of the charitable service, through the different stages of coding and comparison, then we could form some subordinate codes and pass the theoretical saturation test. Finally, we can construct the effective factors of the supply mode of charitable service and provide a charitable service supply reform and some recommendations.

It's of great significance to use grounded theory methodology to explore the effective factors of the supply mode of charitable service, and construct the conceptual model of charitable service. The theoretical significance is to establish a new theory of the supply mode of charitable service. This theory stems from many empirical observations. The practical significance is to analyze the effective factors of the supply mode of charitable service, then to get a cost benefit analysis, find the optimal path and improve the supply of charitable service.

Based on above questions and method, we take some social work organizations in China as an example to analysis, and get 42 copies of interview transcripts by deep interviews of social workers in Hebei Province, construct the conceptual model of the validity factors of the supply of charitable service by grounded theory methodology and qualitative analysis software Nvivo10, and discuss the further development of the charitable service to better fit social fairness.

2 Literature review

2.1 Grounded theory

Qualitative methods, like their quantitative cousins, can be evaluated in terms of their canons and procedures only if these are made explicit. (For a more detailed explanation of the method see:

Glaser/Strauss, 1967^[1]). Grounded theory derives from its theoretical underpinnings from Pragmatism (Dewey, 1925^[2]; Mead, 1934^[3]) and Symbolic Interactionism (Park and Burgess, 1921^[4]; Hughes, 1971^[5]).

To be exact, coding is the basic analytic process in which is engaged by the researcher. In grounded theory methodology, there are three basic steps of coding: open, axial, and selective. Open coding is the interpretive process by which data are broken down analytically. The purpose of open coding is to help the analyst gain new insights into the data. Researcher can use the Nvivo10 software to coding. In axial coding, categories are related to their subcategories, and these relationships tested against data. Also, further development of categories takes place and one continues to look for indications of them. Selective coding is the process by which all categories are unified around a central “core” category and categories that need further explication are filled-in with descriptive detail. Thus, this type of coding is likely to occur in the later phases of one’s study (Juliet Corbin and Anselm Strauss, 1990^[6]).

2.2 Charitable service and social work

Social work originated from Western charitable organizations, social work and charitable services are aimed at helping people in society who need help. However, there are some differences between social work and charitable service. For example, compared with charitable service, social work focus on prevention and development. We know that either charitable service or social work is a public practice, and the integration of modern philanthropy and professional social work could promote its healthy development. Social workers play a vital role in promoting charity culture, promoting charity development and monitoring charity activities (Luo Shu-yuan, 2010^[7]).

From the perspective of the source of charitable service and social work, at the end of the 19th century and the beginning of the 20th century, the United Kingdom and the United States raised the “charitable organization” and “community with good neighborly movement”, it aimed at promoting the development of community and absorbing more volunteers. What’s more, modern social work was also gradually evolved (Fang Shu, 2014^[8]).

Social work could provide professional services to help people self-help. In other words, the key concept is “self-help”. In modern society, social work is based on altruism and scientific methods of professional social service activities. In community service, professional social work could get closer to community residents and provide services directly. What’s more, to understand the needs of the them, professional social work is gradually emphasis on strengthening community governance (Wang Si-bin, 2011^[9]).

From the perspective of professional service, the trend of charitable service is specialized, scientific and standardized. Social work focuses on improvement of human ability, the core concept is “helping others”, while the concept of charity focus on “love” and “dedication” (Yu Cui-jie, 2011^[10]). From this point of view, social work is more professional and scientific than charitable service. Li Xiao-long (2016) pointed out that charitable organizations should further develop in the direction of specialization. To promote the rational allocation of charitable resources, charitable services should do under the guidance with a right charity culture. How to realize the rational allocation and deep development of charitable resources? A set of professional scientific methods of work is most needed^[11].

Based on above, it’s of great significance to use grounded theory methodology to explore the effective factors of the supply mode of charitable service, and construct the conceptual model of charitable service. The theoretical significance is to establish a new theory of the supply mode of charitable service. This theory stems from many empirical observations. The practical significance is to analyze the effective factors of the supply mode of charitable service, then to get a cost benefit analysis, find the optimal path and improve the supply of charitable service.

3 Research design

3.1 Research object

The research object of this article is the social work organizations in Hebei Province, and the researchers cover 5 social work organizations in Shijiazhuang City and Zhangjiakou City, such as Chen

Xi Social Work Service Center in Shijiazhuang City.

The selection of the object is based on the following considerations: first, it's convenient for author to contact the social work organizations in Hebei Province; second, the research cost is reduced, both the author and respondents have a geographical advantage; third, these interviews are through face-to-face interviews or telephone interview.

3.2 Research method

Grounded theory methodology has three phases: (1) open coding is the interpretive process by which data are broken down analytically. The purpose of open coding is to help the analyst gain new insights into the data. Researcher can use the Nvivo10 software to coding; (2) in axial coding, categories are related to their subcategories, and these relationships tested against data; (3) selective coding is the process by which all categories are unified around a central "core" category and categories that need further explication are filled-in with descriptive detail.

3.3 Data collection

This article collected 42 interviews by face-to-face interviews and telephone interviews, the research object is some social workers in Hebei Province. This interview is mainly based on the following considerations: first, the interview is more targeted, so the research questions can communicate directly with the respondents; the second is an interview can be a profound insight into research questions. According to the above criteria, we will carry out the information collation and the data encoding after finishing all the interview recordings into interviews.

4 Analysis process

4.1 Coding process

Open coding is a process that used to represent the concept of data. By doing decomposing different concepts and categorizing data, open coding could collect data again, then combine them in some new ways. The purpose of open coding is to discover the same or similar types from the original data collected by the researcher, and rename the type to determine the concept and dimensions of the type. As a result, we get 43 open codes.

The purpose of axial coding is to refine and distinguish the categories so as to discover and establish the relationships between some various concepts. We use Nvivo10 software to coding, according to its internal links further classification, and then we collect 14 axial codes.

Selective coding is to choose the core category, and give some contacts to verify the relationships between them. Based on open coding and axial coding, we extract 10 core categories.

This paper uses the qualitative analysis software Nvivo10 for the three-level encoding of the original data. After Nvivo10 software analysis, the article extracts 43 open codes, 14 axial codes, and 10 selective codes. All coding process are shown in Table 1.

Table 1 Coding process

Open coding	Axial coding	Selective coding
<i>Theme 1: The relationships between social work and charitable service</i>		
Social work originated from charity		
Promote each other		
Professional development of charity		
Help vulnerable groups	The same origin	
Social work is more scientific	Professional	Professional
Policy support from government	Talent reserve	
New major in college		
Bachelor degree		
Poor independence		
Think about traditional cultural factors		
<i>Theme 2: The effective factors of charitable service</i>		
Lack of professional social organizations	Trust difficulties	Approve
Low social recognition	Financial difficulties	Money
Distrust from people	Treatment difficulties	Treatment
Recipients do not trust	Resource allocation issues	Suit one's measures to local

Open coding	Axial coding	Selective coding
Theory and practice out of touch	Analyze specific issues	Conditions
Lack of project	Group cooperation	Cooperation
Social workers need to be professional	Self help	Self help
Lack of policy support	Participate and communicate	Communication
Financial difficulties		
Treatment difficulties		
Resource allocation issues		
Different objects have different services		
Group work		
Group services		
Teamwork		
Improve the recipient's own ability		
Participate in community activities		
Consensus		
A clear service goal		
The purpose of matching with the service		
More professional staffs		
Environmental factors		
Attitude		
Social support		
Participation		
Timely communication		
<i>Theme 3: The functions of social worker</i>		
Change idea		
Mental care		
Understand the community		
Enlighten	Mental care	
Technical support	Intrinsic motives are clear	Coordination
Professional requirements	Coordination relationship	Mental care
Internal motivation note		
Coordination relationship		

4.2 The effective factors of supply mode of charitable service

Through the above analysis, we can see that, there are three stages in the effectiveness of the supply mode of charitable service: the preparation stage, implementation stage and feedback stage. In the preparation stage, the investment of funds, social recognition and treatment are important; In the implementation stage, cooperation and self-help service supply are effective; In the feedback stage, a good communication is an important way to enhance trust.

5 Conclusions

Charity, as a public preference, cannot reflect the quantity of its supply and demand through the market price. And, it also be difficult to obtain the total accurate statistics. Moreover, the supply mode of charitable service has a direct impact to recipients on the satisfaction of charitable services and social fairness. So we take some social work organizations in China as an example to analysis, and get 42 copies of interview transcripts by deep interviews of social workers in Hebei Province, construct the conceptual model of the validity factors of the supply of charitable service by grounded theory methodology and qualitative analysis software Nvivo10, and discuss the further development of the charitable service to better fit social fairness.

This research found that there are three stages in the effectiveness of the supply mode of charitable service: the preparation stage, implementation stage and feedback stage. In the preparation stage, the investment of funds, social recognition and treatment are important; In the implementation stage, cooperation and self-help service supply are effective; In the feedback stage, a good communication is an important way to enhance trust.

The shortcomings of this paper have three: although we ensure as far as possible the objectivity of

the coding process, there are some subjectivities in the process of extracting the ten categories, and the sample size is not large, only 42 interviews. What's more, the logical connections of explanations of the model have yet to be strengthened.

Future study of this article should focus on using quantitative research methods to test these concepts, it can use logistic regression, the effect is defined as a dichotomous variable, the impact of various factors regression analysis, trying to explain whether these variables have an impact.

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‘Revitalize Education Opportunities through Public Private Partnerships for Achieving Sustainable Development Goals (SDGs): An Indian Experience’—‘Making Partnership Central to Enabling Change’

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Abstract India’s economic and Human development is one of the most significant global achievement in the recent times to reflect the global agenda in national development and plans to accelerate progress on sustainable development goals and targets at all stages of governance to bend the arc of history through universalization of education also expanding lifelong learning by harnessing through public private partnerships mode, the education system in India had long and rich history of participation by voluntary sectors the progress has also faced challenges due to population size, poverty, infrastructure and lack of funding by the government from time to time which had far reaching societal implication. Although the present government policy frame work recognizes the public private partnership also keeping in view the rapid technology explosion and urge for knowledge based society the public private voluntary alliance between various actors where both agree to work together to reach a common goal or fulfil a specific need that involves shared responsibilities, means, competencies and risks in realizing the objective of universal access and easing the budget constraints on the government. By reworking on the existing models to fill the policy gaps public private partnership emerges as a viable alternative to improve the access to quality primary, secondary and higher education while ensuring equity and social justice by improving enhanced accountability structure. The present article explores Indian experience to revitalize education opportunities challenges and partnerships which is vital for achieving SDGs.

Key words Sustainable development, Universalization, Education, Partnerships

1 Background

Education is widely believed to be critical for any nation’s political, social and economic progress which acts as a powerful means in strengthening sustainable development. With ever increasing importance of knowledge society which has a profound implication on countries ability to compete in the global economy, to respond to existing and emerging challenges depends on the education systems ability to impart foundation skills, which enable further learning, and to impart transversal skills, which foster mobility. it is important for improving through diverse knowledge strategies to reinforce education and training system which develops a literate and trainable workforce. The 86th Constitutional Amendment by Indian parliament makes free education of children aged 6-14 a fundamental right. Over the past decade the Sarva Shiksha Abhiyan (SSA) Universalization of Education programme has brought over 60 million additional children into school—expansion at a scale and pace unprecedented in history—achieving near universal enrolment and gender parity the entrepreneurial talent and the ability to absorb, adapt, apply knowledge and technology are increasingly key to economic success which requires education and training systems that impart broad-based problem-solving skills as well as the social, interpersonal skills and attitudes, to realize this shared transformative object of sustainable development goals begins with forging grater interface between public and private sector partnerships for revitalizing the education system in developing countries.

2 History of Public Private Partnership (PPP) and arrangement in India

One of the earliest evidences of contracting out public services is found in regard to

implementation of 'the war on poverty' programme of the federal government in USA, during 1960's. since most of the social services funded by federal government were implemented through contracting and public private partnership this led to proliferation of government sponsored non-profit service agencies.

With regard to India, there were two broad trends of education in ancient India, rabbinical and Buddhist, India has a long history of religious charitable organizations and civil society based on the concept of daana (giving) and seva (service) these organizations are voluntary in sprite without profit making objectives were active in cultural promotion, education and health as early as medieval era, they proliferated during the British rule working to improve social welfare and literacy during the second half of the 19th century, nationalist consciousness spread across India and self-help emerged as the primary focus of socio-political movements.

Numerous organizations were established during this period, including the Friend-in-Need Society (1858), Prathana Samaj (1864), Satya Shodhan Samaj (1873), Arya Samaj (1875), the National Council for Women in India (1875), and the Indian National Conference (1887). The Societies Registration Act (SRA) was approved in 1860 to confirm the legal status of the growing body of non-government organizations (NGOs).

The Societies Registration Act (SRA) continues to be relevant legislation for NGOs in India, although most state governments have enacted amendments to the original version, later during 18th century colonial era the educational reforms by Lord Macaulay, Governor general of British India, woods dispatch of 1854's new education policy introduced English medium education in India, later on christen missionaries at time directed there efforts constructing schools, hospitals, roads, and other infrastructure facilities and carried out in establishing English medium schools and started imparting English language, accompanying these reforms came the printing press for dissemination of Literature. A firm foundation for secular voluntary action in India was laid with the establishment of Servants of India, a secular NGO in 1905.

3 Need for Public Private Partnerships in India

Indian education system is one of the largest such systems in the world 135 million children attending primary school, higher education which currently has over 500, universities and more than 20,000 colleges with an enrolment of 20, million students. India has never been challenged to provide education to first generation learners and vulnerable groups at the scale that Right to Education Act 2009, compels it to do it today for the children in the age group of six to fourteen years free and compulsory education as the fundamental right in such a manner as the sate may by law determine, brought another 60, million additional children without rationalizing the allocation of resources and skills for both government and private sector this challenge cannot be achieved.

The inherent and the new challenges of such a large system is faced with the critical issues like management, infrastructure and regulation being faced by these institutions require serious attention both public funded and those operating in the private sector, as a result the old structures of management established during the pre-independence and working during most of the twentieth century is required to undergo drastic changes. India has already set itself more ambitious targets in the areas of economic progress, inclusion and sustainability, the role of state is central to implement as well design convergence with SDG's in order to achieve the SDG's. The primary purpose of Public Private Partnership (PPP) to seek a collaborative engagement that builds on the strength of different players and creates a whole greater than the sum of the parts.

4 Context of Public Private Partnership (PPP) practices in India

In the Indian context the education sector which largely over regulated, post-independence under the constitution of India it is the federal state that is called upon to shoulder most of the responsibilities, the government of India has been supplementing the efforts of state governments in there welfare functions, Most of these services have been traditionally provided through in-house facilities of governments, financed and managed directly by them. Public-private-partnership (PPP) on the other hand is an approach under which services are delivered by the private sector (non-profit/for-profit

organizations) while the responsibility for providing the service rests with the government. This arrangement requires the government to either enter into a “contract” with the private partner or pay for the services (reimburse) rendered by the private sector. Contracting prompts a new activity, especially so, when neither the public sector nor the private sector existed to provide the service.

Later in India it is worth mentioning that community support for the government programs was sought during the first five year plan, for the construction irrigation canals, during the seventh five year plan ministry of Rural development implemented its programs through non-profit agencies. The ninth five year plan explicitly recognizes role of non-governmental organization (NGO's) and voluntary organizations for social development, further more the Ministry of Human Resource Development (MHRD) extended the system of Grant-in-aid to private education institutions which are popularly known as ‘aided schools’ in India.

The 12th Five year plan (2012-2017) coincides with implementation of Right to Education Act (RtE), places an unprecedented focus on the expansion of education, on significantly improving the quality of education imparted and on ensuring that educational opportunities are available to all segments of the society. Private sector education in India, in schooling is estimated to be around 14%. Other estimates show that the share of unaided secondary schools has increased from 15% in 1993-1994 to 35% in 2006-2007. District Information System for Education (DISE) data for 2007-2008 places the number of schools under private, unaided management at 173,282 out of 1,250,775 schools in India.

The National Sample Survey, 2009 reported that 7% of students are in private aided and 20% in private unaided schools. At elementary stage, the figures are 12% and 17% respectively. Private sector participation in secondary sector is considerable and it is estimated that 63% schools are under private management. According to the World Bank (2011), the education sector in India caters to 600 million people up to the age of 30 years. The annual government spending is 30 billion USD, and it still only amounts to 2.8% of GDP. Already, annual private spending on education is 43.2 billion USD, making it one of the largest capitalized spaces in India.

There are three things generally distinguish (PPP) from direct provision of services by governments, namely (i) a partnership based on well articulated ‘contract’ (ii) a long term relationship between the public and private sector (iii) flexibility and responsiveness in decision making. Clearly, under the 12th Five year Plan, there is a need for a greater discourse and agreement about what constitutes partnership in the education sector, how it is defined and, perhaps more importantly, how partnerships can be structured in a manner that ensures accountability for the use of public resources by private agents. At this critical juncture, greater dialogue is required between stake-holders to discuss debate and understand PPPs- their definition, role, types, structuring systems, key performance indicators, financial arrangements, regulatory and legal aspects and exit strategies.

5 Understanding Public Private Partnerships (PPP) in education

The primary purpose of PPP is not merely to use the private party as an executor or a source of funds though these may be parts of the role in specific cases. Rather it needs to seek a collaborative engagement that builds on the strengths of different players. PPP can then become possible, meaningful and effective on credible parameters. PPP can be an important part of the overall strategy to achieve quality at scale, but is not a panacea. The PPP strategy must fit into and be in line with the overall school education strategy and priorities. PPP is useful to the extent that it helps meet the larger goals. Also PPP should never limit or restrict government itself from offering educational services or running schools because it has a PPP partner in that area. To private partners, working amongst the dispossessed, is a new arena which will need much learning, and the learning curve will be steep, but not impossible.

It may well be that the model of PPP evolving in this manner may well be very different from what we see today or envisage for the future. We need to proceed with the conviction and processes to make sure that the best amongst all players come forward. Multiple regulatory agencies with overlap of functions and mandates govern almost every aspect of functioning of educational institutions. Setting up a private university requires parliamentary approval. Unless one sets up a private/deemed university,

in order to be able to grant degrees, colleges will have to 'affiliate' with existing universities and follow the existing norms. The system of affiliation in its current form leads to excessive control by a university on the individual functioning of a college. As a result, very little original work or innovation happens in private colleges.

Clearly, under the 12th Five year Plan, there is a need for a greater discourse and agreement about what constitutes partnership in the education sector, how it is defined and, perhaps more importantly, how partnerships can be structured in a manner that ensures accountability for the use of public resources by private agents. At this critical juncture, greater dialogue is required between stake-holders to discuss debate and understand PPPs—their definition, role, types, structuring systems, key performance indicators, financial arrangements, regulatory and legal aspects and exit strategies.

6 Indian experiences of Public Private Partnership (PPP) continuum

From past six decades since India became a Republic the education sector has been traditionally built on the core principle that it is the state's responsibility to educate its citizens. Towards this purpose, a significant aspect of policy focus over the last two decades has been on capacity creation. Government has continued to invest in creating new capacities as well as enhancing them in existing institutions. Progress has been made—India has certainly come a long way from 28 universities and 578 colleges in 1950-1951 to over 500 universities and more than 25,000 colleges at present. Today, the country has the largest number of higher education institutions in the world and close to 20 million students enrolled.

Over last two decades, a rapidly growing Indian economy has led to a huge demand for an educated and skilled labour force. To meet the manpower needs of a dynamic economy, not surprisingly, private enterprises have cropped up to complement public educational institutions, plagued as they are by capacity constraints. In fact, over the past few decades, it has been the private sector that has really driven capacity-creation in Indian higher education. Private presence in higher education got a fillip starting the mid-1980s, coinciding with the reducing investment by Government of India (GoI) and the states. In 2001, when private unaided institutes made up 42.6 per cent of all higher education institutes, 32.8 per cent of Indian students studied there. By 2006, the share of private institutes went up to 63.2 per cent and their student share went up to 51.5 per cent. Privatization of higher education is especially noticeable in higher education professional courses such as engineering and Master of Business Administration (MBA), where majority of the institutions offering such programs have been established by the private sector. So much so, the share of private institutes in the field of pharmacy and engineering is more than 90 percent. These statistics show that private education players are the norm rather than exception and that privatization of higher education is now an irreversible trend in India.

Critics who argue that education is a social good and should remain exclusively in the hands of the government will find it hard to disagree that given the scale and complexity of Indian higher education challenges, the government on its own cannot single-handedly tackle all the issues. This is not to say that privatization is the panacea to all of India's higher education problems. In fact, this phenomenon has brought about its own set of issues and challenges. Yet, the fact that India has a burgeoning youth population that sees education as a ticket to prosperity, coupled with declining education spending by the government, translates into a great demand for private higher education.

Existing (PPP) models in education sector India:

- (i) Government - aided schools in various Indian states
- (ii) Residential schools in Andhra Pradesh State
- (iii) Adarsh schools in Punjab State
- (iv) Schools in Rajasthan State
- (v) Model schools through out India

7 Designing conducive environment for Public Private Partnership (PPP) for achieving Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs) framework provides an opportunity to renew and integrate efforts in order to meet, to a significant degree, national and global aspirations in a defined time frame. India has set ambitious targets to increase its gross enrolment ratio (GER) in all the primary, secondary and higher education and to achieve skill development of the entire workforce in the next decade. Government reports and expert committee reports propound several reforms for India's schemes in all levels of education and skill development.

For PPPs to become an effective instrument through improvements in service delivery, efficiency and development impact over and above those attainable through efficient public policies, it is important that the public sector is able to correctly identify and select projects where PPPs would be viable, structure contracts to ensure an appropriate pricing and transfer of risks to private partners, establish a comprehensive and transparent fiscal accounting and reporting standard for PPPs, and establish legal, regulatory and monitoring frameworks that ensure appropriately deliver quality of service.

In other words, it is necessary that country specific institutional capacity to create, manage, evaluate and monitor PPPs. Taken as a whole, an institutional framework that endows country's with the above four interrelated capacities should have the benefit of ensuring that PPPs are undertaken for the 'right reason', i.e. ensuring an improvement in the quality and cost efficiency of a given infrastructure service to the citizen and not as a vehicle for 'off budget' activities. They are also necessary for making certain that efficiency improvements are measurable and monitored and, facilitating good governance in the administering of the PPP.

8 Conclusion

India has, over the past years, directed its development pathway to meet its priorities of employment, economic growth, food, water and energy security, disaster resilience and poverty alleviation. India has also aimed to restore its natural capital and adopt transparent and robust governance along democratic lines. However, emerging challenges of climate change impacts, increasing inequities, and lagging human development indices are well recognized by both the citizens as well as the government. Public Private Partnerships (PPP) can be an important part of the overall strategy to achieve quality at scale, but is not a panacea. The PPP strategy must fit into and be in line with the overall country's policy strategy and priorities. PPP is useful to the extent that it helps meet the larger goals. Also Public Private Partnerships (PPP) should never limit or restrict government itself from offering educational services or running schools. To private partners, working amongst the dispossessed, is a new arena which will need much learning, and the learning curve will be steep but not impossible. It may well be that the model of PPP evolving in this manner may well be very different from what we see today or envisage for the future. We need to proceed with the conviction and processes to make sure that the best amongst all players come forward.

The post 2015 UN Sustainable Development Agenda framework provides an opportunity to renew and integrate efforts in order to meet, to a significant degree, national and global aspirations in a defined time frame. The use of PPP structures in education projects in India is set to continue and expand in the coming years. There is a stream of project in the pipeline. The educational PPP sector is new in India and is not as well developed as PPP in other sectors.

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Ambiguity and Policy Change: Institutions, Entrepreneurs and Multiple Streams *

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Abstract Multiple streams theory is used widely in western public policy analysis as a tool, which lacks consideration of institutional factor has been an unquestioned fact. It is necessary to blend institutional factor into multiple streams framework. The aim of this paper is to explore a neglected aspect of the multiple streams approach (MSA): the impact of institutions in amending (or not) the framework's logic and hypotheses. The article address this issue drawing on evidence from the Czech Republic, Germany, Norway, and the European Union (EU). After discussing the origins and elements of multiple streams, I lay out the challenges posed by including institutions in MSA and introduce some of the ways the scholars have attempted to overcome them. I argue the inclusion of institutions challenges and enriches but does not seriously amend the logic of MSA.

Key words Multiple streams, Institutions, Ambiguity, Garbage cans model

1 Introduction

The aim of the paper is to explore a neglected aspect of the multiple streams approach (MSA): the impact of institutions in amending (or not) the framework's logic and hypotheses. Institutions are defined as systems of formally or informally embedded social rules that may constrain or enable policy-making (March and Olsen, 1989^[1]). One of MSA's major criticisms is the framework's inability to explicitly incorporate institutional dynamics into the logic of policy-making and to derive testable hypotheses (Schlager, 2007^[2]). The article address this issue drawing on evidence from four comparative settings: the Czech Republic, Germany, Norway, and the European Union (EU).

In this introduction, I first discuss the origins and elements of MSA. I then lay out the challenges posed by including institutions in MSA and finally briefly introduce some of the ways the authors (mainly from abroad) have attempted to overcome them in their research articles. The inclusion of the institutions enriches and complicates but does not seriously amend the logic of MSA.

2 Origins and synopsis of multiple streams

In classical times, Pythia¹—the priestess of Apollo Loxias (roughly translated as Apollo), delivered prophecies by uttering incomprehensible words that priests needed to interpret to anxious pilgrims who sought the god's favor and benevolence. The priests of course understood the importance of ambiguity in human affairs, especially in matters of state. Many pilgrims to Delphi were kings, generals, and public officials who based decisions of war and peace on the god's wishes. Clear prophecies would have been better than the incomprehensible oracles handed down by the priestess, but that was neither profitable nor preferable. Ambiguity served the useful role of enriching the priests, while it provided meaning and divine inspiration to the pilgrims. It enabled priests to always be right because they took advantage of what we might call today selective attention and interpretation.

At one evel, Delphic oracles were about instrumentality and rational choice. Priests took advantage of "gullible" pilgrims to deliver prophecies in return for riches and prestige. They made strategic calculations about what to say, to whom, and for what purpose. They sought as much information as possible about the person in front of them in order to deliver the oracle with the most net benefits for the priests. They also understood full well that speaking truth to power is a dangerous endeavor; so the oracles were carefully crafted to please and appease. Otherwise, pilgrims would not

*Financed by Key Project Fund for Social Science and Humanities of Guizhou University (Project No.: GDZT201505) and Innovation Fund for Postgraduates of Guizhou University (2017057).

1 Pythia, a character of Greek mythology, commonly known as the Oracle of Delphi, who served as a priestess from local people, transmitted the oracles.[<https://en.wikipedia.org/wiki/Pythia>]

return or worse, they might turn against the priests in a fit of rage.

At another level, Delphic oracles were a game of useful deception. The prophecies were crafted in a way that took on many meanings so that pilgrims heard what they wanted to hear. Cleansing and celebratory rituals were carefully constructed to add legitimacy to the whole affair so that meaning and divine inspiration were linked seamlessly to human reason. Perhaps pilgrims, and certainly the priests, understood the true nature of the Delphic process, but no one seemed to mind. Adding a little pomp and circumstance to the process of divine revelation and preference construction provided food for the rational soul.

The MSA conceptualizes public policy somewhat like the Delphic oracle, a ritualistic process with ambiguous messages that generate conflicting interpretations (Zahariadis, 2014^[3]). Ambiguity is defined as the presence of multiple, conflicting, and irreconcilable interpretations public events, situations, and processes. It is operationalized by way of three indicators: problematic preferences, opaque technology, and fluid participation. Actors in policy-making are often faced with decisions without having formulated a priori clear and consistent preferences. They do not understand well how the process works, especially when it involves multiple agencies across administrative or national jurisdictions. Finally, participation rates vary across venues making presence in decision-making arenas at least as equally important as position in institutional hierarchies (March and Romelaer, 1976^[4]).

MSA was developed as an explanatory framework to be used under conditions of ambiguity that other frameworks dismiss as an aberration. It does not reject but rather supplements rational choice. It derives inspiration from Cohen et al.'s (1972^[5]) garbage can model of organizational choice and was first used by Kingdon (1984^[6]) to explain agenda setting at the national level in the USA.

Standard decision-making theory views organizational decision-making as intentional, consequential action, whereby actors have consistent, exogenous preferences, time to look for and evaluate alternatives, and clear and stable decision rules. However, these conditions do not hold in many cases calling for alternative conceptualizations of the process that more closely approximate what people actually experience (March, 1991^[7]). Cohen et al. (1972^[5]) developed a vision which saw organizational processes as occasions for conflicting demands on the attention of participants operating in loosely coupled and partially overlapping environments. The authors conceptualize a garbage can process of choice consisting of four relatively independent elements or streams: choice opportunities, problems, solutions, and decision-makers. Interactions among the four elements follow a temporal logic, that is, the varying speed by which elements arrive and depart from the choice arena. At a given choice, opportunity problems and solutions attach to each other not because of their inherent link as means-ends chains but because of their temporal proximity. At its limit, any solution can address (though not necessarily solve) any problem because they are contemporaries. These problem–solution packages are in turn tracked by decision-makers who move in and out of decisions depending on competing demands on their attention. The end result is a capricious process that is bounded by organizational structure and the energy (available resources) a decision-maker brings to a given choice.

Kingdon (1984^[6]) adapted this conceptualization to understand the problem of agenda setting. How does an idea's time come? How do issues become problems in the first place? Adapting the garbage can logic to public policy, Kingdon developed a model to explain agenda setting at the federal level in the USA. He conceptualized three streams—problems, policies, and politics—incorporated actors in all three streams, added the importance of policy entrepreneurs as facilitators of choice, and revisited the concept of choice opportunities by linking them to either the problem or politics streams. Among them, the problem stream or the political stream by themselves can construct the governmental agenda or open a policy window and the alternatives are influenced more by the policy stream (Sabatier, 1991^[8]; Wolman, 1992^[9]). When all of them are coupled together with the advocacy and promotion of policy entrepreneurs, the open window can create an opportunity to move them up on the decision agenda.

Problems are perceived gaps or deviations from a desired social state of affairs, such as inflation, pollution, or inaccessible health care. Kingdon (2006^[10]) indicates that some representative mechanisms reflecting problems' appearances, such as indicators, focusing events and feedbacks, can

set governmental agendas independently. These mechanisms must so significant and urgent that they can easily attract governmental officials' attention and reach into agendas (Birkland, 1997^[11]). However, he also states there exist some factors making these issues drop from a conspicuous agenda even if problems have been in the agenda. For examples, governmental officials feel they have addressed this problem or they fail to deal with it; a certain mechanism for stressing a problem has changed in an opposite direction; people have been used to a condition or a problem; other items replace those which should have been given more attention.

Policies are ideas proposed, advocated, and debated in narrow policy communities. In Kingdon's book named "Agendas, Alternatives, and Public Policies", he discusses the policy stream can affect alternatives specification directly; the process of alternatives specification which are participated in by policy communities are generated and narrowed in the policy stream. Policy communities which are composed of specialists in a given policy field can connect with each other tightly or loosely. These specialists can try out their ideas on others from the policy communities to make their favorite proposals and alternatives concerned and accepted by decision-makers (Miller et al., 2010^[12]). Thus, a large number of ideas and proposals can float around freely in this policy primeval soup, but policy entrepreneurs called ideas advocates do not permit this process to be completely free-floating. They seek to "soften up" both policy communities and larger publics in a variety of ways (e.g., bill introductions, speeches, papers and forums), acquiring more approvals of new ideas and building acceptances for proposals, as Kingdon (2006^[10]) points out. In addition, he argues proposals which can survive must meet a series of criteria, including technical feasibility, congruence with values of community members and the anticipation of future constraints.

Politics includes macro-level actors, such as political parties and the national mood. The book presents that the national mood, organized political forces, events in governments all constitute primary factors of the political stream; related cases indicates that a modification of administration or a change of top personnel in a government organization can alter agendas substantially, and that the combination of national mood and elections can facilitate a more powerful agenda than organized interest groups having rich resources. As with the problem stream, the political stream by itself can also take a strong effect on agendas. Noteworthy is the fact that it is crucial to reach consensus in the political stream for improving the probability of constructing governmental agenda. Nevertheless, different from the policy stream which builds consensus by persuading and diffusing, the political stream's consensus is established through bargaining (Jenkins, 1995^[13]).

The policy window is defined a chance for complacent methods raised by advocates of policy advices, or an opportunity of special problems paid serious attention by them (Kingdon, 2006^[10]). Reasons for promoting openness of a policy window contain changes in the political stream or a new problem capturing governmental officials' attention (Zahariadis, 2003^[14]). It is thus clear that not only can the problem stream or the political stream set a governmental agenda, but also they can open a policy window independently (i.e., a problem window or a political window). But a window does not stay open long. Such a short duration of an open window requires that policy entrepreneurs must seize the precious opportunity to facilitate a coupling of all three streams in time (Kendall, 2000^[15]; Petchey et al., 2008^[16]; Oborn et al., 2011^[17]). Once they are joined together, the probability of a project entering the decision agenda is significantly increased. If one of three streams is absence, then it is highly difficult for the project to rise on the decision agenda. The policy window might be open for a short time, but if the coupling of three streams is not made immediately, it would close.

The policy process is loosely coupled in the sense that the streams are independent: Each obeys its own dynamics and rules. For example, while many ideas may float in the policy stream, relatively few gain wide acceptance among policy community professionals. Focusing events tend to direct attention to some problems and away from others. Streams are weakly linked but not nested; they may interact, but they do not covary (Orton and Weick, 1990^[18]). For example, policies, such as privatization, developed to address one problem, such as lack of public funds, may end up addressing another, such as the creation of an entrepreneurial culture (Zahariadis, 1995^[19]).

Issues are more likely to rise and fall on the agenda when all three streams are coupled or joined together by skilled policy entrepreneurs during open policy windows. Windows are defined as

occasions for policy change, and they open when major changes happen in either the problem or politics streams. For example, the events of 9/11 opened a policy window for a host of policies (Birkland, 2004^[20]). National elections also open windows in the politics stream by providing the opportunity for a new administration to come to power and highlight a different set of issues and priorities. The logic of MSA has recently been expanded to cover policy formation (Zahariadis, 2003^[14]) and implementation (Ridde, 2009^[21]) across issues and levels of governance. However, despite numerous comparative applications (Jones et al., 2016^[22]), MSA theorizing has been somewhat devoid of institutions.

3 Institutions, ambiguity, and public policy

The institutional complexion of a policy system greatly affects policy performance, that is, the efficiency of the system and the effectiveness of problems and solutions that may be considered. Not all policy-makers may attend to all problems at the same time. Not all solutions see the light of day. Institutions structure this process serving two important functions: They both constrain and enable policy choice (March and Olsen, 1989^[1]). Here I summarize the relationship between institutions, ambiguity, and public policy, and in the next section, I address implications for MSA. This summary has two benefits: to reduce the vast literature on institutions (e.g., Peters, 2012^[23]) to only two relevant strands (as constraints and facilitators) and to help situate the MSA within the uneasy tension between those strands.

Choices are often conceived as the pursuit of consistent preferences based on a portfolio of options with estimates of anticipated consequences in constraining institutional contexts. As stable sets of informal and formal rules that structure patterned interactions of groups of individuals, institutions imbue predictability and decrease uncertainty (North, 1990^[24]). But they also bias priorities, prejudice solutions, and distort the length and contestability of the process. A rougher institutional morphology (i.e., more numerous and more autonomous institutions) produces friction, elongating the policy process and increasing political conflict (Schattschneider, 1960^[25]; Jones and Baumgartner, 2005^[26]). For example, when a policy has to pass through many institutions before it is adopted, the rate of adoption is likely to slow down to fit with institutional calendars. Moreover, because different groups have access to different institutions, policies will face more resistance and pressure for compromise, as they need to appeal to groups with different agendas and preferences. Choice is reduced to selection among a limited number of issues and options based on what is institutionally permissible or viable. The US legislative system of multiple institutions and access points stands in sharp contrast to the British system of unicameral, majoritarian democracy.

Apart from constraining choice, institutions also enable it by generating meaning. Perceptual cues and frames that evoke and shape meaning often trigger action in particular situations (Weick, 1995^[27]). In this sense, institutionalized frames and institution-derived identities also edit and prime attention and meaning through feedback processes and contextual validation. Weber and Glynn (2006^[28]) go as far as to suggest that “institutions, in the form of institutionalized combinations of identities, frames and performance expectations, may in fact ‘steer’ action in a direct, taken-for-granted way.” For example, national legislative procedures and institutions shape individual beliefs about who people are and to which communities they belong. This is done via three mechanisms: They can be nested and consensual (e.g., Germany and Spain), cross-cutting and contested (e.g., France), or separate and contradictory (e.g., the UK) (Risse, 2010^[29]). Identities in turn help explain popular support under certain conditions for greater cross-national economic cooperation, restrictive immigration, and the like. To take another example, members of the European Parliament choose from a menu of options depending on the degree of overlapping partisan and European identities. Institutional rules facilitate the mix, which in turn biases policy in different directions.

Ambiguity poses two important challenges for institutions and the study of public policy. First, because conceptions of institutions differ along the axes of stability and political conflict, they have different consequences for policy formation. The concept of ambiguity suggests institutions can take on two or more meanings depending on situational context (Hajer, 2003^[30]). Such multiplicity of meanings provides scope for creative interpretation both constraining and facilitating choice.

Ambiguity empowers actors to continually reinterpret institutional opportunities and constraints, thereby generating instability and political tension. Because institutions remain an imperfect guide for action, actors may discover new interpretations of an institution over time, creating a state of flux in the form of constantly renegotiating institutional compromises. This is particularly true for losers who have incentives to seek new interpretations to curb distributional disadvantages (Mahoney and Thelen, 2010^[31]). In this sense, boundaries and rules of behavior become contextual and politically contested. Policy change is therefore neither gradual nor punctuated but rather it depends on the degree of ambiguity and temporal context. Opportunities connect actors, strategies, and policy content. In a policy framework such as MSA, which assumes the presence of generous ambiguity, institutionalized rules and expectations represent contingencies that need to be specified in particular contexts. The logic in turn requires careful theorizing of the duality of institutions and ambiguity to specify the mechanisms and conditions that promote or inhibit policy change.

Second, ambiguity helps shape the content of policies in the implementation stage. Inconsistencies arise when new tools in implementation provide both incentives and disincentives for the attainment of stated policy goals (Kern and Howlett, 2009^[32]). Decoupling conflict from institutional constraints in the policy formulation stage fosters policy innovation in implementation. Héritier (1999^[33]) calls this process subterfuge and uses the concept to explain why decisions are still made and implemented despite political conflict in an institutionally complex and contentious EU environment. Member states and actors in EU arenas decide, but generally national administrations implement. Encouraging the activation of different institutions and actors at different stages of the policy process across member states contains conflict and promotes experimentation, learning, and national adaptation. From an institutional perspective, ambiguity within EU policy-making both constrains and enables choice at different stages of the process.

4 Bringing institutions into multiple streams

Adapting what March and Olsen (2008^[34]) have called the logic of appropriateness (the garbage can process of organizational choice) to public policy has resulted in analytical changes for MSA. Policy entrepreneurs rather than pure energy broker the process of policy-making by helping put together winning coalitions in support or opposition to proposed options. Moreover, the streams of problems and policies are not devoid of actors because they are debated, rejected, amended, and re-introduced by groups or individuals in policy communities or policy networks which are connected and affect and are affected by actors in the broader polity, such as elected officials, the media, and others. The way problems are defined and their match to policy-maker norms and biases influences where they end up on the agenda. Framing effects are not only present in the editing stage of decision, as prospect theory contends (Tversky and Kahneman, 1981^[35]), but they also bias search and selection processes. All in all, MSA contends perceptions and the structure of attention produce predictable shifts in preferences and choice.

Although these changes have made the model less capricious and more familiar to students of public policy, the adaptation has come at a cost: the loss of explicit attention to organizational structure. Structural variations in garbage cans significantly affected performance. The authors of the computer simulation that underpins the garbage can model specified three decision structures that linked decision-makers to choice opportunities: open, hierarchical, and specialized. An open structure connects any decision-maker to any opportunity. The hierarchical structure links some (important) decision-makers to many choices, while less important decision-makers are connected to fewer choices. In a specialized structure, decision-makers specialize in the opportunities they may attend. The effects of non-open structure in combination with other features of the model, such as variations in energy load and level of problem difficulty, tend to produce long queues of important problems, lengthy decision times (the time it takes to solve problems), and high problem activity (time spent on problems activated but not addressed).

The implications of these findings were not transposed onto multiple streams (Sætren, 2016^[36]). Kingdon included structural features within each stream—for example, technical feasibility increases the chances of a solution bubbling up in the policy stream or the receptivity of an idea in the political

stream is partly dependent on the national mood. This argument was further refined by Zahariadis (2003, chapter 4) where the degree of structural integration in a given policy community or network was hypothesized to affect the trajectory (content and emergent speed) of solutions. But with one exception (Zohlnhöfer et al., 2015^[37]), the effects of institutions have not been systematically incorporated in the process itself. For example, does MSA have the same explanatory power in institutionally malleable, e.g., EU, or stable, e.g., Czech or Norwegian, settings? Does hierarchy affect the ability of policy entrepreneurs to forge winning coalitions?

So far, MSA has tried to model institutions in three ways: through institutional ambiguity, arenas, and duration of policy windows. The theoretical enterprise resembles what may be an unsystematic policy bricolage, the crafting of new processes by recombining a precariously maintained mix of substantive goals and symbolic elements in a given institutional repertoire that differ from but also resemble old policy expectations and outcomes. Such bricolage connects actors and institutions in a dual sense. To use Cairney's (2013^[38]) terms, it is synthetic by redeploying familiar elements from other theories, but also contradictory in that it adds insight and explanatory power of its own. But it is also unsystematic because the studies neither build on similar institutional designs nor do they "talk to" each other.

Herweg applies MSA to explain the EU agenda regarding gas directives (Herweg, 2016^[39]). She first explains the difference between national and EU political streams. Because the institutional morphology differs significantly at the EU level, it is important to specify what the EU political stream is. His article does not mean that MSF can not explain the EU agenda setting process, but MSF needs to be adjusted to give play to its potential explanatory power. For example, the author argues that the ripeness of the streams and the opening of policy window can take place at the same time (1998 program), reducing the criteria for the survivals of the policy thinking to a standard: technical feasibility, as a condition of ripe policy streams. Despite dramatic institutional adaptations, the author still affirms the basic MSA logic: items rise on the agenda when streams are ripe, policy windows open, and entrepreneurs actively couple the three streams. The paper just took the first step in tuning the long journey to optimize MSF.

Saurugger and Terpan examine the conditions that promote hardening or softening of norms during periods of economic crisis (Saurugger and Terpan, 2016^[40]). The purpose of the article is to understand the direction of policy change during the crisis. The author does not justify the three streams of MSF in the case, different from most scholars' logic, but rather focuses on two key variables of the framework: the window of opportunity and the policy entrepreneur, and two hypothesis are proposed: 1. The broader the window of opportunity, the greater the likelihood of policy changes; 2. At the opening of broader policy window, more coordinative of policy entrepreneur coalition based on the consensus of problems and solutions, the greater the likelihood of policy changes occurring. Structural features of windows similarly affect the size of policy change: wider windows lead to more far-reaching policy change. They provides a new perspective: Policy Entrepreneurs Coalition Consistency, explaining the reasons of radical policy changes taking place during the crisis. But the authors acknowledge the need to embed actors in institutions.

Although interests are vital to the MSF, interest groups have so far been only secondary in theoretical and empirical research. In Kindon's initial conception, organizational interests is a key variable in politics streams (Rozbicka and Spohr, 2016^[41]). The authors argue that the embedding of interest groups enhances the explanatory power of MSF, and explains how the interest groups affect each other by using two examples: the German labor market policy at the national level and European chemical regulation at supranational level. They find interalia that institutionally integrated corporatist systems inhibit access to new entrants by formalizing participation and ensuring stability. As systems become less integrated, i.e., more pluralist, the likelihood of access increases and so do the chances of unstable winning coalitions and policy reversals. Agenda setting and policy changes need to be implemented by specific people at specific times. Interest groups played a role of policy entrepreneurs in the process. They avoid specific issues from entering the agenda by means of framing techniques and feedback requirements. In other words, different institutional configurations privilege different actors, but they do not affect MSA's temporal order and coupling logic.

Another paper is a diachronic comparative case study of three successive efforts by Norwegian government over the past decades to move Oslo's central institutions away from the capital to other locations outside the capital region. The focus of the study is how to explain the 2001-2007 latest government relocation plan's unexpected success. How did it overcome this seemingly unfavorable advantage to reach this highly controversial policy program? Using a modified MS framework that has undergone three full policy cycles to clarify a bold policy of innovation in the cabinet, while policy window opens, uses an operationalization strategy that enables policy process. The entrepreneur audaciously defied his own party and the established policy tool of launching a public investigative expert commission prior to proposing a policy. Instead, he used his position to create a tightly and politically steered intra-ministerial project group to craft a regionally balanced deal that could satisfy diverse interests in parliament. The contributions of this paper are as follows: (1) Expand the focus of MS framework to the whole policy process; (2) Analyze the specific factors of policy entrepreneurs' success: personal charm, operation strategy, policy window, institutional location. At the same time, the authors believe that institutional factors have important implications for the MS framework and point out that this is also one of the directions of future research.

Novotný and Poláček explore the applicability of MSA to the Czech Social Democratic Party's modernization program (2006-2008), while extending the approach to outside context of government (Novotný and Poláček, 2016^[42]). MSA was first used in the field of party organization, political parties are understood as organized anarchy the same as government or universities et al., concerned about the party's policy-making process and the policy window's closing. This case not only validates the explanatory power of the MSA in different areas, but also provides a good example of solving the problem in a crisis situation. They find that the size of policy windows affected the size and scope of outcome (modernization) in an endogenous trajectory: Narrow reforms brought electoral success and new dynamism to the party. Ironically, it was electoral defeat that opened a wider window for broader reform to reorganize the political base, add new objectives and rules, and strengthen the leadership's control. To sum up, the article makes the first attempt to apply MSA to areas outside government (political parties), and provides a model for party experience in crisis decision making. Innovation in the MSA application area has enlightened us some new ideas: (1) MSA should not only focus on the opening of the window of opportunity, but concern about the window of opportunity and the gap between policy window and policy implementation (policy adoption); (2) Raise our thinking about the conditions for the success of policy implementation (acceptability of value, technical feasibility, richness of resources, position of policy entrepreneurs in the hierarchy of power, etc.).

Ackrill and Kay (2011^[43]) infuse MSA with the concept of institutional ambiguity as a facilitator of spillovers. In the original MSA application to the USA, Kingdon (1984) observed that major policy change in one area might lead to changes in other related areas. He termed this process spillover, and hypothesized spillovers occur when policy entrepreneurs succeed in transferring winning coalitions across issue areas. In other words, success in one area opens a policy window in another. Ackrill and Kay formalize the concept by arguing there is frequently overlap across institutional boundaries, especially in the EU. In that case of jurisdictional overlap, that is, when two or more agencies deal with the same issue, one finds two types of spillovers: exogenous and endogenous. Exogenous spillovers are the ones theorized by Kingdon and depend on entrepreneurial skills to generate success across policy sectors. In contrast, endogenous spillovers are the direct outcomes of success by one agency that create a precedent and may affect outcomes in an institutionally connected but different agency. For example, the loss of the sugar case in the WTO privileged the EU's Trade Directorate-General (DG) in matters of liberalization and provided the impetus to reform sugar subsidies in 2005, which were under the purview of the DG Agriculture. Endogenous spillover effects may be so strong even to the point of "forcing a decision when none otherwise would be made" (Ackrill and Kay, 2011^[43]).

Other scholars conceptualize institutions as arenas. By defining the context within which policies are made, institutions specify the types of actors that may participate, the size of the winning coalitions, and the policy alternatives that are institutionally permissible (Béland, 2005^[44]). Using this schema, Ness and Misretta (2009^[45]) introduce the "policy milieu" as an additional element to the MSA in their examination of the use of lottery proceeds to fund education in North Carolina and Tennessee. The

milieu refers to organizational structures in (USA) state governments, such as the governor's formal powers and what they term legislative professionalism. Blankenau (2001^[46]) adds to this argument the link between institutional milieu and policy windows. He maintains that greater numbers of veto points necessitate a longer policy window in order to adopt a particular policy in light of the number and magnitude of compromises that need to be made.

Reaching back to capture the decision and access structures elaborated in the original garbage can model, Zahariadis (2015^[47]) explores the effects of policy window duration on political conflict, democratic participation, and the size of policy changes. He differentiates between two links between windows and institutions: recurrent and episodic deadlines. The former are embedded in the temporal repertoire of institutions, such as national elections or budget negotiations, and the latter are externally or internally imposed by say, judges or natural catastrophes. Focusing on episodic deadlines, Zahariadis examines the implications of institutionally decelerating or accelerating the policy process. He hypothesizes *inter alia* the imposition of shorter windows generally reduces the likelihood of conflict by limiting participation and raising the intensity of framing effects. However, internally imposed deadlines—i.e., endogenously opened windows—increase the likelihood of conflict because they are more politically malleable, while externally imposed ones—i.e., exogenously opened windows—favor larger deviations from the status quo because policy-makers can use them to avoid blame.

The most elaborate attempt to incorporate institutions into MSA has been done by Zohlnhöfer et al. They conceptualize two nested processes, one for agenda setting (agenda coupling) and the other for decision-making (decision coupling). Formal institutions play a larger role in decision-making, and the authors proceed to specify how. They claim “while the policy and problem streams remain relevant during decision making, it is the political stream that is of prime importance during decision coupling because the main question at this point becomes: will the policy entrepreneur(s) gain the majority needed to get their pet project adopted”? If one accepts this proposition, it is easy to see how formal institutions shape the majority and rules by which compromises are attempted and winning coalitions built. Political parties play a big role in shaping a receptive audience to problem-solution packages. For example, in Westminster-type majoritarian democracies, a proposal backed by the majority party will likely be adopted quickly and with little compromise. However, in light of a bicameral legislature or a presidential system with a distinct separation of powers, a condition they term institutional pluralism, parties in general play a lesser role and entrepreneurs become more important in brokering support.

5 Conclusions

The paper picks up where the literature on MSA has left off. The scholars revisit institutional ambiguity, arenas, and window duration and add one more novel element: the structural element of coupling, i.e., policy entrepreneurship. This is the first systematic attempt by scholars to “talk to” one another and build on previous MSA literature by confirming and refining hypotheses regarding institutional effects. The two articles by Herweg and Saurugger and Terpan explore how institutional perturbations in entrepreneurship and temporal context affect policy change. Rozbicka and Spohr analytically specify the strategies of interest groups in well-defined institutional milieu, while Sætren explores the effects of entrepreneurial strategy and institutional position on coupling success. Other scholars articulate the logic of endogeneity in reforming political organizations. Using the MSA, the first two explore the effects of institutions on the policy process, while the latter three examine how actors and strategies affect institutions.

All in all, the article revisits and expands on some of the institutional innovations attempted in earlier MSA studies. The scholars refine hypotheses regarding the role of institutions in MSA, such as the relationship between duration of windows and scope of policies and the unique institutional configuration at the EU level. They also empirically confirm others, such as the ripeness of streams, entrepreneurial strategies, and the role of institutions in privileging entrepreneurial coupling.

To return back to Pythia, the policy process resembles in many ways the ritualistic process of a Delphic oracle. While the ambiguity inherent in the content serves multiple objectives, the process is interactively shaped by prevailing institutional morphology. Institutions shape and constrain content

and process. They play the role of Delphic useful deceivers. The article help paint an incomplete picture by which we can partially understand the mechanisms of how this is done. But more research is needed to replicate and further refine the arguments advanced in an effort to more clearly understand how ambiguity adds meaning and purpose to public policy.

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A Comparative Study on Open Government Data Policies between China and the United States Based on Two-dimensional Analysis Framework

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Abstract Open government data as an important part of the big data strategy, it has great significance to promote public participation, realize government transparency and enhance social trust. This paper takes the open government data policy of China and the United States as the research object, and a comparative analysis of the policy is made by constructing a two-dimensional analytical framework that includes both the instrumental dimension and the content evaluation dimension. The result shows: in terms of instrumental dimensions, the use of environmental policy instruments in the policies of the two countries is the most, the supply policy tools are the second, the demand-based policy tools are at least, but in the environment-based policy tools and supply-type policy tools to use the proportion of the gap, China is greater than the United States; In the aspect of content evaluation, the two countries have the highest degree of readiness policy, and there are differences in the implementation and influence of the policy design. Based on this, this paper puts forward some suggestions for the development of China's open government data policy.

Key words Open government data, Analytical framework, Policy tool, Policy analysis

1 Introduction

Open government data (OGD) refers to the data of government's public sector available in a public format and manner free of charge to the public so that the public can access and use^[1]. Since the US government proposed to open government data in 2009, more and more countries in the world have joined the ranks of open government data. OGD has become an important thrust in the era of big data to enhance government transparency^[2], promote public participation and political interaction^[3], achieve value-added information and innovative applications^[4], and stimulate economic growth^[5]. In 2015, Premier Li Ke-qiang clearly stated the maximum opening of government data, since the State Council issued the "Some opinions on strengthening the service and supervision of market participants by using big data", which firstly use "data open" in government document. In September the same year, the State Council issued "Notice on the issuance of the outline of the development of big data action" to further guide our government to implement the strategy of data opening and sharing -forming cross-sectoral data sharing pattern by the end of 2017 and uniform open platform for government data by the end of 2018. At present, China's open government data strategy has made some progress, but the latest results from the most authoritative international assessment of the two open assessment reports in international level- "Global Open Government Data Index" and "Open Data Barometer", showing that China's government data open level ranked No.93 (a total of 122 countries) and No.55 (a total of 92 countries). Therefore, the status of China's government data is not optimistic, the gap is more obvious compared with the countries with better data opening, such as the United Kingdom, the United States, Australia and other countries.

In order to promote the effective implementation of the strategy of open government data in our country and improve the level of development of OGD, this paper attempts to establish a framework for policy analysis to compare OGD policies between China and the United States. So we can find the inadequacies of China's open government data policy and provide suggestions for the opening of the government's data policy by drawing on the advanced experience of the United States. From the policy point of view, this paper takes the policy of opening the government data at the national level of China and the United States as the objects, because: (1)The implementation of open government data action is based on the national policy's guiding, and its development depends on the formulation of policies, thus explore the reason why countries have different extents have realistic and interpretive meaning

from the national level of open government data policy perspective. (2) Although there are differences between the two countries in the political system, social culture and economic development level, the leaders of the two countries attach great importance to the development of open government data, and the land area of the two countries is equal, and the regional innovation capacity is unevenly distributed Status quo^[6]. (3) The United States is the first country to open data in the world, its related policy system is abundant and the development of open government data in the forefront of the world. Thus it has better significance to be compared and referenced.

This study is mainly divided into 5 parts, the rest of this paper is organized as follows. In section 2, we review the domestic and foreign research on open government data and its policy; then in section 3, we construct the framework for policy analysis; In section 4, this paper analyzes the Sino-US open government data policy by applying the analytical framework; Finally puts forward the results and corresponding suggestions in the section 5.

2 Literature review

2.1 Open government data research profile

In CNKI on the 'title = How Net ('open data' or 'data open' or 'open government data') and in Web of Science on the 'TI= ('open data' OR 'data open' OR 'open government data')' in order to search the literature. After reading the obtained literature one by one and eliminating the irrelevant literature, we find that domestic and foreign research on open data is started in 2002 and 1996 respectively. However, the research on open government data has been paid attention to by researchers in recent years under the constant practice and exploration. Even so, the study of open government data has made some progress.

At present, foreign researches on the opening of government data are mainly conducted on the individual level, organization level, the open government data itself and macro level. On the individual level, it is principal to analyze the function of open government data in public perception^[7] and individual's adoption of them^[8]; on the organization level, there is more focus on the impact of open government data on organization performance^[9] and how organizations conduct the opening of government data as well as its influencing factors; as for the open government data itself, scholars mainly study on the construction of open government data platform^[10], its quality assessment and optimization, etc. In addition, more researches are based on the macro perspective to explore related issues, such as: from a social perspective to discuss the open government data in the innovation of public services, analyzing the trend of social development and other aspects of the social value and the potential social challenges of the open government data, analyzing the role of open government data in economic growth from an economic perspective, exploring the existing legal or moral ethics and the implementation of open government data between the conflict and the establishment of relevant laws and regulations from the legal / ethical perspective, open government data is conducive to the promotion of public participation, government transparency and trust, and analyzing the open government data policy file from a political perspective.

Compared with foreign countries, the domestic research started late, the research content is not rich enough, and the research depth is relatively weak. Most of the papers are still a basic descriptive study. Domestic research on the opening of government data can be divided into four main areas: (1) analyzing the concept of open government data and its characteristics, value and significance; (2) introducing the practical experience, operating mechanism, policies and regulations of foreign open government data, and providing enlightenment for the development of China's open government data; (3) combined with the background of the times, describing the development process and current situation of China's open government data and analyzing the construction path of open government data; (4) analyzing the existing problems based the open government data platform / website in China, and putting forward some countermeasures and suggestions. Besides, a small number of studies have analyzed the impact factors of open government data utilization, evaluation of open government data, open data and privacy security and so on. It is worth mentioning that, a considerable number of domestic research is a review of the foreign open government data now, showing that the domestic academic circles are still in the stage of reference for foreign research, but less autonomy research.

2.2 Open government data policy research

Based on the above research on the domestic and foreign related research results, we make a further analysis on the open government data policy. At present, there are few studies on open government data policy, and the research contents can be broadly summarized as three aspects: policy description and reference, policy framework and policy analysis.

Specifically, domestic scholars carried out the policy description and reference to the study. For instance, Huang Ru-hua, Cheng Yin-gui, Chen Meng as the representative scholars introduced and analyzed the open government data policy in the United States, Britain, France, Denmark and other countries, so provided the inspiration and advice for the development of China's open government data. In terms of the policy framework, Bertot's study suggested that there are several deficiencies in the US Open Government Data Policy Framework such as data acquisition and distribution, data management, privacy and security protection. Zhao Run-di established a policy content framework which based on the core issues that extracted and analyzed from foreign policy, and then analyzed the open government data policy text from the United States, Britain and Australia^[11], thus proving the availability of this policy content framework; Po Pan et al. set up the "SRP" theoretical model of China's open government data policy to explain and forecast the existing policy needs, by using content analysis and system analysis methods from the perspective of public management.

There are multiple studies on analysis of the policy. In order to explore the influence of policy, Bates found that the UK's open government data policy have promoted the realization of neoliberal policy objectives and the development of 'information-based countries', by analyzing the interviews, observations and policy documents. In pursuit of figuring out the objectives of policy, Jung & Park first descriptively analyzed the South Korea's open government data policy through semantic network analysis, and then used network nodes as the key for a in-depth analysis. Subsequently, they found the major issues that the policy have managed to address and as well as its solutions, and meanwhile, they suggested that innovative economic ecosystems should be incorporated into the policy objectives^[12]. In addition, Rosnay & Janssen's study found that the existing open government data policy does not have clear legal guidance, although it follows the existing legal framework. Therefore, they suggested that the corresponding legal basis should be established for the open government data policy. It should be pointed out that the comparative study of open government data policy has also attracted attention. For example, Feng Changyang has analyzed the privacy policy of eight government open data portals in China; Zhang Xiao-juan et al. have compared the open government data policy between China and US; Zuiderwijk & Janssen has attempted to develop a framework for comparative analysis of government data, which includes environmental and environmental factors, policy content, performance indicators and public value, and then uses this framework to compare the similarities and differences among seven open government data policies from different levels of government agencies in the Netherlands; Nugroho et al. rebuilt the analytical framework of Zuiderwijk & Janssen and added cultural factors, in order to compare and analyze the open government data policy of the United States, the United Kingdom, the Netherlands, Kenya and Indonesia^[13].

Based on the above analysis, it can be found that the policy research of open government data has become one of the research points in the field of open government data research. However, due to the lack of research results, the guidance and suggestion of policy-making are still relatively insufficient and are still in need of analysis. At the same time, although some scholars have conducted a comparative analysis of the policy, their researches failed to cover the national level of policy comparison, or involved non-open government data policy, or did not analyze the policy in China. Therefore, the comparative analysis of open government data policy between China and other countries is still blank. Moreover, the current comparative study of open government data policy has not yet formed a unified analytical framework, and also need to keep exploring and be enrich by the academic community. Additionally, due to the significance connection between the policy and the practice, and the comparative study of the policy, one can explore the weakness of policy in a better way and even expand his scope of knowledge. As a result, the comparative study of open government data between China and Americas vital in both theoretical demand and practical significance.

3 The construction of two-dimensional analytical framework of open government data policy

At present, the comparative analysis of the open government data policy has not yet formed a unified research framework. On the one hand, the opening of government data as a new data strategy, its development time is short, the governments of the open government data policy is limited; the other hand, with the continuous development of government data and countries of different political, Social conditions, countries of the open government data policy differences, it is difficult to find a universal analysis of the framework for policy comparison analysis. At the same time, policy differences provide a reference for the mutual reference of policies between countries. In view of this, this paper attempts to establish a policy analysis framework, the use of content analysis of China and the United States at the national level of open government data policy comparative study. Government-led open government data movement is an important prerequisite for large data strategy, is an essential support for the national information strategy. But because of its implementation time is shorter, less practical experience, so its development depends on the relevant policies introduced by the government. Zhao Run-di pointed out that the open government data policy to promote the development of open government data has a global, guiding and supportive role. It is clear that open government datapolicies have an important impact on open government data movement. For policy, Liu Chun-hua argues that any policy is an organic unity of tools and goals and that tools are the fundamental path to achieving goals^[14]. Thus, this paper argues that the open government data policy at the national level plays an instrumental role in the process of data liberalization, guides the government at all levels to promote the sharing and sharing of government data, and the content of the open government data policy to achieve good data Open and effective applications have important implications. Based on the above analysis, this study will build a policy analysis framework from the instrumental dimension of the open government data policy and the content evaluation dimension of the open government data, as shown in Figure 1.

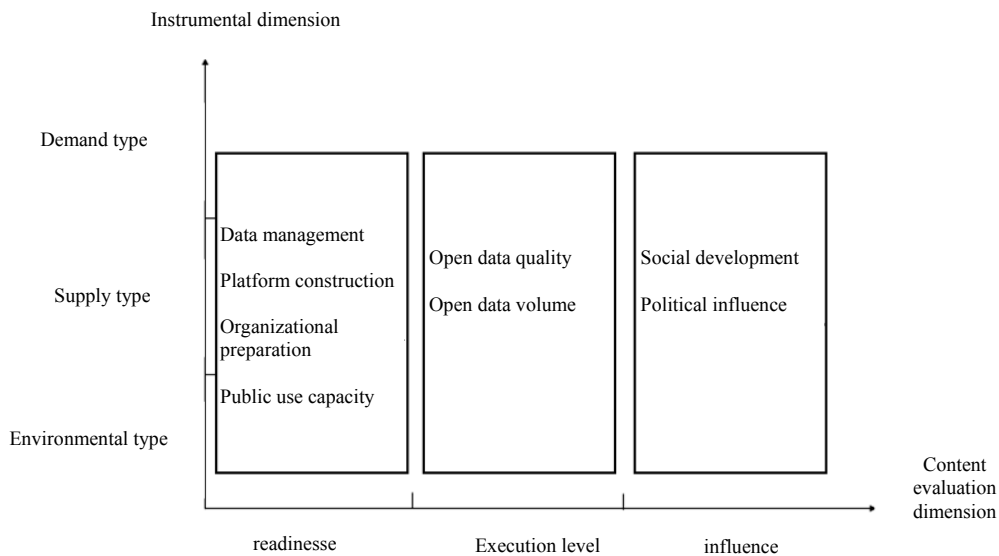


Figure 1 Open government data policy of 2D analysis framework

3.1 The instrumental dimension of open government data policy

Policy as a tool can be traced back to the last century 50's, after decades of development, in particular, Hood's 'government tools', Peters and other public policy tools: the evaluation of public management tools, Salamon's 'Government Tools: New Governance Guide' and other works published, greatly promote the academic community of policy concerns. There are currently many categories of policy tools, such as McDonnell & Elmore's four classification, Howlett & Remash's triple classification, Rothwell & Zegveld's three classification and so on, where Rothwell & Zegveld The

research framework, which is based on the classification of policy tools, has been widely recognized and adopted by researchers both at home and abroad. As the open government data is based on the relevant data platform, in order to facilitate the direct use of the format of the release of government data, one of its important purpose is to innovate public services and public participation in the form, it can be said that open government data is a government innovation initiatives, The introduction of open government data policy is a kind of innovation policy. In addition, research has been applied to Rothwell & Zegveld's research framework for cross-country comparative analysis of policies and to achieve better results. Based on this, this paper refers to Rothwell & Zegveld's policy tool classification method, the open government data policy tooling dimension is divided into environmental, supply and demand three categories. Among them, the environmental policy tool refers to the open government data policy for the development of open government data to provide the development environment, such as private security system, regulatory system, open mechanism, etc.; supply policy tool refers to the policy requirements of the government initiative to the public release of government data, Such as data management personnel training, capital investment, data release; demand-based policy tool is to fully mobilize the government, social organizations, enterprises, the public and other active use of data to promote the whole society more deeply on the government data And then to achieve further liberalization of government data, embodies a pull effect, such as crowd-sourced data services, incentives.

3.2 The content evaluation dimension of the open government data policy

The evaluation of policy content can be reflected in policy output, and policy output can be measured by performance indicators, so this paper suggests that the corresponding performance indicators can be used to evaluate policy content. At present, the evaluation of open data development level (performance) indicators have not yet reached an agreement, but the World Wide Web Foundation's index system has a good operability, and the use of the system to assess the level of open data in different countries, the evaluation results Recognized by the world. Based on this, in the evaluation of the content of the government data policy on China and the United States, this study uses the evaluation index developed by the World Wide Web Foundation to design the contents of the evaluation of the contents of the open government data policy, To measure. Combined with the World Wide Web Foundation's interpretation of the three aspects, and in accordance with the actual needs of policy analysis, this paper on the degree of preparation, implementation and influence to give a new interpretation, which is prepared for the policy of the implementation of open government data to take , Including data management, platform construction, organization, public use capacity; implementation of the policy provides for the government to the implementation of government data on the specific implementation of the situation, including the number and quality of open government data; influence refers to the policy reflects Open government data should be the benefits of government and society, including social development, political influence.

4 Comparative analysis of open government data policies between China and the United States

4.1 The source and code of data

When collecting relevant policies, first search for keywords for "open data, open data or open government data policies / directives / opinions / regulations" on the government portal, and then read and remove, for example, medical, forestry, transportation, etc. Professional policy documents, and ultimately selected at the national level of open government data policy documents. In addition, in order to avoid omissions, this article also through access to relevant research papers, from which to get the policy in line with this study. On this basis, we further choose the policy of directly linking open government data, and some indirect or supporting auxiliary policies, such as 'Plain Writing Act', 'Managing Government Records', 'Improving Regulation and Regulatory Review' This article is not included in the policy analysis data set. Based on the above steps, a total of four Chinese government data policies, and 7 the United States open government data policies. It should be pointed out that China's existing open government data policy is derived from the policy document on big data since China has not yet introduced policies for purely government data. The US-China Open Government

data policy applied in this study is shown in Table 1.

Table 1 China and the United States open government data policy

Serial number	Policy (China)	Serial number	Policy (US)
1	<i>Some ideas on the use of big data to strengthen the service and supervision of market entities</i>	1	<i>Transparency and Open Government</i>
2	<i>To promote the platform for action on big data development</i>	2	<i>Open Government Directive</i>
3	<i>Notification of the implementation of major projects to promote big data development</i>	3	<i>Sharing Data While Protecting Privacy</i>
4	<i>Big data industry development plan (2016-2020)</i>	4	<i>Final Guidance on Implementing the Plain Writing Act of 2010</i>
		5	<i>Making Open and Machine Readable the New Default for Government Information</i>
		6	<i>Open Data Policy-Managing Information as an Asset</i>
		7	<i>2014 Agency Open Government Plans</i>

After defining the policy data, in order to facilitate the follow-up analysis, this paper coded the open government data policy on the policy document. At the time of coding, the code of the government data policy is divided into the policy analysis unit by the coding staff, and the division of the standard can express a policy meaning for the policy analysis unit. Then, according to the policy document unit source policy file serial number and its ranking in the document to be encoded, for example, the code Z1-1 indicates that the policy analysis unit it represents is derived from the policy “on the use of large data to strengthen the market And a number of regulatory opinions” and the first policy analysis unit for the open government data in the policy, and so on. This paper uses Z to represent China’s policy, M represents the US policy, and ultimately, China’s policy analysis unit 32, the US policy analysis unit 126. As shown in Table 2.

Table 2 Policy analysis unit coding table

Source	Policy analysis unit	Code
China’s policy 1	Through the government information disclosure and open data, open social information resources sharing, improve the transparency of market main body of production and business operation activities, as the main body in the news media, industry organization and stakeholders and consumers in the supervision of market main body to create conditions.	Z1-1
China’s policy 1	We will further increase government information disclosure and data openness. Except as otherwise provided in laws and regulations, the information such as the administrative licensing, administrative punishment shall be the administrative decision online within 7 working days from the date of the public, administrative transparency and enhance the government credibility.	Z1-2
...
China’s policy 4	We will promote the formulation of institutional documents for the protection and opening of public information resources and the administration of government information resources.	Z4-3
American policy 1	My Administration will take appropriate action, consistent with law and policy, to disclose information rapidly in forms that the public can readily find and use.	M1-1
American policy 1	Executive departments and agencies should harness new technologies to put information about their operations and decisions online and readily available to the public	M1-2
...
American policy 7	An explanation of the steps your agency is taking to make the initiative sustainable and allow for continued improvement.	M7-16

4.2 A comparative analysis of the instrumental dimensions of China - US open government data policy

Depending on the definition of environment-based policy tools, supply-oriented policy tools and demand-based policy tools in tooling dimensions, the contents of the encoded policy are classified. First, the policy tool type is described by country. We can see that China's environmental policy tools up to 16, accounting for 50.0% of open government data policy, supply policy tools have 12, accounting for 37.5%, demand-based policy tools at least, only four, Accounting for 12.5%; US environmental policy tools, supply-oriented policy tools and demand-based policy tools were 60, 52, 14, they are in the open government data policy accounted for the proportion of 47.6%, 41.3% and 11.1%. Second, compare the types of policy instruments between China and the United States. On a quantitative basis, the number of China's three policy instruments is much less than that of the United States. On the one hand, this stems from the fact that China has less policy on opening up government data and has not developed specific policy documents specifically for open government data. On the other hand, but also reflects the Chinese government's emphasis on open government data to be improved. In terms of proportion, the three types of policy tools in the Sino-US policy share of the proportion of that China and the United States open government data policy design ideas are more consistent; The types of policy instruments used by both China and the United States to open up the government data policy are environmental type, supply type and demand type, indicating that China and the United States are mainly relying on environmental policy tools to promote the implementation of open government data strategy. In terms of the ratio gap, the gap between US environmental policy tools and supply-side policy instruments is only 6.3%, compared with 12.5% in China, and the difference is significant because the United States has a higher level of development of government data than China It is also necessary to pay attention to the provision of matching data, talent and capital supply while creating a good environment for the development of open government data. The gap between demand policy tools and other two types of policy instruments is enormous, global open government data development time is shorter. Countries on how to stimulate the whole society to open government data needs are constantly exploring.

Table 3 The instrumental dimension distribution of open government data policy in China and the United States

Policy tool type	China			America		
	Example	Quantity	Ratio	Example	Quantity	Ratio
Environmental type	Z1-1, Z1-4, Z2-2, Z2-6, Z2-7, Z2-8, ...	16	50.0%	M1-6, M2-1, M2-3, M2-5, M2-6, ...	60	47.6%
Supply type	Z1-2, Z1-3, Z2-1, Z2-3, Z2-4, Z2-11, ...	12	37.5%	M1-1, M1-2, M2-2, M2-4, M2-8, ...	52	41.3%
Demand type	Z2-5, Z2-13, Z3-1, Z3-4	4	12.5%	M1-3, M1-4, M1-5, M1-7, M2-15, ...	14	11.1%

4.3 Comparative analysis of content evaluation dimensions of open government data policy between China and the United States

The statistical results of the content evaluation dimensions of the US-China Open Government Data Policy are outlined in Table 4. Similarly, according to country description, Chinese policy accounted for 50% of the degree of readiness (25% for data management, 9.4% for platform construction, 12.5% for organization and 3.1% for public use); The number of open government data accounted for 9.4%, open government data quality accounted for 15.6%, social development accounted for 6.3%, political impact accounted for 18.7%; the United States open government data policy in the preparation of the design of 54 % (Data management is 20.6%, platform construction is 7.2%, organization is prepared for 18.3%, public use capacity of 7.9%), the implementation rate of 18.3% (open government data accounted for 6.4%, open government data quality accounted for 11.9%) , The impact of accounting for 27.7% (social development accounted for 7.9%, political impact accounted for 19.8%). Then, a comparative analysis of China and the United States policy. In terms of the total proportion, the two countries have the most policy on the degree of readiness, and in terms of the

proportion of the implementation and influence of the policy, China's open government data policy on the implementation of the content and influence of considerable, while the United States pay more attention to Influence of the policy guidance, which shows that the United States open government data policy more purpose. This paper argues that more targeted policies can further stimulate the preparation and implementation of the proposed Chinese government in the design of open government data policy should be clear policy objectives. That is expected to achieve the impact. From the specific indicators of the proportion of view, the United States open government data policy in the specific indicators of the proportion of the gap is smaller than China, reflecting the development of the United States in all aspects of the development of government data is relatively more balanced; In addition, China in data management, Construction and opening up the number of government data and the quality of the four aspects of the policy ratio is greater than the United States, and the above aspects can be summarized as the relevant data provided by the policy content, corresponding to the specific policy for the government should open areas of data, The data format should be what, how to manage data and the establishment of the corresponding government data open website, it can be said that China's open government data policy is still in the basic stage of exploration; compared to China, the United States in the preparation of the organization, the public use higher capacity, social development and political influence of the proportion of policy, policy on behalf of the management and configuration of the main organizers of open government data design systems and programs can make use of public data and government data released on open and relevant the role of decision-making, open economy and society of government data Benefits, and promote public participation and government transparency, etc., shows that the US government's open data policy pay more attention to remain open to protect data and achieve corresponding impact value, its policy has been to achieve a higher target level.

Table 4 China and the United States open government data policy content evaluation dimension distribution

Implementation effect		China				America			
Index	Specific index	Example	Quantity	Ratio	Total ratio	Example	Quantity	Ratio	Total ratio
Readiness	Data administration	Z2-2, Z2-7, Z2-8, Z2-12, ...	8	25.0%	50%	M2-1, M2-10, M3-3, ...	26	20.6%	54%
	Platform construction	Z2-3, Z2-9, Z3-6	3	9.4%		M2-6, M2-12, M4-6, ...	9	7.2%	
	Organizational preparation	Z2-6, Z2-10, Z3-7, Z4-1	4	12.5%		M2-4, M2-9, M2-11, ...	23	18.3%	
	Public use capacity	Z1-1	1	3.1%		M1-3, M1-4, M1-6, ...	10	7.9%	
Executive degree	Open government data Quantity	Z1-4, Z2-4, Z3-3	3	9.4%	25%	M2-3, M2-5, M2-8, ...	8	6.4%	18.3%
	Open government data quality	Z2-11, Z2-14, Z2-17, ...	5	15.6%		M4-1, M4-8, M5-9, ...	15	11.9%	
Influence	Social development	Z2-1, Z3-1	2	6.3%	25%	M1-7, M2-15, M3-2, ...	10	7.9%	27.7%
	Political influence	Z1-3, Z1-2, Z2-5, Z2-13, ...	5	18.7%		M1-1, M1-2, M1-5, ...	15	19.8%	

5 Conclusions

Open government data strategy purposes, is the implementation of large data strategy, intelligent city strategy an important foundation. Open government data policy as a fundamental guide to the

opening of government data, the development of accurate, reasonable and effective policy is particularly necessary. In this paper, we establish a two-dimensional analytical framework based on the instrumental dimension and content evaluation dimension to quantitatively compare China's open government data policy with American open government data policy. The study found that the open government data policy between China and the United States is reflected in all aspects of the two dimensions. In terms of instrumental dimensions, the policies of the two countries show that the environment policy tools are more than the supply-type policy tools, Tools are more than the status of demand-based policy tools; in terms of content evaluation dimensions, China and the United States open government data policy on the preparation of the policy are the most, China's implementation of the policy and influence of the policy rather, The number of open government data and the open government data quality of the four aspects of the policy, they are open in the government data policy in China accounted for a high proportion of the policy The proportion of policy in the United States open policy data, while the proportion of other aspects of China's policy than the United States less. Based on the above research, this paper makes the following suggestions on China's open government data policy:

(1) Accelerate the development of national policy documents for open government data. China's existing open government data policy or in the development of large data on the policy, or only have local effects (such as Shanghai, Guiyang and other self-proposed policy), there is no specifically for the opening of government data to develop the national level Policy, and the US federal government has introduced more policy documents on the opening of government data, and is equipped with a wealth of supporting policy text. Obviously, such a policy situation to a certain extent led to China's open government data level ranking later. In addition, Article 3 of the Constitution stipulates that the relationship between the central and local governments is the initiative and creativity of the local government under the unified leadership of the central government. Therefore, this paper suggests that the Chinese government should speed up the development of the national level Government data policy to solve the difficult situation of the city in the practice of open government data, the difficulties of different standards, and coordinate the guidance of local government design in line with its own data open policy to comprehensively enhance the level of open government data.

(2) To strengthen the emphasis on supply-oriented policies, and to explore the development of demand-based policy. At present, the United States in the use of environmental policy tools and supply-oriented policy tools are more balanced, not only developed the relevant open plans, privacy and security provisions and liability mechanisms, but also in the supply level, data release, management training, funding There is also a large number of policy elements (including supporting documents) in terms of application and data quality assurance, while China's open government data policy has a large gap (12.5% Disparity in the use of environmental policy instruments and supply-type policy instruments) May lead to 'Make bricks without straw' situation. Therefore, it is recommended that in the development of open government data policy, the need to increase the use of supply-type policy tools, such as increasing the open platform for data construction, data format, data description and so on. In addition, China's use of demand-based policy instruments is scarce, and there is a need to explore more demand-based policies, such as incentives, recognition and acceptance of services and technological innovations that are made by the use of government data and incentives So that the public demand for the generation of government data, to create a government data culture.

(3) To strengthen the influence of open government data policy influence, to achieve greater political and social benefits. Impact includes both social development and political influence, and more specifically, it contains economic development, social trust, public participation, government transparency and so on. When the government's policy objectives more clearly and attention, can be more robust implementation. Therefore, in the specific policy-making process, on the one hand, we should pay attention to public participation, on the other hand, we should also emphasize the open government data to create social trust, to achieve transparency and promote the importance of economic development. In addition, you can refer to the GDP as an important assessment of the government's indicators, the level of government data as an open government assessment indicators.

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Explorative Research on Collaborative Governance of Elderly Care Services in the Integration of Beijing, Tianjin and Hebei Province Based on Social Network Analysis

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Abstract Give the context of Integration Strategy of Beijing-Tianjin-Hebei (Jing-Jin-Ji in short), the collaborative actions among Jing-Jin-Ji becomes more active and intensified, while the whole collaboration are still unsatisfied for the whole strategy execution. The paper aims at figuring out the empirical findings for the collaboration governance of elderly care services in Jing-Jin-Ji, furthermore to propose some valuable suggestions to remedy the inappropriate collaboration of elderly care services. Under the assistances of Social Network Analysis(SNA), the paper collected relevant collaborative data, and states the network of elderly care services in Jing-Jin-Ji is become stronger while the density and centrality still need improvement. By the references of the research findings, the paper puts forward to establish the trust mechanism, compensation mechanism and sustainable mechanism to inspire the corresponding participants to spontaneously join in the collaborative network for allocation and consumption of the elderly care services.

Key words Collaborative governance, Elderly Care Service, Integration of Beijing, Tianjin and Hebei Province, Social network analysis

1 Introduction

The political bureau of the CPC central committee held a meeting on April 30, 2015, which adopted the Plan for Beijing-Tianjin-Hebei Collaborative Development and defined the Beijing-Tianjin-Hebei collaborative development as a national strategy aimed at eco-integration, environment integration, economic Integration and Public service integration etc. However, Public service integration is the bottleneck restricting Beijing-Tianjin-Hebei integration. Only by resolving the gap of public service between Beijing and Tianjin and Hebei can we overcome barrier that affect the collaborative development of Beijing-Tianjin-Hebei. In the face of aging times, elderly care issue in Beijing-Tianjin-Hebei public service is especially prominent. At the same time the three areas cooperate poorly on sharing the supply and allocation of elderly care resources, it has greatly influenced the quantity, quality and other performances of elderly care in this metropolitan circle, which doesn't match with Beijing-Tianjin-Hebei integration strategy. The main purpose of this study is to clarify the practical situation about the three areas' elderly care collaboration and try to propose suggestions for optimized policy breaking the predicaments among its elderly care collaboration, then finding the proper path to establish a strong network collaborative structure system of Beijing-Tianjin-Hebei elderly care. The paper base on Regional Public Service Collaborative Governance Theory and by introducing the social network analysis (SNA) method to measure the level of cooperation, the status of resources exchange and the degree of interaction after collecting and quantized the interactive data among these three areas.

2 Literature review

2.1 Chinese literature review

The representative study on the collaborative governance of regional elderly care in China mainly focuses on resource allocation and government cooperation. In order to deal with the general shortage of software and hardware facilities, the misdistribution of elderly care resources, the malfunction of elderly care institutions constitute pressing issues that, starting from the top-level design, balancing existing resources to full coverage through the guidance of policies, subsidies and so on, and advancing Beijing-Tianjin-Hebei elderly care process through removing system obstacle, reasonable emotional guidance and cost control (Feng Xue-fei, Ni Jiang-tao; 2014)^[1]. According to the empirical

research of Shanghai and the development of the current elderly care collaboration level, we should develop a collaborative network of government, establish a system of cooperation services, and use a variety of policy and management tools given the context of weaken housing elderly care function and the inadequate development of the institutions (Jin Gai-jia, Chen Ruo-jing, 2009)^[2]. Having interviewed and investigated the agencies of social services for the elderly in Hubei province, it has been put forward that the construction of elderly care system combining medical treatment remains relatively low and the practitioner structure is not reasonable, and then it was believed that multi-area and multi-sectoral agencies should strengthen cooperation in order to improve the cultivation of professional talents in the areas, construction of elderly care facilities, financial subsidies and tax support (Xiong Ying, 2013)^[3]. Aiming at improving the conflict relationship between family pension and social pension, borrowing E. Litwak's Balance theory and the Responsibility Sharing theory as the guidance, and combining the research of Baotou XS elderly apartment, one article puts forward family pension and social pension should be both more collaboration on daily service and emergency and reach third party full potential of regulation functions through creating a platform, setting up the incentive mechanism, and actively developing social worker organization (Bai Jing, 2014)^[4]. With a view to integrate pension and medical resources and improve the efficiency of resources usage, it was proposed that elderly care institution could work collaboratively with hospital or community nursing station developing a medical-care integration pattern for elderly care to realize the integration of medical and pension resources. What's more, this pattern could be advanced by establishing the assessment system of medical care for elderly, elderly care industry standards, as well as the access standards for pension institutions with medical institutions inside (Gong Fang-fang, Qiu Chuan-xu, Huang Wen-jing, Sun Xi-zhuo, 2015)^[5].

The other studies on regional public service collaborative governance we can learn from are listed as following: Public health. For example, one study evaluated and analyzed the efficiency of input and output of public medical and health level in 13 cities among Beijing-Tianjin-Hebei, as well as the changes and transverse comparison of differences on the three areas through data envelopment analysis (dea) method, and the use of Malmquist productivity index (Wang Li, Wang Xiao-jie, 2015)^[6]; Building the 'rules-unite' plan to unify rules, such as sanitation special planning, living garbage processing special planning, renewable resources industry planning, hazardous waste pollution prevention and control planning, then strengthening inter-regional prevention and control on the basis of localized management priority (Zhang Long-ke, 2016)^[7].

2.2 Literature review out of China

The foreign scholars are more acceptable for the development trend of elderly care and public service collaborative governance, and regional public service collaborative governance or network governance has already formed a systematic theory. So it will inspire the elderly care collaborative governance under the background of Beijing-Tianjin-Hebei integration by analyzing the foreign practical cases.

2.2.1 About the theory of public service co-governance

Many Western scholars have advocated the application of social network analysis (SNA) to public service organization network (Provan and Huang, 2012) and collaborative governance, and carried out a series of research relating to the Co-governance theory: ① Collaborative Target, reaching a consensus on the target, and the key of Co-governance is avoiding the intricate network; ② Collaborative Process, the deliberation contributes to increase the value of public participant and improving the accountability, transparency and legality of decision-making (Robert, Weymouth, 2015); the scale and scaling adapt to the changing question and demand (Chris Ansell, Jacob Torfing; 2015); Via Compound Collaboration to make the flexible and strategic mechanism will benefit to strengthen the efficiency of cooperative partner (Chris Ansell; 2015); Negotiating Collaborative Governance means apply language arts and communication analysis to review the relationship of collaborative subjects' power to avoid unsustainable cooperation (Mie Plotnikof, 2015); ③ Collaborative Performance, building an evaluation system for productivity performance by exploiting "Nine Dimension Performance Matrix" further, and this system has two parts. One is Performance Level including CGR, Actions, Outcomes, and Adaptation, and the other one is Analytical Unit including Organization, CGR and Target (Kirk

Emerson, Tina Nabatchi; 2015).

2.2.2 About the theory of elderly care co-governance

In the 1990S many scholars proposed that it was a primary trend to different departments of elderly services integrated into a unified system, the formation of the structure of the most effective, in order to meet the various needs of the older consumers (Robert Myrtle, Kathleen H. Wilbe, 1994)^[8]. For elderly care collaboration activities, the scholars concluded that there were three types of transaction management, “service integration” for the level of customers collaboration, “system integration” for the level of organization collaboration, “system development” for the level of the interactive relationship between different service system (Richard Fortinsky, 1991)^[9]. For collaborative networks, when there is a core organization with network residual claims, it usually has high effectiveness (Keith Provanand, Brinton Milward, 1995)^[10]. The research of collaboration between public, private and third sectors found that cross-sector challenges in the field of elderly care were often associated with two aspects of cooperation: governance and administration. As above mentioned the cross-sector collaborative management should focus on social innovation, and the collaborating partners need to invest more collaborative activities to deepen partnerships and access resource in a more effective way to create social values (D Grudinschi, L Kaljunen, T Hokkanen, 2013)^[11].

2.2.3 About the elderly care co-governance of case study

At the beginning of the 21st century, many countries in Europe, with the emergence of social governance network, treated co-governance instead of the government or the market management, especially in elderly care and some other non-profit welfare bureaucracy organizations since there often was a consensus between the professors and citizens (Ingo Bode, 2006)^[12]. The lack of effective collaboration among medical professionals was a common problem in France’s elderly care system. Only through the network design to improve the coordination mechanism between the organization and the medical professionals, then serving the elderly better (Thierry Garrot, Nathalie Angelé-Halgand, 2016)^[13]. In Greece, the government was setting up regional organizations and the organizational foundation to further promote the development of co-governance model, especially in terms of elderly care, gradually from individual old-age care to community-based old-age care service management (SL Tsartsara, 2016)^[14].

Above all, comparing with the abroad empirical studies of new regionalism, holistic governance, network management on regional public services, the domestic co-governance studies on regional elderly care (and even public services) seems lack of the systematical analysis from the angles of cities to the integration area, from awareness to the behavior, so it is necessary to continue to further explore the basic theory to find the theoretical analysis framework that matches the complicate regional elderly care co-governance. Therefore, in the background of the Beijing-Tianjin-Hebei integration strategy, the existing collaborative pattern are unavailable to solve the short-view problem that they cooperate poorly on sharing resource or shouldering responsibilities together. The elderly care co-governance on the Beijing-Tianjin-Hebei integration should be studied in a view of macro-perspective and by a systematical scientific method. And it is necessary to know the co-governance whole situation among the agencies in Beijing-Tianjin-Hebei well, such as the unification degree of cooperation consciousness and the co-governance behavior, then improving the policies about the elderly care co-governance to reduce transaction cost for government collaboration and to optimize the co-governance performance.

3 The research method of social network analysis and data collection

3.1 The research method of social network analysis

Harvard University scholars put forward the concept of “faction” based on studying at the pattern of interpersonal relationship in the 1930s, and then John Barnes in the university of Manchester, UK and other social anthropologist on the basis of predecessors’ research explored the relation between tribes and village “community” structure. In the field of public administration, Western scholars mainly applied Social Network Analysis to policy networks, publicly-funded service delivery networks and collaboration, governance, which got great achievements and attentions (Li Dong-quan, Huang Kun, Lan Zhi-yong, 2011). Scholars in China also begin to use the Social Network Analysis method to study the collusion of government investment projects (Le Yun, 2013) and the network structure of public

opinion transmission about the emergency (Kang Wei, 2012), and others tried to apply it to analyze the network structure of “Yangtze River Delta” (Li Xiang, 2011). As the social network analysis studies the relational data, it is highly compatible with the characteristics of the cooperative relationship between governments on the metropolis. Therefore, this paper will use this method to explore the local government collaborative network in Beijing-Tianjin-Hebei.

In the process of social network analysis, Ucinet software has been favored by scholars because of its advantages of simplicity and visualization. By collecting interactive data among the three areas, frequency count and quantitative processing to establish the collaborative governance evaluation index, we will make it form the cross-tabulated data. Using Ucinet software to analyze the social network (Network Density, Network Center Degrees, Middle Center, and Closeness Centrality) of the elderly care collaborative activities in Beijing-Tianjin-Hebei, we will evaluate the three areas' collaborative rate, the condition of resource exchange and interaction, analysis of local governments' elderly care collaborative network structure, characteristics, interaction and development trend through the Cohesive Subgroups Analysis and the Ucinet loaded the drawing tool of Net Draw to describe Beijing-Tianjin-Hebei urban visual elderly care collaborative network between governments. The study just aims at breaking through the difficulties in the elderly care collaborative process of the three areas and finding the proper way for the formation of a strong network of public services in Beijing-Tianjin-Hebei.

3.2 The logic and process of data collection

3.2.1 The construction of public service co-governance theory

Co-governance, as a new theory, has not developed a clear theoretical framework, but as a cross theory of synergetic and governance theory, many scholars also explain the corresponding connotation of it. For example, Eugene badaher, a scholar of the holistic government, considered that ‘collaboration’ was a joint activities involved two or more institutions working together in order to enhance public value^[15]. Thus co-governance reflects the collaborative process of social organizations in order to create public value. Li Han-qing, a domestic scholar, deemed that the characteristics of co-governance theory were “the pluralism of the governance body, the synergy of subsystems, the cooperation between self-organizing groups and the formulation of common rules” (Li Han-qing, 2014)^[16]. These concepts and definitions of co-governance theory provide the evaluation criteria for this study, so the governments' behavior in daily work in Beijing-Tianjin-Hebei that involves the interaction and collaboration between the two subjects, will count as an effective co-governance data samples and be included in the data sample of this study.

3.2.2 The data collection of the elderly care co-governance in Beijing-Tianjin-Hebei

In terms of data objects, this study chose the various cooperation behaviors related to a total of 42 regions among Beijing-Tianjin-Hebei in 2015-2017 as a social network analysis of the data samples, including the 16 municipal districts in Beijing, 11 cities (prefecture level city) in Hebei province, 15 districts in Tianjin. They will be treated respectively as the principal part of social network structure of participation by SNA method measuring the degree of collaboration, mutual dependence between each other, and estimating the central cities, then carries on the visualization and analysis of network structure. According to this principle, this study collected a total of 64 data, the main source of data for these districts' official government websites, Chinese academic conference site, the mainstream news media site (such as the People's Daily News, NetEase News, Tencent News, Sohu News, etc.). In the collected valid data, it mainly include 5 joint official meeting among governments, 7 government research and exchange activities, 15 document agreements, 7 elderly care projects by jointly building, 18 press conferences for elderly care collaborative government, and 12 academic conferences.

In terms of the time span of the data, the study selected the 2015 to 2017 to expect to scientifically analyze its degree of elderly care collaborative governance network in the integration of the Beijing-Tianjin-Hebei development up to now. In Beijing-Tianjin-Hebei metropolitan region, the cooperation between local governments often involve two or more sides, so the data in the network structure of undirected and it do not be distinguished between the direction of the inflows and outflows, which means the network will be regard as an undirected network if just calculate the number of contact between each other.

In the next step, categorized these data into direct participation and indirect participation collaborative behaviors, we will assign points according to the two kinds of classification to realize the classification and quantitative processing of data. The specific assignment criteria: ① collaboration awareness data, indirect collaboration both or all parties (0-5 points); ② collaboration implementation data, direct collaboration both or all parties (6-10 points); ③ collaborative learning and growing data, collaboration achievements (6-10 points).

4 Empirical research and findings on collaborative governance of Elderly Care Services in the integration of Jing-Jin-Ji

4.1 Visual analysis

From the Figure of Relation Visual Structure (Figure 1), the network relationships of Elderly Care Services in the region of Jing-Jin-Ji has been generally formulated in the whole, and each city has some mutual relations which gets great improvements for the regional collaboration comparing to the situation before the Integration Plan of Jing-Jin-Ji in 2015. Moreover, it shows close connections among each participants which emerge the radiation. However, the central city is not transparent which, namely, each connection acts independently and there is no axis city as the initiator or leader city during the whole collaborative behaviors. It will be exposed in details as the following data of intensity and centrality.

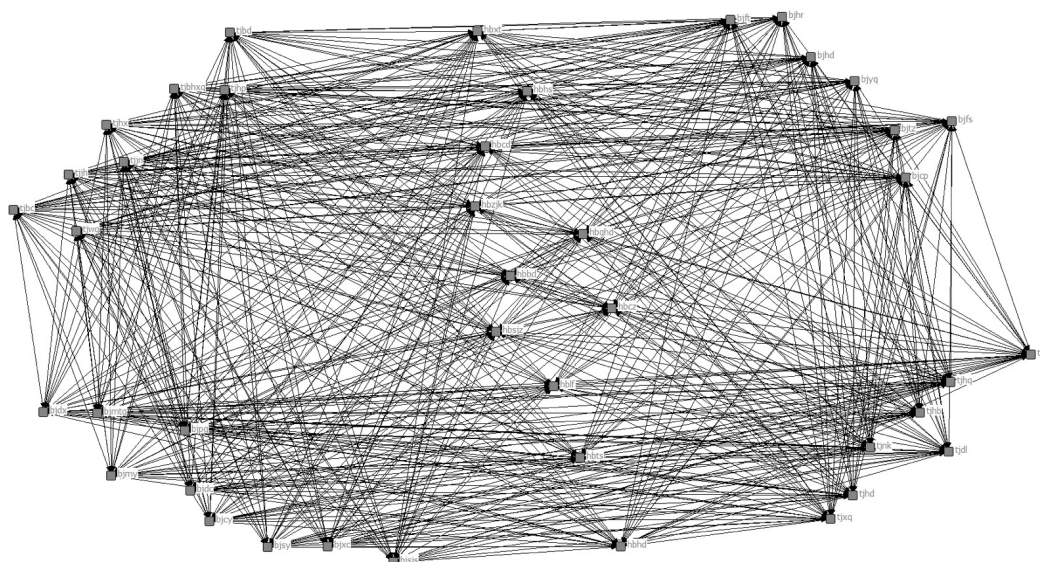


Figure 1 Visual structure of network connections

Notes:bjdc=Dongcheng District, Beijing; bjxc=Xicheng District, Beijing; bjcy=Chaoyang District, Beijing; bjhd=Haidian District, Beijing; bjft=Fengtai District, Beijing; bjsjs=Shijingshan District, Beijing; bjmtg=Mentougou District, Beijing; bjfs=Fangshan District, Beijing; bjtz=Tongzhou District, Beijing; bjsy=Shunyi District, Beijing; bjcp=Changping District, Beijing; bjdx=Daxing District, Beijing; bjpg=Pinggu District, Beijing; bjhr=Huairou District, Beijing; bjmy=Miyun District, Beijing; bjyq=Yanqing District, Beijing; hbsjz=Shijiazhuang, Hebei; hblf=Langfang, Hebei; hbbd=Baoding, Hebei; hbts=Tangshan, Hebei; hbqhd=Qinhuangdao, Hebei; hbcd=Chengde, Hebei; hbzjk=Zhangjiakou, Hebei; hbxt=Xingtai, Hebei; hbhd=Handan, Hebei; hbcz=Cangzhou, Hebei; hbhs=Hengshui, Hebei; tjhp=Heping District,Tianjin; tjhd=Hedong District,Tianjin; tjhx=Hexi District, Tianjin; tjnk=Nankai District, Tianjin; tjhb=Hebei District, Tianjin; tjhq=Hongqiao District, Tianjin; tjdl=Dongli District, Tianjin; tjxq=Xiqing District, Tianjin; tjjn=Jinnan District, Tianjin; tjbc=Beichen District, Tianjin; tjwq=Wuqing District, Tianjin; tjbd=Baodi District, Tianjin; tjbxq=Binhai New District, Tianjin; tjnh=Ninghe District, Tianjin; tjjh=Jinghai District, Tianjin

Throughout the Figure 2, it is straightforward to find out Hebei Province is the most frequently collaborative participants during the Jing-Jin-Ji Collaborative governance. Following with the better interaction among the Jing-Jin-Ji collaboration of elderly service care, more elderly people from Beijing and Tianjin moved to Hebei to take the elderly care services which is beneficial for amounts of Hebei's resources to be invest into the elderly care service and the Elderly Care Service Belt of "Around Beijing and Tianjin" is gradually appeared. Taking the Figure of Centrality Structure into consideration, the different areas in Beijing show different collaborative performance in the whole network, e.g. Dongcheng Area, Xicheng Area and Fengtai are the most active participants for the inter-area collaboration.

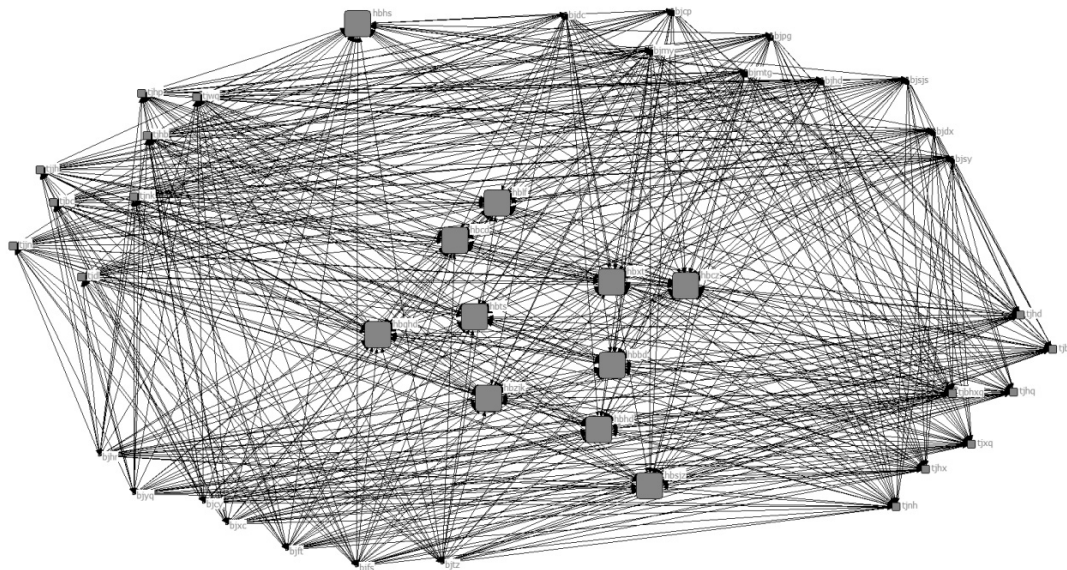


Figure 2 Result of the Centrality Structure

4.2 Density and centrality analysis of collaborative governance of Elderly Care Service in Jing-Jin-Ji

By the means of Ucinet Software to analyze the regional collaboration of Elderly Care Service in Jing-Jin-Ji, the network density shows 0.6748. According to some handbooks of Social Network Analysis, the density should be scaled 0-1. If the network density rate is higher, the effects of mutual collaboration will be better. And it launches the analysis of Specific Centrality which resulted in 12.83%, Heterogeneity equals to 2.42% and Normalized reaches 0.04% which show the collaborative rate is still low and the collaborative effects of inter network needs promotion.

In the Jing-Jin-Ji metropolitan circle, the active rates of cities in Hebei Province are on average higher than Beijing and Tianjin, esp. the highest network centrality is Zhangjiakou. Zhangjiakou city pursuit for the better livelihood city in recent years and mainly concentrated to improve the aging services and Medicare, maybe results in the emphasis on the regional collaborative governance of the elderly care services.

From the perspective of Between Centrality, Chengde, Zhangjiakou and Langfang of Hebei Province gets the highest score of 8.504 which states these cities have rich resources of elderly care services and are available to control these resources. Moreover, Beijing and Tianjin in the collaborative network needs some cities in Hebei Province to connect to and cooperate with as the role of Agent. Taking a reference to Closeness Centrality, the results turns up similar which shows Hebei Province has the transparent advantages of elderly care resources and Tianjin lags behind Hebei Province. In sum up, Hebei Province potentially tends up to the core center of the collaborative network and its influences for the other cities becomes rapidly strong.

Table 1 Result of Specific Centrality

Number	Name	Degree	NrmDegree	Share
1	bjdc	6660.00	49.981	0.023
2	bjxc	6665.00	50.019	0.023
3	bjcy	6645.00	49.869	0.023
4	bjhd	6650.00	49.906	0.023
5	bjft	6645.00	49.869	0.023
6	bjsjs	6645.00	49.869	0.023
7	bjmtg	6645.00	49.869	0.023
8	bjfs	6645.00	49.869	0.023
9	bjtz	6685.00	50.169	0.023
10	bjsy	6645.00	49.869	0.023
11	bjcp	6645.00	49.869	0.023
12	bjdx	6645.00	49.869	0.023
13	bjpg	6645.00	49.869	0.023
14	bjhr	6645.00	49.869	0.023
15	bjmy	6645.00	49.869	0.023
16	bjyq	6645.00	49.869	0.023
17	hbsjz	8265.00	62.026	0.029
18	hblf	8480.00	63.64	0.029
19	hbbs	8265.00	62.026	0.029
20	hbts	8265.00	62.026	0.029
21	hbqhd	8265.00	62.026	0.029
22	hbcd	8435.00	63.302	0.029
23	hbzjk	8515.00	63.902	0.029
24	hbxt	8265.00	62.026	0.029
25	hbhd	8265.00	62.026	0.029
26	hbez	8265.00	62.026	0.029
27	hbhs	8265.00	62.026	0.029
28	tjhp	6055.00	45.441	0.021
29	tjhd	6055.00	45.441	0.021
30	tjhx	6055.00	45.441	0.021
31	tjnk	6055.00	45.441	0.021
32	tjhb	6325.00	47.467	0.022
33	tjhq	6055.00	45.441	0.021
34	tjdl	6055.00	45.441	0.021
35	tjxq	6055.00	45.441	0.021
36	tjjn	6055.00	45.441	0.021
37	tjbc	6055.00	45.441	0.021
38	tjwq	6250.00	46.904	0.022
39	tjbd	6055.00	45.441	0.021
40	tjbhxq	6055.00	45.441	0.021
41	tjnh	6055.00	45.441	0.021
42	tjjh	6055.00	45.441	0.021

4.3 Cliques analysis of collaborative network of Jing-jin-ji Elderly Care Services

The paper uses Ucinet to move on the Cohesive Subgroups Analysis, namely Cliques Analysis aiming at exploring on how to divide the components in the network and what are the connections among different cliques or groups. From the Figure 4, it is clearly drawn three large group including Beijing, Tianjin and Hebei. Furthermore, it can be figured out from the detailed subgroups like Dongcheng and Fengtai are the more active areas in the Beijing Group; Shijiazhuang, Langfang and Handan are the more active participants in Hebei Group; Wuqing is the most active region in Tianjin Group. To dig out the reasons, the paper ascribes to the geographic location and supportive policies which makes these cities or areas are more sensitive or enthusiastic toward the regional collaboration of the elderly care services.

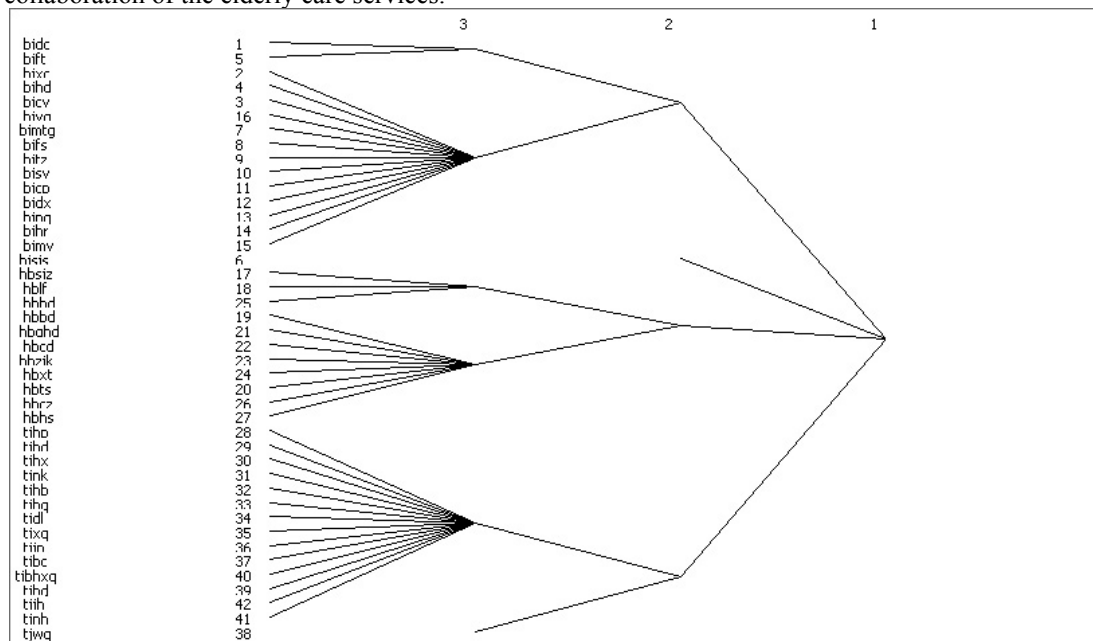


Figure 4 Result of cliques analysis

5 Policy proposals

5.1 To establish the trust mechanism based on mutual cooperative belief

According to the research findings from the collaborative network of elderly care service in the Integration of Jing-Jin-Ji, it exposes there are great needs to expand the relationships among diversified entities, and the regionally mutual relations ought to be intensified. In order to realize the optimal Elderly Care Service Metropolis Circle, it is of a necessity to build up a trust mechanism among local governments. Prof. Wang Gang mentioned that Trust is a psychological commitment between the cooperative sides, which can bring up reliable actions even though given in the uncertain conditions¹⁷. Correspondingly, the mutual trusts among local governments of Beijing, Tianjin and Hebei Province are deemed as the beginning point and effective footstone for the collaborative governance of elderly care services, which can enforce the relative collaborative minds, promote the collaborative mechanism and inspire the collaborative behaviors. As above mentioned, the intensity of collaborative network is just 0.6748, the whole network centrality is 12.83%, the collaboration rate of elderly care service among Beijing, Tianjin and Hebei is not high which to some extent is given rise by the lack of basic mutual trusts during the collaborative activities. Namely, the absence of mutual trust which is as the cooperative premise and base leads to the slow advancement of the elderly care service network in the region of Beijing, Tianjin and Hebei Province.

How to further drive the elderly care service network in the region of Beijing, Tianjin and Hebei Province? The paper deduces two indispensable prerequisites: ① the highly coherent ideology,

identified goal and plan for collaborative governance of the elderly care service in Jing-Jin-Ji which matches with the respective responsibility and roles according to their positions under the Integration of Jing-Jin-Ji. By that, the collaborative governance of elderly care service can rely on the consistency and containment of policy and strategy. ②the diverse and multi channel communications. Due to the divergent environmental conditions of the relative cities during the process of collaborative governance, there are some interest conflicts among different stakeholders. In order to promote goal congruence, the necessary communication becomes vitally important.

5.2 To establish the interest compensation and coordination mechanism based on the win-win and jointly sponsor rules

Mutual Benefiting and Win-win is the key for regional cooperation. As Feiock (2014) mentioned, the excludability or overflow benefits of the regional public issues are the crucial driving force for advancing the regional stakeholders to realize the cooperation and regional targets^[18]. Hence, there is a need to establish a jointly interest compensation and coordination mechanism which takes effects for all the cities and areas under the certain metropolitan circles during the process of collaboration among Beijing, Tianjin and Hebei Province aiming at elderly care services. Referring to some news, Hebei province is available to provide large scale elderly care services for Beijing and Tianjin. Recent years, governments of Hebei support to establish many aging institutions which are in response to the Integration of Jing-Jin-Ji. From the above network visual framework of centrality, some cities in Hebei Provinces are the comparatively active participants during the network. However, it is released that many aging care institutions expressed their discontent for the governmental subsidiaries provided by Beijing and Tianjin during the field investigations of aging institutions in Hebei Province. It is far more reaching for the large daily cost of operation, and the one-time subsidiary for the needed infrastructures and are always restricted by the amount quota control which negatively affect the far-reaching collaborations for the aging industry.

Therefore, some benefits should be offered to Hebei under the benefits compensation mechanism. Beijing and Tianjin should appropriately improve the subsidiary standard to support some cities in Hebei Province which assists to offer some aging care services for Tianjin and Beijing. In details, Beijing and Tianjin ought to give more compensations for some aging organizations or enterprises in order to initiate more incentives for maximizing the regional whole interests.

5.3 To establish the sustainable mechanism for collaborative governance aiming at learning and growth

In general, the collaborative governance for the elderly care services under the Integration Jing-Jin-Ji targets at optimizing resources sharing, improving aging care services system and promoting the qualities which are referred to a long-term plan with the sustainability while not in a short-term consideration. Therefore, the local governments under three regions should launch more interactive activities from diverse angles and multiple levels, e.g. field investigation, academic seminars under some enthusiastic collaborative organizations in order to move on the mutual understanding of the distinctive advantages pursuing for the collaborative efficiency. As mentioned from the collaborative network data, it shows the several interactive activities including the investigation among different governments, field trip and communications which are providing with solid bases and growth force for the profound collaborative development in the future. However, there is none of a core city shown in the collaborative network of elderly care service and both of the interaction degree and quantity are below the desired level in the Beijing, Tianjin and Hebei Province in the light of network density, centrality degree and collaborative density. Supposing to solve this problem, a long-term plan should be set up and the collaborative consciousness and degree should be cultivated in periods. In order to reduce the frictions during the process of collaboration, there are consultation, negotiation, and dialoguing etc. in the forms of conferences and mutual actions should be fully utilized to build up a sustainable learning mechanism with the purpose of facilitating the future collaboration.

Besides that, it is possible of a god-given period to learn from the current collaborative failures and unsatisfactory results. If we can make fully uses of the chance to positively think and sum up the experience for digging out the optimal collaborative development route and formulate the collaborative

agreements. So that, it is beneficial to enlarge the collaborative radiation efficiency and gain the better performance by the way of mutual learning and experiences references.

6 Conclusions

Throughout the data findings, it is analyzed the collaborative network becomes intensified and radiation connections becomes more despite that the network density is still low and intra network synergy effects are not transparent of the collaborative network for the elderly care services for Jing-Jin-Ji. At the end, the paper puts forward some sound suggestions of cultivation, building-up and enforcing the collaborative consciousness, optimizing the interest compensation mechanism, and enforcing the collaborative sustainability according to the status in quo of the elderly care services in Beijing, Tianjin and Hebei Province.

In addition, the research has a lot of deficiencies, like it should make the research to be more scientific and rigorous. For example, the research data and materials are quite scarce because some government official websites just release limited materials as a result that some collaborative practical data are exclusive from the research. Besides that, the rating system and classification of collaborative activities should be more specific which to some extent shows subjective of the researcher. In the future research, it aims to enlarge and optimize the data base to clarify the network structure of elderly care services in Jing-Jin-Ji accordingly. Concretely speaking, the research is going to search for more collaborative data and strictly divide them into three categories referring to the previously set standards. Moreover, the paper will further figure out the sponsors, organizers and participants during the collaboration and rates these different roles with different scores correspondingly. By that the visual collaborative governance network is getting closer to the practical network in reality which will tends to be more rational and the proposed suggestions should be more persuasive.

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Equality Research on Trust and Cooperation Effectiveness of Higher Educational Student Financial Aid Policy in China

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Abstract Student financial aid policy provides a fairer opportunity for poor students to take part in the higher education, and the equal implementation of student financial aid policy is of great significance to enhance the effectiveness of trust and cooperation among participating groups. Using the survey data over 4300 questionnaires from 60 colleges and universities in 6 provinces in China, the main factors affecting the equality of student financial aid policy will be explored through the Logistic regression model based on the theory of poor student judgment and the theory of fairness of educational distribution from the two aspects of whether poor students are financed and their needs are met, and to reveal the role of policy equality among government, universities and poor students trust and cooperation. Then the relevant suggestions for improving the equality of implementation of student financial aid system will be proposed.

Key words Student financial aid, Equality, Logistic regression, Trust and cooperation

1 Introduction

The higher education subsidy system has played an important role in helping poor students to complete their studies in China. After the Chinese government has promulgated *the Opinions on Establishing the Developed Subsidy Policy System for Students with Financial Difficulties in Regular Undergraduate Universities, Higher Vocational school and Secondary Vocational Schools* in 2007, Chinese universities have established a diversified hybrid funding system including scholarships, grants, student loans, tuition waivers, “Green channel” and etc. In 2016, the number of subsidized students in regular colleges and universities was 42 million, and the total amount of subsidy reached 95.6, which is 49% of the total amount of university aids funding. And finance bank provide student loan amount was 26.3 billion RMB^[1]. It basically reaches the goal of “no student drops out of school due to family economic difficulties.” Higher education student aid policy provides poor students with a more fair opportunity to participate in higher education.

For the study of subsidy policies for poor students in higher education, many scholars focus on the eligibility of poor students and the efficiency of policy implementation. In developing countries, because it is difficult to collect family income exact data, identifying who is poor student becomes more difficult. After educational economists discussed about the eligibility of poor students theoretically, they found that the criterion for eligibility was difficulty accurately. Then, students from low income family could not obtain subsidy, since students without financial difficulties get aids and possess the limited resources^{[2][3][4]}. Some scholars have researched on the measurement and identification methods of poor students. Chinese scholars have summarized the experiences results in the developed countries^{[5][6]}, and carried on the specific measurement of Chinese poor students^{[7][8]}. Chinese scholars also have evaluated the higher education subsidy policy and they found that the implementation of government subsidy policy is equitable among colleges and universities and benefits to the majority of poor students^{[9][10]}. After Chinese government introduced implementation of precision poverty alleviation and precision poverty eradication strategy, education poverty alleviation has become an important policy to curb the intergenerational transmission of poverty and achieve poverty alleviation accurately. Scholars have studied the relationship between education and precision poverty alleviation^{[11][12]}. Most scholars have paid attention to the significance of student subsidy policy to promote the educational equality, and evaluated the fairness of student subsidy policy. Many of these studies were based on the aspect of policy system, and there was lack of empirical research. Moreover, most of the evaluations of the efficiency of student aid policy were based on policy

implementation issues, and less accurately study about whether the funding can meet the needs of poor students. Some research data was just collected from a few of university surveys, which cannot cover the whole of China.

This study will discuss the equality of the policy implementation from the perspective of the trust and cooperation effectiveness of the subsidy policy in China. First, study the impact of trust and cooperation between institutions and students on the identification of poor students. Then, calculate the gap between the amount of subsidies and the needs of poor students, and analyze the equality of policy implementation of the three modes of state grant, student loan and school scholarship. Finally, reform suggestions are proposed to promote the fairness of aid policies in higher education.

2 Data sources

The survey was taken by the National Support Center of the Ministry of Education in 2015, including six provinces, Jiangsu, Shandong, Henan, Hubei, Sichuan and Xinjiang. In each province, we selected 10 institutions which are seven kinds of universities, and selected two classes to investigate. A total of 4390 valid questionnaires were collected.

3 Equality analysis of identifying poor students in China

Identifying poor students is an effective premise of implementing student subsidy policy. The outcome of identification is directly related to the flow of subsidy resources, and even the realization of educational equality. Especially in China, family income and personal income are difficult to collect precisely, so identification of poor students and how to give subsidies appropriately are the most difficult problem to be solved necessarily.

In the higher education subsidy policy in China, the poor students is defined as “the money that the students and their families raise cannot support them to study on campus and afford the basic cost of living”^[13]. Because of this ambiguous definition of poor students and the diversity among various regions and institutions in China, identifying poor students has become the bottleneck of implementing equality of subsidy policy. During the processes of identifying poor students in colleges, in order to reduce the difficulties for poor students to apply for subsidies, they just need to provide proof of family economic difficulty and aid application form. Later, the specific processes of identification mainly relies on faculty counselors, and then they will identify the poor students based on the classmate observation and opinions. Finally, according to the degree of economic difficulties, they will give the poor student the appropriate subsidy.

In order to analyze the equality of the identification procedure and the main factors affecting fairness, we used two indicators that are “whether they submitted the application form of family economic difficulties” and “whether they were identified as poor students by the institution”.

In the survey, 44.2 percent of students submitted the form of family economic difficulties, and 40.7 percent students were identified as those from low income family. The students who submitted the application form of 84.6 percent were identified from low income families. We regarded students who submitted economic difficulty form as dependent variable of self-determination poverty, and regarded students who are identified as having financial aid as the dependent variable of institution identification. We analyzed the main factors of impacting on identifying poor students based on three aspects separately, student individual characteristics, aids work from institution and education expenditure in China.

Based on the Logistic regression, the individual factors of whether students submitting the form includes gender, minority, the degree of education, the resident region, the number of family members and household annual income. From the aspect of subsidy policy, there are significant effect of whether students have scholarships, national grant and student loans, and whether there is democratic part of review in the processes of institution identification. In educational expenditure, except for board wage, tuition, accommodation fee and basic daily expenditure also have effect on submitting economic difficulty application form.

Similarly, in factors of whether a student is identified as poor one by universities, except for gender and minority, other individual factors also are significant. In the processes of identification, we

added two new indicators that are “whether institution will publish the results” and “the overall evaluation of aids policy.” We found that students who did not have the qualification of poor students were more satisfied with equality of policy implementation than students who were qualified. In educational expenditure, the amount of tuition and accommodation fees have no significant effects on students with qualification of economic difficulty. In the survey sample, students from high income family often choose to pay for high tuition fee and good conditions of accommodation. Therefore, they will not apply for financial subsidies, and will not care whether they are identified as poor students.

Table 1 Main factors affection on identification poor students by Logistic regression

Factors of identifying poor students	Whether submitted the application form		Whether identified as poor students by the institution	
Individual characteristics				
Gender	0.233 *	(0.096)	0.117	(0.106)
Minority	0.633 ***	(0.158)	-	-
Education	-0.426 ***	(0.104)	-0.646 ***	(0.114)
Resident region	0.368 ***	(0.097)	0.225 *	(0.108)
Family members	0.186 ***	(0.038)	0.122 **	(0.042)
Household annual income	-0.938 ***	(0.070)	-0.885 ***	(0.072)
Subsidies policy				
Whether obtain national grant	2.655 ***	(0.118)	3.08 ***	(0.12)
Whether obtain scholarships	0.266 *	(0.113)	0.301 *	(0.124)
Whether obtain student loans	0.760 ***	(0.138)	0.608 ***	(0.142)
Democratic review /Publicity	-0.506 ***	(0.145)	-0.595 ***	(0.171)
Overall policy evaluation	/	/	-0.312 ***	(0.068)
Education expenditure				
Tuition	-0.293 *	(0.131)	-	-
Accommodation fee	-0.465 *	(0.184)	-	-
Board wage in university	-	-	-0.377 **	(0.131)
Basic daily expenditure	-0.128 **	(0.042)	-0.171 ***	(0.045)
Constant	14.242 ***	(1.598)	13.4 ***	(1.297)

Note: * Indicates $p < 5\%$; ** Indicates $p < 1\%$; *** Indicates $p < 0.1\%$

In general, from the gender, girls who submitted applications have higher probability to be identified as having economic difficulty than boys do. Similarly, minority, undergraduate students, students from rural, and students having more family members are more likely to be qualified than the Han, specialists, students from urban, and students having less family members separately. The possibility of people who have high household annual income submitted application and then were identified as needy student decreases. In the aspect of institution, the huge possibility is the students who submitted applications and got national grant, scholarships and student loans, since this is a necessary condition of getting subsidies.

After analyzing the identification processes in students and institutions, the factors of students' own identification and colleges' decision have very high unity, which indicates trust between them is relatively high and the effectiveness of cooperation between them is relatively significant. Therefore, students have high satisfaction of overall higher education subsidy policy implementation. In the survey, nearly 50 percent of the students were “very satisfied”, 36.7 percent of the students were “satisfied” and only one percent were “dissatisfied”.

4 Equality analysis of subsidy to meet poor student needs in China

After identification of poor students implements equally, there is another important indicator of reviewing equality of subsidy policy, whether the policy goals of various student subsidy models can be achieved, and whether aids can satisfy or almost satisfy the needs of students with economic difficulty.

According to the national income classification standards in World Bank and the situation of China, we divided family annual income into four levels, including below 8,000 RMB, 8,000 to 20,000

RMB, 20,001 to 100,000 RMB and more than 100,000 RMB, and we studied the gap between the education need of students with different family income and getting subsidies. In our survey, there are 4.9 percent of student from families with annual income lower than 8,000 RMB, which are low-income families. It coincides with 5 percent of students who are identified as the percentage of very poor families. There are 21.9 percent of students whose family annual income is between 8,000 RMB to 20,000 RMB, which is the level of middle and bellowing middle. It basically coincides with 20 percent of college students are poor. According to the income levels, we analyzed different groups of people based on their needs. Then we chose three kinds of subsidy projects, including student loans, national grants and scholarships which are the most covered policies, and also analyzed the degree of various subsidies satisfied needs of poor students and the outcome of implementation of those subsidy programs.

Table 2 Education expenditure and subsidies with different income levels

Income level	Tuition (1)	Accommodation (2)	Board wage (3)	Daily expense (4)	Student loan (5)	Grant (6)	Scholarship (7)	Part-time job (8)
< 8,000	4099	835	6130	1171	5843	3052	1193	2091
8,000 – 20,000	4679	871	6012	1588	6312	2895	843	1776
20,001 – 100,000	5590	995	7793	3066	6704	2799	857	1922
>100,000	6916	1155	9601	6430	6414	2875	1084	3493

For students with different levels of household income, from the education expenditure, the group of students from low and middle-low income their tuitions are basically lower than 5,000 RMB, which is coincide with tuition in the majority of colleges in China. In contrast, students from the high-income families will choose art universities with higher tuition, or participate higher education through some special projects with high tuition. From the perspective of accommodation, food, and daily basic expense, the basic expenses increase with household income levels enhance. Students from the lowest income families have the lowest expense of tuition, accommodation, and daily expenses. It is obvious that poor students choose majors with lower tuition and dormitories with worse conditions, and try to minimize their daily expenses.

First of all, students from low-income family apply for a lower amount of student loans. Because national subsidy student loans need to be repaid, financial bank institutions lend loan based on the needs of tuition and accommodation fee to prevent default risk. It did not meet the standard of maximum loans, 8,000 RMB per year, for undergraduate students. Then, from perspective on national grants, the highest amount of subsidy that the poorest students can be obtained is 3,052 RMB. The amount of grant which is obtained by middle-low income groups of people is the second highest, 2895 RMB. It indicates that national grants mainly benefit poor students. However, compare it to food expenses which is more than 6,000 RMB, the number of national grants is less than half of the food expense. It cannot solve poor students' living problems. Moreover, in the aspect of scholarships, the maximum number of subsidies which low-income groups of people can get unexpectedly is 1,193 RMB. It is 350 RMB higher than middle-low income students. It indicates that the academic performance of students from the poor families is excellent, so they can get a higher scholarship. Finally, based on the analysis of off-campus part-time job income, for filling the lack of education expenditure, poor students choose to have part-time jobs to increase their income. The poorest students income of part-time job is 2,091 RMB, whose rank only second to the class with highest income, 3,493 RMB.

Further, analyze the gap between the amount of subsidies that obtained by students with different levels of income and the needs of education, especially care about whether the educational needs of students from low-income and middle-low income families can be satisfied. First of all, national student loan is “financial institutions provide poor students with credit loans, which is led by the government. It can help poor students to solve problems of tuition and accommodation fee during

study.”^[14] Through calculating, we found that national student loans can basically meet the needs of tuition and accommodation expenses, which indicates realization the goal of national student loans policy. Then, analyze the amount of aids from the government and university, all subsidies can basically satisfy low-income groups of people’s tuition, accommodation fee, and food expense. The gap between them is just 978 RMB and 1,511 RMB. Finally, for the poorest students, considering about their off-campus income and their basic daily expenses, the gap between education expense and supply is only 57 RMB. The difference among middle-low income students is only 1,324 RMB.

Table 3 Gap between the subsidies and the needs with different income levels

Household income	Gap of student loans	The gap of institution aids	The gap of all subsidies
	(5)-[(1)+(2)]	[(5)+(6)+(7)] -[(1)+(2)+(3)]	[(5)+(6)+(7)+(8)] -[(1)+(2)+(3)+(4)]
< 8,000 RMB	909	-978	-57
8,000-20,000 RMB	762	-1511	-1324
20,001-100,000 RMB	120	-4017	-5161
>100,000 RMB	-1657	-7299	-10236

In conclusion, the aids from the government and universities basically covers the needs of students who need support, so as to achieve their respective policy goals. Among the government, universities, financial institutions and students forms a good trust and relationship, and they promote the equality of higher education subsidy policy implementation together.

5 Conclusions and recommendations promoting equality of higher education subsidy policy

Based on above study, the conclusions are as follows: Firstly, in the process of identifying poor students, the factors that affect students’ own identification and colleges’ institution decision mainly include students’ family status, student subsidy model programs and education expenditure, etc., which shows that the trust and cooperation effectiveness among students and college their universities is significant, and students are highly satisfied with overall colleges’ subsidy. Secondly, according to the analysis of groups with different levels of family income, funding of the government and colleges basically satisfied the needs of people students who need support, and national subsidy loan mainly help poor students to solve problems of tuition fee and student subsidies grants are for fundamental living expenses and accommodation fees, so as to the objectives of the funding policy are clearly and well achieved. Finally, off-campus part-time job income of the poorest students is higher, which indicates that funding aids can not fully meet the needs of such groups.

By analyzing the processes of identifying poor students and difference aids among the needs of poor students that were satisfied by various subsidy modes in China, based on trust and cooperation among students, college universities, and the government, and to promote equality of implementing subsidy policies, we give suggestions as below.

At first, we should develop scientifically accurate processes of identification, and build the dynamic system of identifying poor students. When submit the application of economic difficulty, students need to show standardized proof information which the local civil departments needs to verify the authenticity. Colleges can establish a dynamic database of needy students, and accurately monitor and determinate students’ financial situation for a long time. They use informatization computer technologies, and big data of student campus cards’ consumption records, library borrowing records, and time of passing in and out of dormitory to determine the real consumption of poor students. It realizes subsidy policy, “the precision of objects, strength, and the provide point,” and establishes the necessary prerequisite for equality of subsidy policy.

In addition, promote enthusiasm of bank to lend student loans, and really realize “get as many loans as need.” Student loans in China mainly based on the National Development Bank to implement the local credit loans mode. The latest student loans policy in 2016 was published, and increases the

amount of loans and extends the repayment period, which plays an important role of reducing the repayment burden. However, the implementation of policy “get as many loans as need” not only reflected in the number of poor students, but also need to achieve the goal on the amount of loans. At the same time, it is appropriate to consider about waive food expenses on campus, so student loans will become the most effective and the most efficient funding projects.

Finally, promote trust and cooperation among the government, colleges, banks, and students, and implement equality of higher education subsidy policy. High efficiency of subsidy system requires the coordinated development of various departments. The civil department of the government needs to bear the authenticity of the proof of family income, so it can enhance the trust between universities and students. The department of education needs to coordinate the relationship between banks and universities, uses the professional management of financial institutions, and improve the efficiency of subsidy policy. Education institutions need to provide poor students with a strong guarantee of successfully starting and complete their study, “from the indemnificatory subsidy to developed subsidy, and focus on cultivating an image of grown and talented students. If the subsidy participates in the principal parts, they will be more likely to trust each other, reduce the operating costs of policy, establish a good cooperation relationship, and is beneficial to more equal implementation of policy.”

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The Impact of Settlement Platform for Out-of-city Healthcare: An Empirical Analysis of Jilin Province *

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Abstract This paper described the changes brought to healthcare system by settlement platform for out-of-city healthcare. We also examined its potential implications for patients and health insurance organizations. The insured benefit from the simplification of the reimbursement procedure and they don't need to pay the full cost or submit the expense account to the health insurance organization anymore. The healthcare organizations benefit from the automation of material review but the maintenance work will increase their cost. It's clear that the number of out-of-city inpatient in Jilin province has increased a lot over 6 years and the percentage of settled by platform has risen significantly, from 1% in August 2013 to 86% in August 2015. Meanwhile the platform had achieved time saving of 44,848 hours and expense saving of 1,751,077 yuan for the out-of-city inpatients and time saving of 47,654 hours for health insurance organizations. We also analyzed the total healthcare expenses and couldn't see any dramatic increase after the platform was introduced.

Key words Out-of-city healthcare, Settlement platform, Empirical analysis

1 Introduction

In China the number of people moving to other cities has increased exponentially and it became clear that free movement would require that people could receive health care when they are in different city. It was also recognized that people might need to be sent to cities with better hospitals for treatment, but this should be controlled by the health insurance organizations paying for the care.

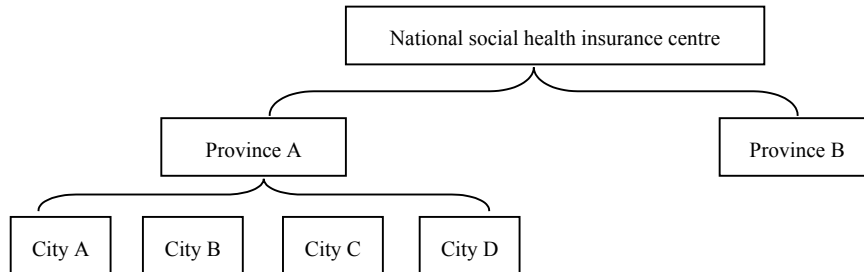


Figure 1 The structure of social health insurance in China

There are two types of social health insurance management structure in China¹. One type is like province A (see Figure 1), even in the same province different city has his own social health insurance organization. Most provinces applied this type of system, including Jilin Province, where the co-payment levels and the medical goods and services covered by insurance are decided by every city and might differ significantly. The other type is like province B (see Figure 1), they have built integrated social health insurance system. Only a few provinces, such as Hainan Province and Ningxia province, applied this type of system^[1]. We could say that although the principle of social solidarity still holds in all cities, the breadth of coverage differs depending on the economic condition and

* Financed by Soft Science Project of Science and Technology Department of Jilin Province "Research on the Improvement of Government Service Capacity Based on the Data Analysis of Mayor's Hotline" (Project No.: 20150418076FG)

1 In China the social health insurance is divided into 3 parts, which are for the workers with job live in the urban, the residents without jobs live in the urban area and farmers live in the rural area respectively. The first two parts are managed by the department of human resource and social security and the last part is managed by the department of health. This paper only focuses on the first two parts.

revenue of social health insurance. As a result the insured who want to go to different city to receive health care in province A needed the authorization of their home city, and this kind of healthcare is called out-of-city healthcare.

At first the patients who obtained out-of-city healthcare had to pay the full medical expenditure and then get reimbursement through complicated procedure^[2]. Some of insured had challenged what they saw as unjustifiable restrictions on their right to obtain health care in another city and their arguments had been upheld by some citizens and medias.

This has resulted in the new arrangement and regulation of the healthcare, which is divided into two layers that are out-of-city healthcare (still in the same province) and out-of-province healthcare^[3]. Firstly, the provincial health insurance organization builds up a platform connects all the health insurance organizations of this province to settle account for the out-of-city healthcare which occurred in the same province. Second, the national health insurance centre build up a platform connects all provincial health insurance organizations to settle account for the out-of-province healthcare, money can be transferred from the province insured came from to the province where they received medical service^[4]. In this paper we will only focus on out-of-city healthcare.

The new arrangements for out-of-city healthcare has been introduced in many provinces of China, which of Jilin province was established in 2011 and implemented in 2013. Healthcare shopping in the different city may not yet be commonplace, but with the development of economic many insured can afford the medical charge, which might give the out-of-city healthcare a boost. The consumer should, in principle, be in a position to select the best deal from a wider choice of options, while important barriers remain. The platform sought to establish a clear framework within the Jilin Province and establishing systems in which member cities can cooperate to resolve outstanding issues. However only inpatient care are involved on the platform, member cities may create a system of prior authorization to enable them to manage inpatient flows and avoid threats to the financial and operational sustainability of their health systems. In this paper we discuss its most contentious issues and examine its potential implications for inpatients and health insurance organizations.

2 Research design

Researchers have conducted a few studies on the new arrangement of out-of-city healthcare; however, most of literatures are based on normative or qualitative research, quantitative papers using survey data are still rare. As a result, we have no idea about its representativeness and objectivity. This paper tries to empirically test research hypothesis above using quantitative method and quantitative research can help us look into the actual effect of settlement platform.

2.1 Data

The data includes two sources: individual level data and provincial level data come from the social health insurance Bureau of Jilin Province; the information about reimbursement procedure is derived from the survey and interview of insured and staffs at social health insurance organization of different city in Jilin Province.

2.2 Research method

With the data collected, we analyzed the impacts of the settlement platform for the involved, namely inpatients and health insurance organizations. Specifically speaking, the variation trend of out-of-city healthcare after the platform was introduced and how much time and expense the platform had saved for the inpatients and health insurance organizations, further more how the total medical expenditure had been affected.

3 The impact brought by the settlement platform

Out-of-city healthcare might occur because of various reasons, we have identified four categories of patient mobility: 1. long term residents working or retiring to other cities. Many older people retire to the city where their children live. 2. temporary visitors. Travelers fall ill in another city are entitled to medical treatment in the city they are visiting and also obligated to contact with home insurance organization in 3 or 7 days after hospitalization. 3. People sent to the better hospital of other city by their home systems. This normally happens to obtain highly specialized services, particularly in

smaller cities where the populations are insufficient to justify local provision. Without prior authorization from the hospital or insurance organization of their home city they can't receive reimbursement^[5]. 4. People who seek treatment in another city on their own initiative. These people typically travel to receive healthcare considered to be of better quality than in their home city. In this kind of situation, they might be refused on the grounds that it was not urgent and appropriate treatment was available in his home city^[6].

After the platform was implemented, the home city still has a system of primary care gate keeping, which is well respected. Meanwhile the process of treatment will be supervised by the health insurance organization of the city where the treatment received. On the platform it would be reimbursed in line with rates their home city has determined for out-of-city healthcare, which is lower than the rates of obtaining care at home city. The platform brought impacts as followed:

3.1 The growth of out-of-city healthcare settled by platform

the new arrangement which paves the way for enlarging the area insured can acquire medical service, will fuel the free movement of insured, especially from the cities with low-grade hospitals to the cities with high-grade hospitals. Some cities view their high medical technology as an opportunity to attract patients from small cities and some patients also go to another city for more mainstream care because they believe the care is of higher quality. It's concerned that the platform might lead to the rapid growth of out-of-city healthcare, thus we checked the official data on mobility as follows (see Figure 2):

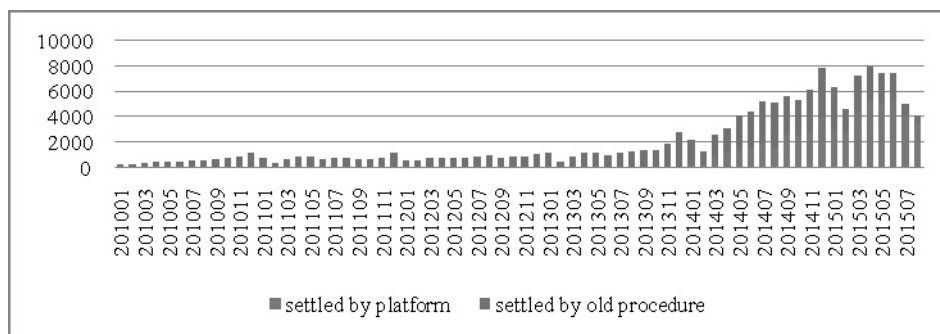


Figure 2 The number of out-of-city inpatients

The Figure 2 illustrates that the number of out-of-city inpatient in Jilin Province has increased a lot over 6 years. Among those, the percentage of settled by platform has risen significantly, from 1% in August 2013 to 86% in August 2015.

3.2 The impact because of simplified reimbursement procedure

Before the platform was introduced even the insured who were entitled to receive healthcare in another city had to pay all the expenditure by themselves and then went through the complex procedure to get reimbursement. By contrast, now the insured simply have to pay the out-of-pocket part and the insurance organizations of different city will settle account the part of reimbursement on the platform. By doing away with troublesome procedures the insured have benefited and the efficiency of insurance organization can be improved.

Table 1 the result of survey of out-of-city inpatients

Amount of reimbursement (yuan)	Number of respondents	Average time to prepare the paperwork at hospital (min)	Average expense to prepare the paperwork at hospital (yuan)	Average time to submit materials at health insurance organization (min)
Below 10,000	31	29.7	28.9	10.0
10,000-50,000	31	49.4	37.5	15.3
50,000-100,000	26	77.7	35.8	15.4
Above 100,000	14	85.9	41.9	15.4

We conducted a survey of the time and expense that out-of-city inpatients spend for the

reimbursement procedure without using platform. Through the interview to the staff of health insurance organization, we figured out that the time and expense vary according to the amount of reimbursement, therefore we classified the respondents into 4 categories. The findings are as follows:

With these time and expense to the number of out-of-city inpatients, we can calculate the sum of saving time and expense as following (see Figure 3):

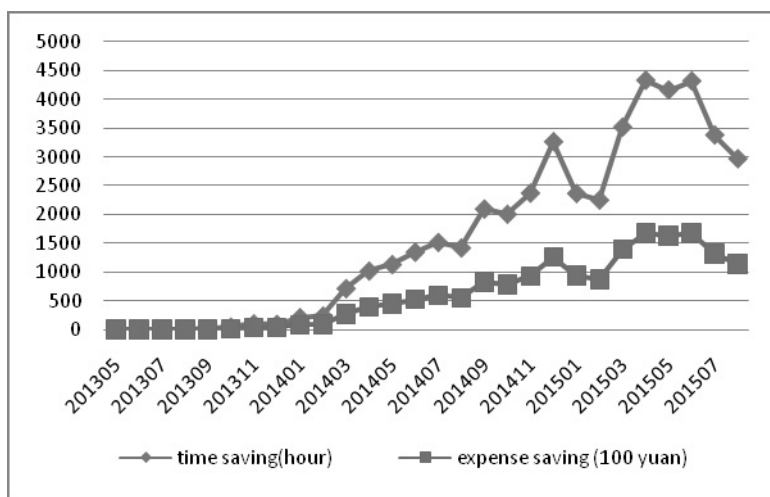


Figure 3 Time saving and expense saving because of platform

Because the number of out-of-city inpatient has increased gradually, both time saving and expense saving shows an upward trend. In June 2015 the time saving and expense saving peaked at 4,312 hours and 167,393 yuan per month respectively. To sum up, from May 2013 to August 2015 the platform had achieved time saving of 44,848 hours and expense saving of 1,751,077 yuan.

3.3 The impact because of increased effectiveness of health insurance organization

The adoption of platform on out-of-city healthcare in Jilin Province could bring clarity for patients, health insurance organizations, as well as raise the awareness of how healthcare differs between different city of same province^[7]. This could also help the provincial organization to figure out how much the specific reimbursement policy be executed. Moreover the platform put health service under the scrutiny of the provincial health insurance organization and all the reimbursement procedures are checked automatically, which increased the transparency of reimbursement decisions for health goods and services and there's no chance to cheat about the expenditure any more.

Table 2 The time used to go through the reimbursement procedure without platform

The process of reimbursement procedure	Number of respondents	Average time (min)
Accept the application	32	5
Check the materials for the first time (dividing the type of medical goods and services)	21	19.6
Check the materials for the second time (check the results of the first time)	13	9.5
Settlement (print the reimbursement voucher)	19	5
Approval (deliver reimbursement voucher and invoice to the financial department)	11	7.6
Transfer the reimbursement to the account of insured/ go through the procedure for insured to get the money ¹	4	5.25
total	100	51.95

¹ In some cities the reimbursement can be transferred to the account of insured directly after it is approved, but in other cities the insured have to go to health insurance organization to get the money in person.

Without the platform, the medical insurance organization have to spend 51.95 min per applicant to go through the reimbursement procedure. Thus the cumulative saving time are 47,654 hours from May 2013 to August 2015.

3.4 The financial burden transferred from insured to hospital and health insurance organization

Before the platform was established, the local hospitals can get full payment from insured. But now they have to wait for a few weeks or months to get reimbursement from the provincial organization, which will be paid from civic organization every six months. Both local facilities and provincial organizations are faced with the pressure of prepayment.

We can see that the financial pressure of prepayment roared rapidly, which peaked at 60,297,000 yuan per month in April 2015. At first this was settled every six month, whereas the settlement cycle has been shortened in recent years (see Figure 4).

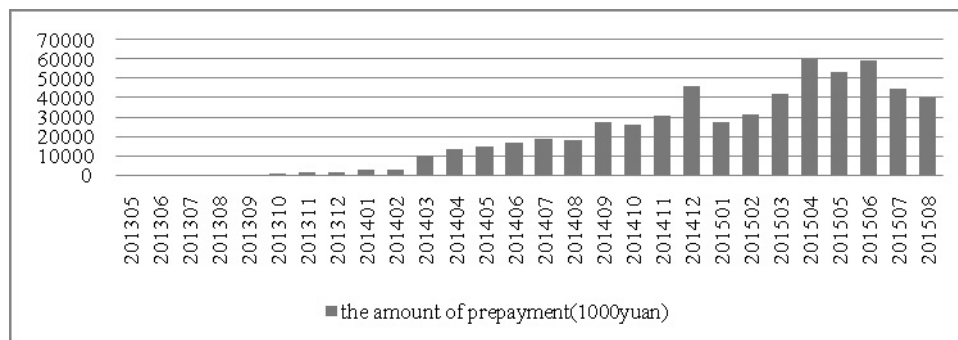


Figure 4 The amount of prepayment transferred from insured to hospitals and provincial fund

3.5 The cost of platform

The insurance organizations also need to ensure the platform work well and the insured are better informed about their entitlements. Therefore the network provides patients with information on rights and procedures of out-of-city healthcare was established as well, which will ultimately increase the transparency of healthcare systems and is likely to stimulate the improvement of care. However, it also need plenty of investment and staffs to maintain the platform. Based on the interviews we calculated the investment before the platform began to operate, which included 1,500,000 yuan of capital and 4,626 work hours. After the platform was implemented, averagely 392.5 work hours per month need to be put into the maintaining work.

3.6 The growth of total health expenditure

Freedom to choose goods and services empowers consumers or their agents to shop for the best available deal. The same freedom puts health policies under scrutiny and may also have fiscal implication for those cities that appear to be weak or deliver poorer quality services.^[8]

We explored the proportion of the out-of-city inpatient in the total inpatient, including numbers, medical expense and reimbursement of social health insurance. The results are as following:

The Figure 5 demonstrates that the percentage of out-of-city in inpatient healthcare has grown dramatically over the last 3 years. In the first half of 2015, the overall volume of out-of-city healthcare is accounting for 15.3% of total inpatient health expenditure and 12.9% of total inpatient reimbursement in Jilin Province.

Because of differences in the perceived quality of health services patients may want to obtain treatment in another city where the medical conditions are supposed to be better. Therefore the payers are afraid that the platform will increase the outflow of patients and then threaten the financial equilibrium of medical insurance system. Actually an initial ruling by healthcare organization held and the freedom to obtain medical services is not absolute and the authorization is taken as the measure to control the outflow of patients and the health expenditure. In fact the increase of out-of-city healthcare expenditure also means the decrease of in-city healthcare expenditure, thus we should focus on the trend of total healthcare expenditure instead of worrying about the increase of out-of-city healthcare expenditure. We analyzed the total healthcare expenditure of Jilin Province as following:

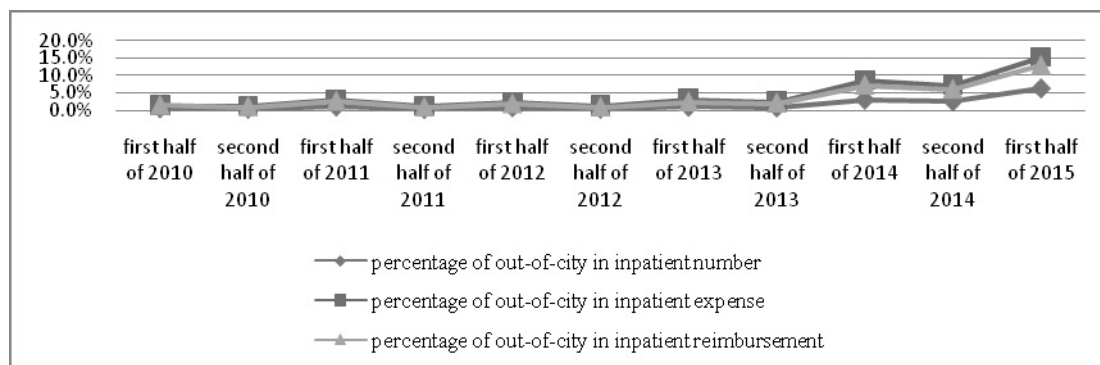


Figure 5 The proportion of out-of-city in total inpatient healthcare

The Figure 6 reflects the growth rate of total inpatient number, healthcare expenses and social health insurance reimbursement in Jilin Province respectively. The factors could affect those are various and complicated, but at least we couldn't see any dramatic increase after the platform was introduced in 2013.

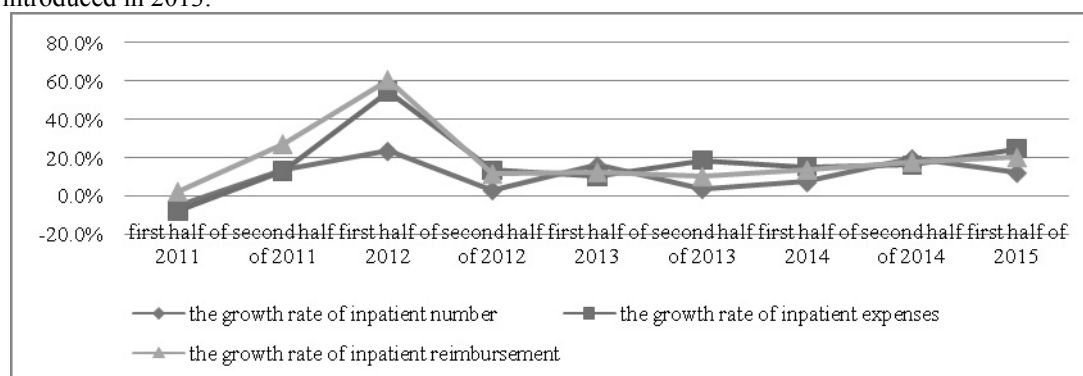


Figure 6 The growth rate of total healthcare in Jilin Province

4 Conclusions

Through the analysis of health insurance data and survey results, it's clear that the number of out-of-city inpatient in Jilin province has increased a lot over 6 years and the percentage of settled by platform has risen significantly, from 1% in August 2013 to 86% in August 2015. Meanwhile the platform had achieved time saving of 44,848 hours and expense saving of 1,751,077 yuan for the out-of-city inpatients and time saving of 47,654 hours for the social health insurance organizations. However the insurance organization had invested 1,500,000 yuan of capital and 4,626 work hours to start the platform and averagely 392.5 work hours per month to maintain it. Although many people concerned that the platform will increase the outflow of patients and then threaten the financial equilibrium of medical insurance system, we didn't see dramatic increase of medical expenditure in Jilin Province.

In the short term there are practical implications for patients and healthcare systems. In the long term the platform could be the first step towards much closer China medical insurance integration.

5 Discussion

Taking prior authorization as the prerequisite to get reimbursement has provoked a lot of debate, many insured see this as unjustifiable restrictions on their right to obtain health care in another city. Another important issue relates to communication between providers. Most hospitals have implemented electronic patient record system but, inevitably, these are incompatible with each other. Although sharing medical information can save a mass of expenditure, there are so many obstacles

remained, such as the concern about competition or the safety of information. In future the platform might make provision for mutual recognition of prescriptions written in another hospital or city, as well as enhanced cooperation on e-health and on health technology assessment.

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Inter-organizational Cooperation in Chinese Governance of Non-traditional Corruption

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Abstract Few policy scientists at home and abroad focused on the governance of non-traditional corruption in developing economies. This paper discusses relevant issues about Chinese governance of non-traditional corruption from the perspective of corruption mechanics. The widespread non-traditional corruption is a major source of political risk in contemporary China. Inter-organizational cooperation is of vital importance for China to improve the effectiveness of governing non-traditional corruption. Based on analyzing the dilemma of Chinese construction of uncorrupted government nowadays, this paper constructs a SIS model concerning about the governance of non-traditional corruption. Constructing uncorrupted government in the way of cooperative governance will produce double influence on the governance of non-traditional corruption. China needs to adjust public-private partnership by elevating public participation to facilitate inter-organizational cooperation in the governance of non-traditional corruption.

Key words Inter-organizational cooperation, Non-traditional corruption, Cooperative governance, SIS model

1 Introduction

Copious articles on political economy convey the popular wisdom that corruption is merely abuse of public power. Rent seeking is typically considered as worthy of exploring for students of public governance. During China's rapid social transition, however, corruption other than rent seeking is annually on the rise. Zhao Shi-yong, the former director general of Bureau of Civil Affair of Wenshan Miao and Zhuang Autonomous Prefecture, declared that he was a mild corrupt official when being accused of embezzlement and bribery. This is one of empirical validation that corruption is no longer a synonym of rent seeking in contemporary China and even the whole world. Importantly, corruption in China in current stage of development differs vastly from corruption in traditional society in that it is ostensibly mild. For this reason, the governance of non-traditional corruption is central to controlling political risk in China.

This paper contributes to the growing empirical work on Chinese anti-corruption movement by focusing on the governance of non-traditional corruption. Chinese political scholars have reached consensus in defining non-traditional corruption. They generally notice that non-traditional corruption involves the cooperation between money and power. (Wu Peng-sen, 2009; Chang Ying, 2010) Yet both non-traditional corruption and traditional corruption will occur as long as public power exists. While non-traditional corruption is deleterious to political legitimacy of modern nation, the governance of non-traditional corruption is quite formidable, as the potentate and money holders jointly put their respective resource into operation for the purpose of receiving return to investment. Hence, studying the governance of non-traditional corruption can enable Chinese policymakers to bring political risk arising from modernization under control. The goal of this study is to gauge the extent to which China can effect the governance of non-traditional corruption.

In this paper, I build a SIS model which incorporates the spread of non-traditional corruption and the fight against this corruption. To my knowledge, no study in the field of political science has investigated the governance of non-traditional corruption from the angle of corruption mechanics. As in any setup in which social behaviors have demonstration effect, non-traditional corruption will not stop spreading unless the state interposes in anti-corruption movement appropriately. Why does inter-organizational cooperation counts in the governance of non-traditional corruption? How could China enhance cooperative governance of non-traditional corruption? This study will address these questions by examining strategic interaction in Chinese governance of non-traditional corruption. In as

much as the focus of this study is the governance of non-traditional corruption, governance transformation in anti-corruption campaign is considered in this study.

The paper is organized as follows. The next section provides a brief overview of the escalating non-traditional corruption in China in the post-reform period. Section Three describes obstacles in inter-organizational cooperation in Chinese governance of non-traditional corruption. Section Four simulates China's construction of uncorrupted government in the context of cooperative governance. Section Five presents the result of the modeling as well as policy implication for eliminating non-traditional corruption. Section Six is the concluding remark.

2 Non-traditional corruption in modern China

Just as its name implies, non-traditional corruption is the symmetry of traditional corruption. A common finding in the literature of comparative political economy is that those in power will commit self-serving act under the guidance of economic rationale. With the formation of surplus goods in society, some of the privileged abused their power to seek personal gain, which gave rise to corruption. Power-for-money deal has been a frequent occurrence in pre-modern China. Non-traditional corruption arises as a consequence of the formation of industrial society. It manifests itself in transaction in Chinese substantial economy and other domain and can be formally legal since China implemented Reform and Opening up Policy. In outsourcing public service, Chinese government is likely to collude with enterprises, thereby carving up the fruit of social development.

Firstly, non-traditional corruption in China is rarely one-time deal. As mentioned previously, traditional corruption is also called power-for-money deal and exists in any society. It includes practicing nepotism, lobbying for promotion and bribery election. It is thus somewhat unsurprising that traditional corruption is not a type of repeated political game, but a zero sum game in name and in fact. In this corruption, officials and businessmen will not have dealings with each other when they complete the exchange of resource. By contrast, non-traditional corruption take place as traditional society evolves into modern society. Just as producers who bring equipment and material into operation in order to earn profit, officials and businessmen engaging in non-traditional corruption attempt to maximize the accrual of political capital and economic capital respectively. To be clear, these elites will cooperate in the long run as long as they have interest in common. Provided that such misdeed does not directly infringe upon the right of survival and development of Chinese mass, the rampant non-traditional corruption does not necessarily result in popular indignation.

Secondly, non-traditional corruption in China is not an undisguised plunder of social wealth. Roughly speaking, officials participating in traditional corruption are those who could exercise control over fiscal fund or private property, with the majority of them working and living in underdeveloped region. They will either appropriate fiscal fund to themselves or exact possessions from those in need of their help, implying that the gain of traditional corruption is a form of stock wealth. On the contrary, non-traditional corruption is essentially a cooperative game between political elites and economic elites which could generate a constant flow of wealth. It is characterized as win-win result which is obtained by these actors and come at the price of public interest. That real estate industry belongs to the top 10 profiteering industries in China is a case in point. Before 2000, there were very few billionaires in Chinese real estate industry (Liu Xiao-jing, Wang Shan-shan, 2010). Today, there is a great abundance of property developers whose personal value amounts to billions of yuan owing to low-price entry and high-price withdrawal acquiesced by regulators.

Thirdly, non-traditional corruption in China exhibits apparent transnational features. Under the impact of the ongoing economic globalization, corruption no longer occurs within a nation's border. Under the circumstances that international community lacks coordination regarding combating corruption, it is inevitable that corruption becomes a cross-border phenomenon. Transnational corruption can be categorized into three groups: overseas commercial bribery, corrupt official fleeing abroad and money laundering. Not only will multinational corporations bribe officials in foreign countries on a day-to-day basis, but also a considerable number of corrupt officials abscond overseas with illicit money. Over the past several years, transnational corporation collectively carried out dollar diplomacy in China. HP, IBM and Carefour all sank into the storm of foreign bribery soon after they

operate in China. Nonetheless, U.S. is among the few countries around the world which severely penalize transnational corruption. In 2009, U.S. Department of Justice issued indictment about ICC overseas bribery, in which multiple Chinese enterprises are involved.

It is well documented that the increasingly serious non-traditional corruption in China contradicts with the construction of harmonious society. Outwardly, non-traditional corruption can be procedurally lawful because of the participation of lobbyist in relevant legislation. In reality, non-traditional corruption is not socially acceptable, as evidenced by the fact it triggers unfair income distribution. One needs to look no further than the sky-high remuneration of senior executive of SOE to know such is the case. In 2007, CEO, general manager and deputy general manager of Ping'An Group were reported to have pre-tax annual income exceeding 20 million yuan. It is an important manifestation of the fierce non-traditional corruption in Chinese monopolized industry in contemporary era.

3 Obstacles in inter-organizational cooperation in Chinese governance of non-traditional corruption

Since 1980s, China gradually stepped up effort to launch anti-corruption campaign. From the very beginning, China's Communist Party viewed historical stories about collapse of regime due to corruption as words of wisdom for public governance. Seeing that China suffered from unprecedented corruption as it initiated economic liberalization, China's Communist Party had to put the construction of uncorrupted government on the agenda. 17th CPC National Congress pointed out that corruption and China's Communist Party were incompatible as fire and water. Despite China reinforces institutionalization of the campaign against corruption, non-traditional corruption in China is still in high-incidence season. Chinese corruption governance structure has not transformed from the unity of party and government to party embeddedness, which greatly frustrates the struggle against corruption.

In Planned Economy Period, China's Communist Party was the only prime body of corruption governance in China. Initially, Central Commission for Discipline Inspection, Supreme People's Procuratorate and People's Supervision Committee had equal status in Chinese governance of cooperation. Later on, the discipline inspection organ of China's Communist Party grasped at authority by itself in Chinese governance of corruption. It assumed the role of charting the course for controlling corruption and putting it into effect in accordance with the party discipline and was responsible for regulating all profession and trade in China. In other words, Supreme People's Procuratorate and People's Supervision Committee were functionally replaced by the discipline organ of China's Communist Party. Given that anti-corruption campaign was integral part of class struggle with the advent of enlargement of anti-rightist movement in 1960s, Chinese corruption governance was subject to usurpation of government by Chinese Communist Party. In particular, dual management mode was adopted in the routine management of the discipline inspection organ of China's Communist Party.

After China embarked on market-oriented economic regime reform, China's Communist Party took charge as the chief of corruption governance not any more. As stipulated by the Party Constitution, the major task of the discipline inspection organ of China's Communist Party is to ensure that the party discipline is observed, whereas Ministry of Supervision assumes the responsibility of monitoring administrative action. Besides from strengthening special legislation for corruption governance, Central Commission for Discipline Inspection established a myriad of branches in government, SOEs and other public sectors. It also makes unified arrangement about supervision after merging the work with Ministry of Supervision in one office in addition to establishing coordination mechanism in corruption case handling. In case of investigation under the law, Central Commission for Discipline Inspection and Ministry of Supervision must hand over the offender to judiciary authorities. From 2008 to 2013, corruption cases transferred to People's Procuratorate by the discipline inspection organ of China's Communist Party accounted for nearly 10% of corruption cases placed on file by People's Procuratorate.

An important obstacle in inter-organizational cooperation in Chinese governance of non-traditional corruption is that, in contrast to many anti-corruption agencies elsewhere in the world, they do not explicitly conduct mutual surveillance. Admittedly, anti-corruption agencies in China are basically full-time institutions aimed at fostering clean and honest administration. But it does not

follow that they invariably play a crucial role in Chinese governance of non-traditional corruption. To illustrate, People's Congress at all levels should have fulfilled oversight function for cadres. It is utterly unbecoming of People's Congress not to be perceived as the backbone of anti-corruption agency in China at the present. Additionally, the discipline inspection organ of China's Communist Party is supposed to coordinate the action of other anti-corruption agencies in China without being entitled to inquire thoroughly into the Party and the government. It could exercise the power to make suggestion about the construction of uncorrupt government at most. Moreover, People's Procuratorate is disturbed by local Party Committee in investigating corruption cases and litigation from time to time. In Chinese governance of non-traditional corruption, it does the bidding of government at the same level together with auditing office and petition office upon much extent.

Another obstacle in inter-organizational cooperation in Chinese governance of non-traditional corruption is that social organizations have not fully participated in Chinese governance of non-traditional corruption. Back 2005, China issued Compendium of Punishment and Prevention System for Corruption which advocated for public participation in Chinese governance of corruption. In 2007, Henan Provincial Government entrusted Henan Research Center of Construction of Uncorrupt Government to inspect the working style of the Party within the province. Still, Chinese official sweeping statement about civil engagement is insufficient to mobilize the mass to contribute to Chinese governance of non-traditional corruption. Despite Chinese social organizations distinguished themselves in online anti-corruption campaign in recent years, there is no denying the fact that their participation in Chinese governance of non-traditional corruption is lowly institutionalized. Such being the case, Chinese social organizations are in all likelihood to participate in Chinese governance of non-traditional corruption in an irresponsible manner, such as staging mass incidents and lying about public feelings.

In a related vein, Chinese fragmented governance of non-traditional corruption is well exemplified by sloth administration. Government employees accustomed to be perfunctory in China are not in the minority, to which anti-corruption agencies are no exception. Under chief executive responsibility system, China mainly holds administrative leaders accountable for disciplinary offence instead of affixing legal liability to corresponding party cadres. To be precise, it is not until administrative omission is exposed by mass media that China will investigate and prosecute the liable bureaucrats. Even if Chinese central government is determined to remove nonfeasance of bureaucrat, local government may set itself against the former in the governance of non-traditional corruption. Without precluding the possibility of this antagonism, there is no guarantee that anti-corruption agencies in China could rigorously undertake self-supervision. In light of inadequate public service motivation of massive bureaucrats in China, it is difficult for the general public in China to count on anti-corruption agencies to devote themselves to the long hard combat on non-traditional corruption.

It needs not to be added that China has not become one of forerunners in the governance of non-traditional corruption in the international arena. In the eyes of Transparency International, China is not high-ranking in terms of corruption perception index. In 2016, it released Corporate Report Transparency, in which the average score of Chinese transnational corporation on transparency was just 1.6. Not only so, a large number of foreign media and think tanks continuously criticized China for ineffectual governance of corruption, leading to global misunderstanding of China's Communist Party regime. Simply put, China has not taken the lead in the governance of non-traditional corruption among major economies in the world.

4 SIS model of non-traditional corruption in China

One way to see non-traditional corruption that rages in contemporary China is to elaborate this phenomenon by analogy with epidemic disease. After China entered WTO, joint offence accounts for a large proportion of non-traditional corruption in China, signifying that non-traditional corruption could be easily proliferated. Report on China's Construction of Uncorrupt Government No.1 indicates that in the primary evolution trend of corrupt official in contemporary China is the changeover from individual to group. It is generally acknowledged that the proliferation of non-traditional corruption is like atomic nucleus fission. That said, mathematic models built to capture the feature of epidemic

disease are helpful to conceptualize non-traditional corruption, thereby paving the way for solving obstacles in inter-organizational cooperation in Chinese governance of non-traditional corruption.

SIS model can be constructed to simulate the proliferation of non-traditional corruption in China in the presence of state intervention. Similar to many other social morbidity, non-traditional corruption stems from specific causative agents consisting of skills and experience needed to actualize money-power cooperation. Such agents can be absorbed by the susceptible population after being emitted by non-traditional corruption transmitters. The intensity of this contagion depends on social network of non-traditional corruption transmitters and the susceptible population. During latent period, the susceptible population may not be aware that they are infected with causative agents of non-traditional corruption. They will enter infection period when employing the skill and experience of non-traditional corruption transmitter for their own sake. A multitude of non-traditional corruption is industry-specific. Both financial corruption and judicial corruption are not exceptional. The proliferation of non-traditional corruption will come to a halt when people experiencing non-traditional corruption refuse to participate in this deal. Even assuming that causative agents of non-traditional corruption will hit these people again, it will only improve the immunity of these people to non-traditional corruption.

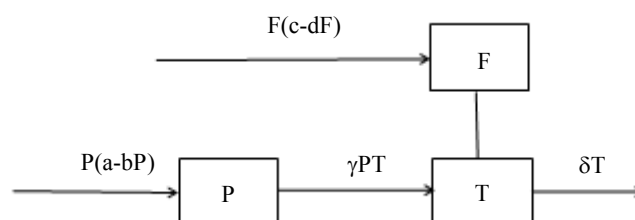


Figure 1 Sketch map of the proliferation of non-traditional corruption

The approach taken here makes the following assumptions. For simplicity, there exist two sorts of members in this model: the crowd firm in purpose, denoted as F, and irresolute ones, denoted as I, and $F+I=N$ holds. The crowd firm in purpose possesses strong anti-corruption consciousness. These people will not give support to non-traditional corruption but deter it after discerning this corruption. Irresolute crowd fall into two categories: susceptible population, denoted as P, and non-traditional corruption transmitters, denoted as T. Susceptible population will transmuted to corrupt persons but do not play a role in the proliferation of non-traditional corruption. Non-traditional corruption transmitters are those who start non-traditional corruption and increase its prevalence. F and I will achieve logistic growth without regard to the interplay between them. a and c respectively represent of intrinsic increasing rate of these crowds. The maximum scale of these two crowd are a/b and c/d respectively. For the susceptible population, the probability of being infected by causative agents of non-traditional corruption is positively proportional to the frequency with which they interact with non-traditional corruption transmitters. Likewise, the probability of blocking the proliferation of non-traditional corruption is positively in proportion to the frequency with which irresolute crowd comes into contact with the crowd firm in purpose.

$$\begin{aligned} \frac{dF}{dt} &= F(c-dF) + \beta FT \\ \frac{dP}{dt} &= P(a-bP) - \gamma PT \\ \frac{dT}{dt} &= \gamma PT - \beta FT - \delta T \end{aligned}$$

Differential equations about the proliferation of non-traditional corruption can be written below. β and γ respectively refer to the rate at which the crowd firm in purpose interact with non-traditional corruption transmitters and non-traditional corruption transmitters interact with the susceptible population. δ refers to emigration rate of non-traditional corruption transmitter from the model. Non-traditional corruption transmitters will be out of existence if they are arrested and sentenced. It is well-known that differential dynamics system has boundedness and stability. Henceforth, this paper can prove that there exist balance points in this SIS model and deduce the condition on which the system established in the model reach the state of local asymptotical stability. By constructing proper

Lyapunov function, it can be found that the balance point at which non-traditional corruption is non-existent has global asymptotical stability. The threshold parameter R_0 written below is similar to reproduction number of standardized epidemic model. It is this parameter that determines the extent to which non-traditional corruption proliferates among the population. When $R_0 < 1$, the equilibrium point at which non-traditional corruption is non-existent is globally asymptotical stable. When $R_0 > 1$, and $\gamma > 1/2 * [\sqrt{(a^2 + \beta^2) + 4bc\beta\delta} - a\beta] / c$, the positive equilibrium point is globally asymptotical stable, which is indicative of that non-traditional corruption transmitters eventually exist in the system.

$$R_0 = \gamma ad / (bc\beta + bd\delta)$$

The mathematical expression of this parameter shows influencing factors of the proliferation of non-traditional corruption: β and γ . Under the condition that the rate at which the crowd firm in purpose interact with non-traditional corruption transmitters and emigration rate of non-traditional corruption transmitter are constant, reducing the rate at which non-traditional corruption transmitters interact with the susceptible population will cause this corruption to disappear. When the rate at which non-traditional corruption transmitters interact with the susceptible population and emigration rate of non-traditional corruption transmitter are given, increasing the rate at which the crowd firm in purpose interacts with non-traditional corruption transmitters will lead to extinction of non-traditional corruption.

5 Rethinking cooperative governance of non-traditional corruption

As outlined above, the proliferation of non-traditional corruption will be curbed if the crowd firm in purpose could outgrow the rest of the population. To this end, people in all walks of life could not solely rely on the government to eliminate non-traditional corrupt forces. Of significance is that the government cooperates with social organizations in the governance of non-traditional corruption in post-crisis era. Countries with high corruption perception index universally attach importance to cooperative governance in the construction of uncorrupt government. It happens that the voice of Chinese civil society about its participation in the governance of non-traditional corruption upsurges year after year. Even so, cooperation governance could be conducive to the proliferation of non-traditional corruption in societies lacking the tradition of democracy and rule of law.

One point is clear from cooperative governance of non-traditional corruption: the transfer of government function in the governance of non-traditional corruption in an unchecked way will compromise accountability. The conviction that the government should play the role of helmsman became widely accepted with the breakout of new public management movement all over the world. NPOs could extend dominance over government in the provision of public goods with their expertise and creativity. But the transition from traditional public governance to cooperative governance does not proceed smoothly in a vast number of countries. The boundary between government, market and the third sector will become blurred as cooperative governance is conducted in a wide variety of fields, which lays hidden danger for corruption in cooperative governance. Concretely speaking, cooperative governance of non-traditional corruption involves the establishment of multiple principle-agent relation. Built-in organizations of government and provider of project fund in the governance of non-traditional corruption may not be the same consigner, implying that multiple subcontracting will destroy accountability chain. Consequently, the government will find it difficult to ascertain who should shoulder the responsibility in event of breach of contract in cooperative governance of non-traditional cooperation.

What is significant about cooperative governance of non-traditional corruption is that corruption will become complicated in the context of cooperative governance. In this cooperative governance, power and resource sharing between government and social organizations will deepen their mutual dependence. Susan Rose-Ackerman once alerted government to take precaution against morphosis of corruption owing to outsourcing. In that case, government and social organizations tend to form policy alliance for their own sake, thus creating crisscrossing corruption network which is capable of facilitating proliferation of non-traditional cooperation. Poorly regulated subcontracting in cooperative governance of non-traditional corruption could give rise to kickbacks and other forms of corruption. With the formation of decentralized governance structure of non-traditional cooperation, the tendency

of government to participate in non-traditional corruption will increase dramatically. For instance, government may not comply with tendering procedure in subcontracting certain projects about building clean and honest administration out of consideration for efficiency. And laws does not always have specifications about such deviation, which incentivizes social organizations to violate the law in cooperative governance of non-traditional corruption.

Notwithstanding the foregoing provisos, however, cooperative governance of non-traditional corruption could induce successful anti-corruption campaign. A commonly used method to avoid corruption in cooperative governance is to enhance contract management for suppliers. It is inadequate to merely conduct result-based performance evaluation of programs concerning about cooperative governance of non-traditional corruption. That is to say, cooperative governance of non-traditional corruption could not be equated with management by objectives. Accountability problems in cooperative governance of non-traditional cooperation are typically attributed to sole focus on the result of this governance. But it is not easy to simultaneously undertake process and result regulation of social organizations participating in cooperative governance of non-traditional corruption, which entails co-production of public goods in anti-corruption campaign. Public tip-offs about non-traditional corruption are a telling example in this respect. In this co-production, the provider of public service is basically the public, whereas government and business play a supportive role in this process.

Should Chinese government which shoulders the responsibility of constructing a nation of rule of law be required to establish negative list system in the governance of non-traditional corruption? In my view, the answer is yes. But would that be enough to eradicate non-traditional corruption? Definitely, no. Nowadays, Chinese classification of industry in the negative list is widely divergent from the common practice of international community. Non-conforming measures are enumerated only for existing industries on the negative list, which obstructs the government from doing as it sees fit in governing non-traditional corruption in emergent industries. Thus, an effective policy adopted to remove non-traditional corruption should be more than alternative non-conforming measures for given industries, let alone institutions are not fixed points. Improving working competence of inspection team could help reduce non-traditional corruption on stock and on flow. Besides, Chinese government should give full play to the role of probity education in rectifying officials' behavioral bias. Rule of Self Discipline of China's Communist Party was issued as the first probity education standard in the history of the party. Members of China's Communist Party are advised to assume exemplary role in the governance of non-traditional corruption.

On the other side, social organizations are not appendage to Chinese government in the governance of non-traditional corruption. In light of the high cohesion among those involving in non-traditional corruption, Chinese government is constantly overextended in obtaining evidence about this crime. Since the grass-root have information advantage over government, social organizations could exert themselves to promote information sharing in Chinese governance of non-traditional corruption. For those who expose non-traditional corruption to the judiciary, Chinese government ought to offer comprehensive legal protection to these social organizations so as to avoid them from being revenged. In the meanwhile, social organizations can lend support to the diffusion of integrity culture in China. In the face of prevailing corruption culture in today's world, they are expected to teach the mass about the concept of incorruptness through lively activities instead of stiffly instilling this concept into masses' mind. On this basis, the public will translate from servants to citizens in Chinese governance of non-traditional corruption.

At any rate, the importance of the public for anti-corruption campaign justifies co-production in governing non-traditional corruption. Under the condition that laws governing anti-corruption campaign are far from being perfect, simply decentralizing the governance structure of non-traditional corruption is not a panacea for secondary corruption. Government direct contact with market in cooperative governance of non-traditional corruption will not reduce the probability of abuse of power. By contrast, public participation in the governance of non-traditional corruption will trigger shrinkage of monopolistic and discretionary power of government, which lays the groundwork for the public to reinforce accountability for this governance. As a result, the public will become conscious of non-traditional corruption and thus exercise supervision right in an orderly way.

6 Conclusions

The analysis in this paper documents the ongoing fight against non-traditional corruption in China. The classical economic analysis of corruption has that a corrupt official will anticipate the reaction of regulator to his misdeed with respect to laws governing public administration. This paper challenges this view by modeling an environment in which corrupt officials do not make decisions individually but interact with the rest of society to intensify non-traditional corruption. Its twofold claim is that inter-organizational cooperation counts in Chinese governance of non-traditional corruption and accountability should not pale into insignificance. This new brand of corruption governance presents a good opportunity for China to advance its agenda in terms of non-traditional corruption.

What are the implications of the modeling in this paper for our theoretical understanding of institutional drivers of inter-organizational cooperation in the governance of non-traditional corruption. While it is hard to comprehensively establish causal effect in Chinese governance of non-traditional corruption, that Chinese government plays a pivotal role in the governance of non-traditional corruption may do a disservice to the construction of political civilization. The distinguishing feature of corruption governance as an operation of accountability is its participatory aspect. Indeed this paper confirms that the public ought to be the mainstay in Chinese governance of non-traditional corruption. Yet the coexistence of corrupt ones and other members of society suggest that the struggle against non-traditional corruption could not be completed overnight. At least, social organizations and government agencies dedicated to Chinese governance of non-traditional corruption should consistently specialize in combating non-traditional corruption to be competent for the task.

Overall, the finding of this paper suggests that the heatedly debated cooperative governance is subject to change as the global society strives to consolidate accountability in anti-corruption campaign. There is clear evidence of growing participation of the public in the governance of non-traditional corruption worldwide. High-level public participation in the governance of non-traditional corruption enables people to learn skills needed for constructing clean and honest administration. Still, it is too early to tell whether co-production in the governance of non-traditional corruption will last a couple of decades and how it is affected by specific policies at national and local level.

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Research on the Construction of Social Pension Service System from the Public Governance Perspective *

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Abstract The aging of China's population is becoming more and more prominent. There are differences in health status, economic level, old-age support wills and psychological needs of the elderly. These differences have led to an increasingly diverse and growing demand for pension services. The pension guarantee in China's social security system is still at a basic level, has a limited supporting function. There are also some drawbacks to the complementary role played by commercial endowment. Based on the theory of public governance, this paper studies the construction of social pension service system, and tries to solve the problem that meets the diverse needs of the elderly. First of all, this paper expounds the basic construction situation and existing problems of China's social pension service system, and then further analyzes the main causes of the problems, finally puts forward some ideas of social pension service system construction. This paper proposes to integrate the three models of family endowment, community endowment and institution endowment, and constructs the integrated family - community - institution social pension service model to form a social pension service system that works by government, market, community and family. In this mode, the providers of the old-age service are composed of various cooperating parties. The Medical-Nursing combined social pension service provided can meet the diverse needs of the elderly. Social pension service management information system promotes the effective operation of the pension service system.

Key words Social pension service system, Family-community-institution social pension service model, Medical-Nursing combined social pension service, Public-private partnerships

1 Introduction

Nowadays, China's aging population is increasing. By the end of 2015, there were 222 million people over the age of 60, accounting for 16.1 percent of the total population, with 144 million people aged 65 and over, accounting for 10.5 percent of the total population^[1]. The aging of China's population is under the situation of "Getting Old before Being Rich", imperfect social security system and the weakening of family pension function. The result is that simply relying on family or government pensions has clearly failed to meet the needs of the people. In the first quarter of 2016, Ministry of Civil Affairs made it clear that the "13th Five-Year Plan" should focus on promoting the construction of social pension service system. This information released by the regular press conference can also prove that the construction of China's social pension service system has become an urgent task. In such a background, the study of Chinese social pension service system construction is helpful for China to further improve the social security system, to better meet the demand of diversified endowment, to emancipate the productive forces, to promote employment by creating social service jobs, and to gradually built up the development pattern of multi-subject common governance with the social pension service as its starting point.

2 Research Overview

In recent years, Chinese scholars' research on the Chinese social pension service system can be

*Financed by Inner Mongolia Philosophy and Social Science Fund, Project Title: Social Stability and Countermeasures in Frontier Ethnic Minority Regions (Project No.: 2011A002); by the Caoyuan Talents, Inner Mongolia, China; Project Title: Social Stability and Its Countermeasures in Frontier Ethnic Minority Regions (Project No.: CYYC2012034); by the Inner Mongolia University Liberal Arts Academic Innovation Team 2010, China, Project Title: Public Administration in Minority Regions (Project No.:12110625); and by the Key Project of The Education Department of Inner Mongolia Autonomous Region, China, Project Title: Path Selection and Policy Design of The Coordination Development of Inner Mongolia Urban-Rural Medical Security (Project No.: NJSJG201201)

broadly summarized into the following types: first, research on different pension service modes; second, empirical research; third, research on demand and supply of social care services.

The research on the mode of social pension service in China is divided into three aspects: home care service, community pension service and institution pension service. Ding Jian-ding (2013) believes that home care service is an important content and method of social care system. Especially in China, which has a tradition of supporting and caring for the elderly, the development and improvement of home-based old-age care services is a way to serve the traditional Chinese culture and suitable for China's basic national conditions^[2]. Community pension service is an old-age service model that relies on the community to provide comprehensive services to the elderly and to provide standardized management for the old-age services provided by the community(Sun Hong-wei, Sun Rui,2013)^[3]. Some other scholars have equated home care with community care. For example, Zhang Qi-lin and Zhao Qing (2011) pointed out that community home care is a different kind of old-age pension for traditional family support and institutional pension, which is the focus of China's promotion of socialization of old-age service^[4]. It is obvious that compared with the traditional family support, home care service and community pension service has many similar characteristics, and both inseparable, supplement each other to jointly play a role in the process of social endowment service. The difference between institutional pension and home-based pension and community pension is that it is the last resort that people have to choose when home-based pension and community pension are not good enough. Home care and community care can provide the old-age care services for the majority of elderly people who are capable of self-care or partial disability, and the institutional pension is only for a small number of elderly people, such as total disability or elderly widowed (Ding Jian-ding, 2013)^[2]; Mu Guang-zong (2012) argues that institutional pension in a support position in the national pension service system, puts forward the problem of the shortage of institutional pension and the low utilization rate of resources in China at present, the weak capacity of the pension agencies, and five countermeasures of resolving institution endowment adversity^[5]. With the development of PPP mode, there are many scholars study institutional pension from the perspective of public-private partnership. Huang Jia (2016) put forward the countermeasures and Suggestions for the construction of pension institutions by referring to the successful experience of the construction of pension agencies in Singapore and the United States PPP model^[6].

The empirical study includes two aspects: the exploration practice of social pension service system in various provinces and cities and the international experience. A large number of scholars have studied the local practice of the construction of China's social pension service system, and the areas involved include Baotou city of Inner Mongolia autonomous region(Zhang Guo-feng, 2013), Jilin Province(Guo Hui-yan, 2013), Shanghai (Song Juan, 2014), Guangdong Province(Liu Lu, 2014), Gansu Province (Liu Huan, 2015; Li Tao, 2016), Henan Province(Zheng Yu-ying, 2015), etc. In terms of international experience, it mainly focuses on the United States, Japan and Singapore, and also includes some references from some other developed countries such as Britain, France and Sweden. The pension model of the world's major developed countries mainly focuses on home-based care, and the service mode is mainly includes welfare mode, supervision mode, general-favored mode and focused service mode (Zhang Yang, 2016)^[7].

Research on demand and supply of social care services. In terms of pension service demand, Zhu Dong-mei (2013) believes that under the influence of economic conditions, physical health status, and the situation of children, there is a pluralistic characteristic of the needs of the elderly to support the service, including the diversification of service content, service level and service form^[8]. Zhang Hai-chuan and Zhang Li-mei (2017) defined personalized pension services in their joint research, conducted an empirical analysis based on the investigation of Chengdu, concluded that the city should pay attention to the economic factors and the influence of the subjective factors of the elderly on the demand for personalized care services, and put forward five specific proposals^[9]. In terms of the supply of old-age service, most scholars tend to have a pluralistic supply subject. The government, market and society jointly assume the responsibility of pension service is the development trend of social pension service. China should deal with the problem of inadequate expression of the rights of the elderly, inadequate market development, immature NGOs and inadequate government

responsibility through the cooperative governance on the basis of multi-party empowerment (Ji Peng, 2013) ^[10].

Besides, there are some researches on the related policies of the system construction and the construction of rural pension service system. According to existing related research, the scholars have pointed out that social pension service system construction in China has many problems, but their proposed countermeasures only concentrate on the aspect while neglect others; most studies have been conducted solely on the model of community home care or institutional pension; although these studies have recognized the importance of the cooperation of multiple subjects, there are limitations on how to effectively play the role of NGOs. This study will address the existing problems of China's social pension service system, and put forward new ideas for the construction of social pension service system from the perspective of public governance.

3 The status quo of the construction of the pension service system in China

China's social pension service system consists of three parts: home care service, community pension service and institution pension service. China's second national conference on aging in 2006 proposed to build a pension service system "based on home-based care, with community service as a foundation, and supplemented by institutional pension". Promulgated in 2011 Social Pension Service System Construction Plan (2011-2015) further defined it as a pension service system "on the basis of home care, with community service as a foundation and supported by institutional pension". It can be seen that China's plan for the construction of the social pension service system is designed and improved based on these three parts.

So far, traditional family support is still the most important mode of old-age pension for the Chinese people. But as people's ideology began to change, the social pension service was also growing, and achieved certain achievements. According to the latest statistics from the national bureau of statistics, as of 2015, the number of insured people in the social endowment insurance for urban and rural residents reached 50,472 million, and the expenditure of the social endowment insurance fund for urban and rural residents was 211.67 billion yuan. There were 116,000 pension services and facilities in the country, up 23.4 percent from the previous year. There are 28,000 pension service institutions registered in this area: 26,000 community pension service institutions and facilities, an increase of 36.8% over the previous year; there were 62,000 mutual support facilities, a 55% increase over the previous year; There were 6727,000 nursing beds, a year-on-year increase of 16.4% (30.3 for every 1,000 elderly people, 11.4% more than the previous year), with 2981 thousand beds and day care beds in the community. China has 2,280 old-age institutions, 21,000 old-age legal aid centers, 71,000 elderly rights coordination organizations, 53,000 old-age schools (7,328,000 students at school) and 371,000 old-age activity rooms; there are 215.51 million senior citizens who received old-age subsidies, 265,000 elderly people who receive care subsidies, and 2.779 million elderly people who received pension service subsidies^[1].

However, the construction of China's social pension service system is still in its infancy stage, and there are many problems that are not adapted to the actual needs. The main performance is: the lack of integrity in the system construction; government investment is insufficient and private investment is limited; the function is single, so it is difficult to meet the diversified pension needs; the service team is not professional enough, and the service quality lacks guarantee.

4 Analysis on the construction of social pension service system

4.1 Service mode of social pension service system

As the three main service modes of Social endowment service system in China, home care service, community pension service and institution pension service have different advantages and disadvantages in meeting the needs of the old-age service. home care service mainly provide door-to-door services, so that the elderly can be in a familiar environment to obtain services, but require the elderly's physical health and self-care ability to achieve a certain level, otherwise it will be required to pay a higher economic cost of living care or medical care services. Community pension service mainly provides day care, suitable for the development of various recreational activities that

enrich the life of the elderly and benefit their physical and mental health, disease prevention and health guidance and other promotional activities. In addition, similar to the home old-age pension, it is more suitable for the elderly who are healthier, more self-reliant and have a simpler need for pension services. For the elderly who need more medical care, Institution pension service is a better choice to provide relatively comprehensive and professional services. But in addition to the high cost of economic, there are also problems such as many old people's psychological conflict with the old-age institution. In addition to the advantages and disadvantages of different modes of old-age service, the increasing individuation and diversification of the aged needs of the elderly in China also put forward new requirements for the construction of the social pension service system. Therefore, the construction of China's social pension service system should make full use of the advantages of home care service, community pension service and institution pension service, avoid their drawbacks, and form flexible solutions to meet the diversified needs of old-age.

4.2 Capital investment of social pension service system

The construction of China's Social pension service system needs a lot of capital investment, which includes the infrastructure construction of the old-age service, the provision of the old-age service, the training of the professional staff of the aged. Only by the government financial expenditure and subsidy can not meet the needs of Social pension service system construction, only broaden the financing channel to obtain sufficient capital investment to ensure the sustainable development of the social pension Service system. However, the old-age service industry needs a lot of upfront investment, and it is difficult to achieve returns in the short term, while the private capital is often limited in scale. Therefore, from risk aversion, private capital investment in the pension service industry is not highly motivated. Fund predicament is the first problem to develop social pension service system, and the public-private partnership is an urgent and feasible strategy. In September 2014, China's Ministry of Finance issued a circular on the promotion of the use of government and social capital cooperation models, and clearly put forward the feasibility, necessity and inevitability of introducing PPP model into public service; in May 2015, the guidance on promoting government and social capital cooperation model in public service the department introduced pointed out that PPP model is the major innovation of public service supply. Chinese government has issued a large number of policies and specific guidance measures to guide public-private cooperation as far as possible, which fully illustrates the important position of government and social capital cooperation in the construction of new public service system. The adoption of public-private partnership can guarantee the supply of basic service of social endowment, improve all kinds of old-age service facilities, and introduce market mechanism of competition, innovate the old-age service system, make the government and social forces build up the social pension service system, and finally win the mutual benefit of government and nongovernmental capital.

4.3 Service function of social pension service system

At present, the service items of social pension service in China are relatively single, most of them stay in the level of meeting the basic needs of the elderly, to provide a simple diet and cleaning services, but the medical care and mental health needs of elderly are difficult to meet. Physical and mental health is the foundation of old age, so social pension service should not only provide life care services, but also to improve the health care for the elderly, and provide the corresponding professional service in the different stages of disease prevention, treatment and rehabilitation. In addition, with the continuous development of the economy and the material living standard, people's old-age demand is becoming more and more diversified under the influence of the source and level of income, family structure, education and occupation field. Therefore, the provision of social pension services should be based on the diversified needs of the elderly, to provide multi-functional, multi-level, Medical-Nursing combined social pension services.

4.4 Service quality of social pension service system

The amateur nature of service personnel is one of the main factors restricting the service quality of the Social endowment Service system. At present, the proportion of temporary and external staff in China's old-age service is relatively large, which leads to the instability of the team. Nursing staffs are mostly female but less male lead to inadequate care for the male elderly. Most of them have not

received the old-age nursing education or professional skills training. Lack of professional knowledge and service skills has led them to meet the needs of the elderly in basic life care only, but difficult to effectively meet the needs of higher specialization like medical care and spiritual care. All these issues directly affect the care of the elderly. Therefore, in order to improve the quality of social pension service, we must strengthen the construction of the pension service personnel, strengthen the professional education, connect the pre-service and post training, and finally promote the improvement of the professional level of the aged service practitioners. In addition, the difficulties in assessing the quality of old-age service and the insufficient attention paid to the evaluation of the service providers are the problems that need to be faced to improve the quality of service. China should, as soon as possible, learn from the developed countries such as Britain, Germany, Japan and the United States, so as to ensure that the elderly can enjoy high quality social service.

5 Ideas for the construction of social pension service system in China

The social pension service model under the perspective of public governance is a governance model in which government departments, communities, old-age agencies and individuals participate in. In the pluralistic governance system, governments are responsible not only for the management of social affairs but also for the provision of basic public services. At the same time, the governance system involves the autonomy of the hospitals, the old-age agencies, the community and other social forces.

In view of the advantages and disadvantages of the three modes of family endowment, community endowment and institution endowment, this paper holds that three models can be integrated to construct an integrated “family-community-institution” social pension service model, which can make the Chinese social pension service system form an organic whole, make governments, communities, old-age agencies, social organizations and individuals establish mutual trust and reliable cooperative relationship, provide better social pension services, and satisfy the old person’s diversified needs of social pension service. This kind of integrated social pension service pattern has the following characteristics: the provider of the old-age service is composed of many main bodies who cooperate with each other; the two main characteristics of the content of the old-age service are the combination of medical and nursing, and it can meet the diverse needs of the elderly; the Social Pension Service Management Information System promotes the effective operation of the old-age service system.

5.1 The service provider of social pension service system

In the “home-community-institution” social pension service model, the main service providers of social pension service system are the governments, communities, pension agencies, social organizations and individuals that have established partnership. The role of the government is to provide funds for the construction of the social pension service system, to guarantee the rights of the elderly through perfecting the relevant laws and system, to provide a good investment environment for the PPP model to be used in the construction of the social pension service system, and to encourage the development of vocational education to cultivate professional endowment service talents.

The community is made up of life service centers and community hospitals, and the role is to provide the necessary services and facilities for the elderly directly. The life service center mainly provides the old-age service which satisfies the daily life demand of the elderly, enables the old people to enjoy the service in the community and home they lives, makes them participate in the diverse community activities. Community hospital is a community health service station with relevant conditions which can provide professional medical services for the elderly. In addition to having a service team that can provide professional medical care, the elderly can get medical insurance reimbursement to the general practitioner for the outpatient service of general diseases. At the same time, the community hospital cooperated with the hospital with certain qualifications, providing regular medical examination services for the elderly and the timely realization of a two-way referral according to the patient’s condition.

Old-age agencies provide pension services mainly through professional services and facilities to the elderly who have been inconvenienced by illness and other causes, as well as for those who

voluntarily choose to retire for other reasons. The main characteristic of the old-age agency, which distinguishes it from the traditional nursing home, is its close relationship with the community life service center and the community hospital. The Life services and medical care available to the elderly at home or in the community can also be achieved in agencies. In other words, the boundaries between families, communities and institutions are diluted by the partnership. In the process of providing the old-age service, the three can realize common management through certain technical support, thus sharing most of human and material resources.

Other organizations and individuals play a major role in investment, donations and volunteering. Private capital provides financial support to the social pension service system through cooperation with the government through the public-private partnership. As a main body of the social pension service system, the old-age agencies can also participate in the investment and obtain the investment income as well as in the way of the government purchase service. Voluntary donations from other organizations and individuals are governed by the Government, are also involved in investment and organization operations, and the sources and uses of funds are publicly supervised. After being professionally trained and evaluated, the volunteers can provide services together with professional staff. The difference between them is that professional workers get paid, while volunteers can get corresponding “time savings” through “time bank” and voluntary service certification so that they gain a certain advantage in the employment process.

Governments, communities (including life service centers and community hospitals), old-age agencies, investors, service personnel and the elderly served appoint the representatives through appropriate methods to form a committee, and express the interest request through the negotiation and the compromise for their own subject party. The committee is also the foundation of the partnership, employing professional management personnel to manage. By imitating the form of the board of the profit-making organization, it can balance the interests of the main bodies and improve the work efficiency while guaranteeing the quality of service, so as to make the social pension service system develop continuously.

5.2 Service content of social pension service system

Drawing on the experience of the mature social endowment service system in developed countries and the exploration practice in Shanghai and other domestic cities, the provision of Medical-Nursing combined social pension service has become the inevitable trend of the service content of social pension service system. The social old-age service in “family-community-institution” is divided into two categories: life care and medical care (see Figure 1), and the elderly served can voluntarily choose different types and consumption grades of old-age service projects or service portfolios they can afford according to their needs.

The provision of the old-age service should be based on clear service project description. The description of the service project includes the content classification of different specific service items, provide methods, operating procedures, quality standards and fees and so on. It facilitates the elderly to purchase the service in a clear understanding of the service content, and also helps to ensure the quality of the old-age service, so as to make the old-age service as standardized as possible. Home services are provided to the elderly in their houses. Life care or medical care service personnel can be tailored specifically to the actual situation and needs of specific service user to provide services, so the service has a certain specificity and exclusivity, and service costs are relatively higher than collective services that communities and agencies offer. Community (Life Service center) services include the elderly university, all kinds of cultural and sports activities. Such services have a certain degree of non-competitive and non-exclusive, so the cost of services is relatively low, but some community activities require the service user to have a certain level of participation conditions in the physical health. Institutional services include both collective care and dedicated care. Collective care are the services provided to the majority of the service users at the same time, such as catering and bedroom cleaning services; dedicated care means that when the elderly have special care needs, they can be voluntarily consumed to receive individual life care or medical care. In addition to the treatment of diseases for the elderly, community hospitals can provide psychological guidance, regular physical examination and cooperation with community life service centers for the prevention and care of

disease in the elderly, so as to focus on the health of the elderly at all times before the onset of disease. In all services, community activities, institutional collective life care and preventive health care services are provided collectively to meet the basic needs of the majority of the service users; dedicated life care and medical care provided at home or in agencies can meet the some older people's needs of higher-level pension. The whole service system can provide multi-functional, multi-level, Medical-Nursing combined social pension services.

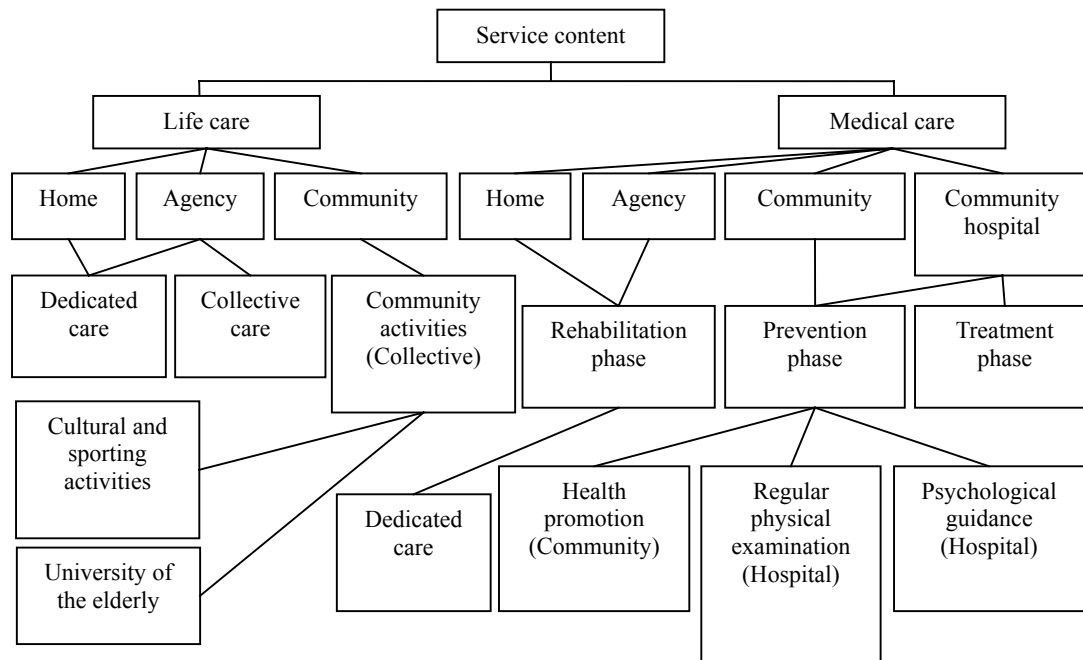


Figure 1 Service content of social pension service system

5.3 Social Pension Service Management Information System

Information symmetry is an important prerequisite for the common governance of multiple subjects. The effective operation of the social pension service system requires the timely sharing of information among the subjects, and the combination of China's "Internet +" and social security supports the realization of this goal from the high altitude of national policy. The system function of the Social Pension Service Management Information System mainly includes the information management and sharing, the financial management, the information openness and so on (see Table 1).

Table 1 Social Pension Service Management Information System

	Organization Management	Service Item Management	Staff Management	Service Object Management
Commission Management Department	Each unit's Application and Summary Report, Committee Information Column	Service Items by Organization	Staff Information by Organization	Service Object Information and Health Files
Community Life Service Center	Organization and Financial Management, Information Column	Life Service Item Management and Evaluation, Payment Status	Life Service Center Staff Information, Attendance Management, Training Management, Volunteer Time Bank Management	Service Object Information and Health Files ,Life Service Evaluation Feedback

	Organization Management	Service Item Management	Staff Management	Service Object Management
Community Hospital	Organization and Financial Management, Information Column	Medical Care Project Management and Evaluation (Categorized by Home Service or Agency Service), Payment Status.	Community Hospital Staff Information, Attendance Management, Training Management, Volunteer Time Bank Management	Service Object Information , Nursing Service Evaluation Feedback, Health Record Management
Old-aged agency	Organization and Financial Management, Information Column	Life Services Item Management and Assessment (Categorized by Collective Care or Dedicated Care) , Payment Status	Old-aged Agency Staff Information, Attendance Management, Training Management, Volunteer Time Bank Management	Service Object Information and Health Files ,Life Service Evaluation Feedback
Staff	Null	Service Item Information.	Personal Information	Service Object Information
Service object	Null	Service Item and Payment Status, Service Evaluation.	Service Personnel Information.	Personal Information and Health Files

As an information sharing platform, Social Pension Service Management Information System opens different function and authority for different subject's service terminals, that will help the departments to effectively manage and cooperate with each other, ensure the quality of service products through professional evaluation and evaluation feedback, enhance social credibility through the public acceptance of social supervision, attract private investment and social donations and promote voluntary services.

6 Conclusions

Through the study of China's Social pension service system, this paper puts forward the idea of constructing an integrated "family-community-institution" social pension service model which makes Chinese social pension service system form the organic whole that the pluralistic subject participates together, enhances the resources use efficiency through the resources sharing. Under the support of the Social Pension Service Management Information System, the system can provide multi-functional, multi-level, Medical-Nursing combined social pension services to meet the old people's diverse endowment demand. The construction of China's social pension service system through this assumption should be a beneficial attempt to diversify the social governance subject, which is conducive to the optimization of social governance structure and the long-term maintenance of social stability.

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Study on Governance Mechanism of Supervision Performance for Food Safety Based on Public Value *

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Abstract Food safety, a vital issue concerning national welfare and the people's livelihood, as well as a leading indicator to people's well-being index, is an important issue in theoretical research and practical exploration of public governance. Food safety is also one of fundamental public safety issues which concerns social harmony, stability and government credibility. In this paper, the structure of "Deconstruction-Analysis-Synthesis" is adopted to deconstruct factors, break up performance management of food safety supervision into three parts: target, process and driving force. At the same time, public value is introduced into the whole process of value evaluation to guide food safety supervisory governance closer to public value target, improve supervisory governance, eventually realize public value target and enhance social welfare.

Key words Public value, Performance governance, Food safety, Supervision

1 Introduction

Food is the material basis human beings live on, and food safety is one of the fundamental public safety issues, which concerns social harmony, stability and government credibility. As China's food safety affairs frequently arise, it has exposed that safety regulatory mechanism is defective and supervision capability cannot meet social needs. On June 23, 2012, food safety had been included for the first time in local government's performance assessment, according to *Decision on Reinforcing Food Safety* issued by the State Council. It is pointed out in *Decision of the Third Plenary Session of Eighteenth Central Committee* as "to improve a unified and authoritative food safety regulatory institute, establish the most severe and comprehensive regulatory system, and set up food source traceable system and quality-labeling system to ensure food safety." It is an essential theoretical and practical issue to establish an effective food safety supervision performance governance mechanism and improve food safety regulation ability and efficiency.

Public value is nature of government performance legitimacy and only government performance from society has legitimacy foundation and can be improved in a sustainable way^[1]. Based on that public value establishes food safety supervision performance governance mechanism, this paper attempts to introduce public value into the whole process of performance evaluation through the guiding function of performance assessment so that we can improve supervisory governance and realize public value to maximize public interests.

2 Analytical framework of food safety supervision performance governance based on public value

Food safety supervision and performance governance is one of hot issues in academic research. Foreign study focuses on food safety supervision subject (Anne Wilcock, 2004; Andrew Fearn, 2007), consumer and producer behaviors in food safety supervision (Swinnen, 2005), food safety supervision model (ICMSF, 2001), and food safety supervision performance assessment (OECD, 2005)^[2]. However, Domestic study focuses on food safety supervision from the perspective of public governance and polycentric governance (Liang Yan-xia, 2006), food safety supervision system and mechanism (Gao Wei, 2010; Ye Jun et. 2012), food safety supervision subject (Zhan Qi, 2011; Zhao Huan, 2012), exploration of food safety supervision performance assessment method (Liu Lu-min, 2009),

*Financed by the 2013 Beijing Philosophy and Social Science Fund Project 'Beijing food safety regulation based on public values: performance evaluation and governance innovation (Project No.: 13JGC094)'.

establishment of food safety supervision assessment index system (Wang Zhen, 2010) and empirical analysis of input-output efficiency of food supervision (Wang Neng, 2011). Liu Peng (2010), adopting analysis paradigm of historical institutionalism, analyzes four structural factors that hinder China's food safety supervision performance perfection and connects current condition of China's food safety supervision performance governance with historical origin^[3]. Huang Dan-li (2013), from the perspective of China's performance evaluation and current study of food safety supervision, under the background that food safety is included in local government's performance evaluation, points out that food safety supervision performance evaluation based on cost-benefit method leads to scientific supervision of China's food safety supervision^[4]. On the whole, foreign study on food safety supervision performance evaluation starts earlier. Relatively, as domestic study on food supervision performance governance and supervision performance evaluation is just commencing, there is no study which reflects on the food safety supervision governance mechanism according to the results of empirical performance tests which are achieved through establishing performance evaluation index system.

Mechanism, a trend and process during which the subject spontaneously goes towards certain target, consists of three factors: motive force, goal and process^[5]. It is on the basis of "deconstruction-analysis-synthesis" to deconstruct components of mechanism, and then to analyze content of each component and relationship among them. In addition, discussion is conducted on how to express and safeguard public value through food safety supervision performance evaluation and realize democratic and efficient food safety supervision based on public value and from the perspective of positioning and realizing mechanism of public value. Based on orientation function of performance assessment, public value is introduced into the whole process of value evaluation to guide food safety supervision governance closer to public value goal, improve supervision governance and eventually realize public value goal.

From the perspective of food safety supervision performance governance and value realization mechanism, the paper analyzes goal, process and motive force within the framework of food safety supervision performance governance and based on the components of deconstruction mechanism. Based on public value, it discusses the value goal, value realization process and motive force of value realization respectively in order to construct a complete frame of value realization mechanism. It is noted that the goal, process and motive force of value realization in performance evaluation practice are considered respectively the part of goal, process and motive force of food safety supervision performance evaluation. Therefore, food safety supervision performance governance and value realization mechanism interact, as shown in Figure 1.

Value realization mechanism of food safety supervision performance governance mechanism based on public value overcomes the shortcoming of efficiency-first value pursuit and managerialism characteristic of taking performance evaluation as a simple management tool. Instead, it puts public value positioned at the bottom level of government performance evaluation, constructs food safety supervision performance evaluation system based on a certain public value, conducts performance evaluation practice and promotes value realization of performance value^[6]. Setting supervision target, process and motive force and making them a part of process of value realization make food safety supervision performance evaluation constrained and influenced by public value and integrate value rationality with tool rationality. Therefore, there is guarantee for pursuit of public value embodied in value idea of supervision, methods and forms used in value realization mechanism. On the whole, public value, centering around citizen rights, expression and realization, requires public value to realize the center of public policymaking, public resources allocation and supervision target, process and motive force, in purpose of gaining social authority and legitimacy. It also emphasizes the interaction of government with other social organizations and the citizens in the process of public value determination in order to realize democratic decision-making through which all parties fully perform the subjective initiatives. Therefore, only with public value as the core can goal displacement be avoided in food safety supervision so as to truly satisfy citizen's needs and give full play to supervise.

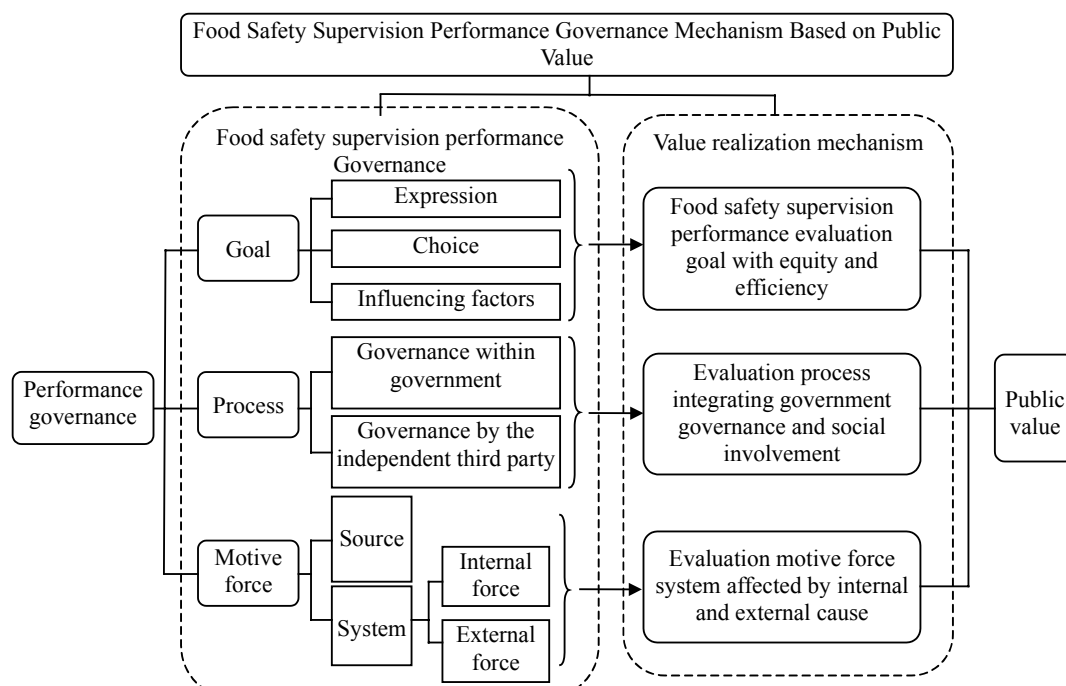


Figure 1 Food safety supervision performance governance mechanism based on public value

3 Value goal of China's food safety supervision performance governance

3.1 Explanation of goal

The goal refers to main activity content, expected aim and result achieved during a certain period of time^[7]. In food safety supervision performance governance, the goal refers to final measurement and evaluation of results achieved during a certain period in government's public management activity on food safety supervision through performance evaluation activity. It is measurable^[8]. Setting a goal is the starting point and the basis of food safety supervision performance governance as well as the primary question of food safety supervision performance governance framework. Food safety supervision performance governance goal based on public value takes public value as a standing point and starting point, considers satisfying and realizing a just, efficient food safety supervision and ensuring food safety as the ultimate value pursuit and makes sure it is manifested in food safety supervision performance evaluation content, index system, and during the whole process of food safety supervision performance evaluation practice. The value goal is fully expressed through process and motive force of performance evaluation, and in turn improves them.

3.2 Choice of value goal

Value realization goal of food safety supervision performance governance based on public value emphasizes the pursuit of public value throughout the process of food safety supervision and makes it a part of performance evaluation index requirement to give expression to fairness and service. In the past, due to shortcomings of managerialism and bureaucratism, government supervision focused more on superficial efficiency and performance, which caused weak supervision, frequent occurrence of food safety incidents and a great deal of loss and had negative effects on society and the public. The new perspective of public value in goal expression and selection helps shift weight from pursuing economy, efficiency and profit to a broader public value goal. The concept of public liability and customer first is implemented, and result-oriented public value is emphasized. In addition, demand from citizens on food safety supervision and quality guarantee is fully responded to give full play of fairness. Given these, this paper defines the choice of safety supervision performance governance goal from macro and micro perspectives:

In terms of macro goal, as food safety supervision performance evaluation is an important part of government performance evaluation, the goal of food safety supervision performance governance should be consistent with the expected performance standard and government performance evaluation, that is, to implement the scientific concept of development, to improve the food safety supervision through the performance evaluation of food safety supervision, to promote the construction of service-oriented government, to effectively ensure food safety, to build a harmonious socialist society, to guarantee the basic material life security, to achieve the goal of comprehensively building a well-off society and to promote a sound and rapid economic development; as to the micro goal, with the food safety supervision performance evaluation subject lowering, performance objective is more specific and oriented as well as closer to work tasks. On the whole, it emphasizes the ultimate goal of realizing public value and interests, effective food safety supervision and management through performance evaluation.

In addition, in food safety supervision performance evaluation practice, target replacement needs to be paid particular attention to. The target replacement refers to basic practices taken to manage an organization. Sometimes, the result has nothing to do with the ultimate goal of the organization, even oppositely, the announced ultimate goal is replaced by specific, local, or short-term goal^[9]. Therefore, in order to avoid it, the most important in choosing a goal of food safety supervision performance governance in China is to ensure the rationality and feasibility of the value realization goal in performance evaluation. At the same time, in this process, drawbacks of leadership must be overcome, and communication and coordination between levels must be paid close attention to, and the goal should be reasonably broken up and quantified in order to give full play to goal setting.

4 Value realization process of China's food safety supervision performance governance

4.1 Evaluation process within government

Food safety supervision performance governance within government is carried out by government departments, such as the Food Safety Committee and offices, through evaluating food safety supervision performance of government departments in charge of food safety or local governments. The performance evaluation, of which the government itself is the subject of management and organization, may be made from within the government or the outside, mainly by superior leaders, aided by peers, that is to say, an evaluation model combines top-down evaluation and peer evaluation. The process can be divided into four phases: preparation, implementation, and summarization and results feedback, each to be re-divided into more phases. In this process, what is mainly emphasized is the internal efficiency value of food safety supervision within government^[10].

4.2 Evaluation process by the independent third party

Performance evaluation by the independent third party is food safety supervision performance evaluation and management by the third party independent of the government, such as academic research institutions, institutions of higher learning, think tanks, social groups, etc. Research groups or project teams composed of the above serve as the main body of organization, and after a full understanding of status quo and problems of food safety supervision, conduct preparation and coordination work of performance evaluation. The government, according to the evaluation results, improves and amends performance goals. Thanks to wider social scale of independent third party that is closer to or rooted in the public and pays close attention to food safety supervision in the social life and existing supervision problems, performance evaluation by the third party has insight into society, and thus realizes information exchange and benign interaction between government and civil society in this process to finally achieve value pursuit of public value first, citizens first, and government responsibility^[11]. This process can also be divided into three phases: preparation, implementation, summarization and the results release. Each is connected to food safety supervision performance evaluation within government and also endowed with special connotation and the characteristics of independent third party evaluation.

5 Motive force of food safety supervision governance

In the process of mechanism formation, the key is motive force towards system goal. With the driving force, people can automatically go for the goal. Therefore, the core issue of mechanism research is motive force^[12]. The motive force system of food safety supervision performance governance refers to a set of driving force which promotes food safety supervision departments take a positive, fair and efficient governance based on public value. Due to the food safety governance problems and citizens' value demand, the motive force is an organic whole composed of source and system. The source mainly refers to major influencing subjects to promotion of food safety supervision performance governance. The system can be divided into the internal and external, which work together to realize value pursuit in performance governance.

5.1 Source of motive force

The driving force comes from all aspects and is divided into three parts in this paper: government, social forces and news media^[13]. Each of them has irreplaceable advantages, so only by making all the three functional can the food safety supervision problem be truly solved.

First is the government department. The value of government department is to supervise and coordinate the interests of all parties, which directly determines the motive force and the ability of food safety supervision performance governance practice. As the administrator of social order, government is responsible for food safety supervision. Government being the direct superior of food safety supervision department, its obligation is determined by service orientation, public value orientation and legal responsibilities for food safety supervision.

Second is social force. The value of social forces lies in the supervision of public food safety from the public, putting forward new doubts, exposing food safety loopholes, attracting social concern, and then integrating the relevant work into technical index and performance evaluation standards in order to promote a better work in food safety supervision performance governance of the government and the third party.

Third is the news media. The value of media and public opinion is to release information and give feedback as intermediary for warning public the current food problems, preventing the loss of public property, attracting attention from government, interpreting relevant performance evaluation standards and promoting the perfection of relevant laws and regulations.

5.2 Motive force system

1. Internal motive force. The internal driving force of value realization in food safety supervision performance governance refers to the reason why the government departments carry out food safety supervision performance governance to realize certain value goals. It can be understood from two aspects: improving the government's food safety supervision mode and improving leaders' supervision performance through effective food safety supervision. The two are interrelated and promote each other.

First, taking the government as a whole, the fundamental motive force of food safety supervision performance governance is to improve the government's food safety supervision ability and model. The basic significance of performance evaluation is to promote and guide the transformation of government functions to the target model of reform through the orientation function of performance appraisal and evaluation. That is to say, the meaning of food safety supervision performance governance is to improve functions and management of supervision subjects through the performance governance to ensure food safety and public value realization^[14]. Second, from the perspective of main government leaders, motive force is to improve performance of relevant leaders in food safety supervision. Carrying out food safety supervision performance governance and taking the independent third parties and the public as a part of the evaluation subjects can reflect the effectiveness of food safety supervision measures and achievements of relevant work of leaders. Through the expression of public value and appeal, they can ensure further improvement of the government's food safety supervision ability and satisfaction of public demand. Moreover, food safety supervision performance governance based on the public value emphasizes democracy, fairness, openness and people first, so it has positive effect on improving government's image and credibility and constructing an efficient and friendly government, which is the political ambition and promotion condition of all government

leaders. Therefore, it serves as the key driving force for leaders to improve performance and actively carry out food safety supervision performance governance.

2. External motive force. The external motive force of value realization in food safety supervision performance governance refers to force from stakeholders outside the government who launch the food safety supervision performance evaluation aiming at food safety regulators of a particular level of government. It is pressure from the outside. The external driving force mainly includes the public demand for food safety supervision performance governance, the external actions of the consumers' association and concerns from the central government over the food safety supervision performance evaluation, the three working together to promote the government's food safety supervision performance governance.

6 Conclusions

Food safety is a vital issue for national welfare and the people's livelihood, as well as a leading indicator to people's well-being index. Based on public value, an analytical framework is constructed in relation to performance governance of food safety supervision to make an attempt at introducing the abstract public value into food safety supervision administrative activities and broaden theoretical research scope; this paper, making use of orientation function of performance evaluation, calls for joint efforts from governments at all levels, social organizations, and general people to build and optimize governance mechanism of food safety supervision, improve governance performance and enhance social welfare. However, considered as a historical process, food safety regulatory governance requires the consistent application of theoretical research into practice, test of effectiveness and science of theory in practice and abstraction of theories from practical experience to improve theoretical system. This paper only proposes a framework of food safety supervision governance based on public value, which has not been tested by practice. The next step is to carry out empirical research based on typical cases of food safety supervision performance governance to verify, revise and improve the theory.

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Intergovernmental Cooperation in Regional Innovation Integration: A Comparative Study between Jing-Jin-Ji Region and Pearl River Delta Region in China *

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Abstract From economic integration to innovation integration, is a new phenomenon in China's regional cooperation. There are two models to build regional innovation integration in intergovernmental Cooperation. Jing-Jin-Ji Region represents the first group of practices, which is a classic "top-down" model and Pearl River Delta Region represents the other group of practices, which is a typically "bottom-up" model. In this paper, a quantitative research is taken by interlocal agreements (ILAs). Based on the institutional collective action framework and agreements network analysis, the measurement results are as following: First of all, Jing-Jin-Ji Region is a classic network lead organization (NLO), which have moderate density, and relied on high level government. And Pearl River Delta Region is classic shared governance (SG), which has high density. Although the higher-level government still plays an important role, the cooperation main bodies are more equal and the governments in the network have higher goal consensus. According to agreements structure we find that the main difference between Jing-Jin-Ji Region and Pearl River Delta Region is that the Pearl River Delta has higher flexibility, but the both of them at a low level of complexity, expansiveness and autonomy. Therefore, this paper points out that in practice, the superior authority play an important role in the innovation integration, but the cooperation by same level and the driven force from the market is irreplaceable.

Key words Regional innovation integration, Intergovernmental cooperation, Jing-Jin-Ji Region, Pearl River Delta Region, Institutional collective action

1 Introduction

Since the new century, the regional integration strategy and innovation-driven development strategy have become more and more important to Chinese government. In the report of the eighteenth national congress, it has not only proposed to "continuing to implement the overall strategy of regional development", but also for the first time stressed to "pay more attention to collaborative innovation" in the context of "sticking to the road of independent innovation with Chinese characteristics". In recent years, the intergovernmental cooperation in regional collaborative innovation is more frequent and closer, from 2003, "Shanghai, Jiangsu and Zhejiang jointly promote the Yangtze River Delta regional innovation system construction agreement" to "Pearl River Delta region science and technology innovation integration action plan" and the current "Jing-Jin-Ji innovation community". The local government has caused continuous attention of academia and policy circles in further breaking administrative barriers and establishing regional collaborative innovation systems^[1-4].

At present, there are two models to build regional innovation integration in intergovernmental cooperation. Jing-Jin-Ji Region represents the first group of practices, which is a classic "top-down" model. In this model, governments of higher level, sometimes even planed by central government, planed the innovation integration^[5,6]. Pearl River Delta Region represents the other group of practices, which is a typically "bottom-up" model. In this model, the innovation integration is driven by market

*Financed by the National Natural Science Foundation of China (Project No.: 71774026), MOE (Ministry of Education in China) Project of Humanities and Social Sciences (Project No.: 15YJC630124), and Fundamental Research Funds for the Central Universities from UESTC (Project No.: ZYGX2016J228)

and horizontal cooperation by the governments of same level, which also confirmed by central government but lately^[7]. In the process of diffusion of cooperation mode, the “top-down” and “bottom-up” models are used as benchmarks to be imitated and learned by other economic regions. So, what are the characteristics, advantages and difficulties of these two models in the process of regional innovation integration? This paper is intended to answer this research question through a systematic comparative study.

Existing researches in regional innovation integration are usually based on the presupposition of allocation of resources and elements. The starting point of this kind of research is to analyze the configuration of scientific and technological innovation resources in the region, and then to propose the policy implications and suggestions for resource and elements redistribution after discovering the situations of balance and efficiency in the current region^[8-10]. Prior researches can help us to discover and understand the resource and element problems in the current regional innovation integration, but in the policy implications and suggestions there is a suspicion of being too idealistic. In fact, the local government does not naturally pursue the maximization of efficiency within the region. As the “new regionalism” has already pointed out, intergovernmental regional cooperation is far from the individual collection of local governments, more often a collection of multiple intergovernmental relations. Intergovernmental cooperation is based on bounded rational decision-making results, the decision-making of local governments in the process of participating in regional cooperation has been driven by their own interests and the pressure of multiple institutions^[11,12]. Therefore, it is not enough to analyze only the resources and elements; the institutional analysis will be indispensable for regional governance. And only based on institutional analysis, regional cooperation in the allocation of resource and elements problems can be found in the real cause behind.

On the other hand, there are some important findings of institutional area on regional cooperation in China. First of all, the vertical relation between the central and local governments has been discussed in depth; the influence of centralization and decentralization on regional cooperation is an important theoretical background of this paper. On the one hand, the decentralization of the central authorities, to promote the local government’s governance tends to promote and maintain the progress of the market. On the other hand, it is precisely the local fragmented economy to force the higher levels of government, especially the central government to continuously strengthen the authoritative planning on regional cooperation^[13]. However, the “bottom line of decentralization”^[14] reflects the problem of regional governance is the so-called “cross-game”^[17], which is caused by the Tiao/Kuai authority relations^[15, 16], that is, the conflict and coordination between vertical intergovernmental issues and horizontal intergovernmental issues. These long-term disputes in public management and regional governance have also led to the difficulty of directly inferring the characteristics and merits of different cooperation modes. Second, the dilemma of competition and cooperation between local governments has also attracted attentions. In the ideal “polarization-diffusion” model, the local government can spread from the economic center to the edge of the region because of the economic and industrial level differences. But in Chinese special “tournament system”^[18], local governments have to make a trade off between the competition and cooperation^[19], which have a negative effect to the regional economic integration. This problem will undoubtedly be amplified in regional innovation cooperation, because the innovation has a higher asset specificity, That means it being locked up for a specific purpose can be difficult to move on to use, and if change its use it will be less valuable and may even become a worthless asset^[20, 21]. This also means that the barriers of technological innovation elements and resources between local governments will be higher. In other words, there are two major issues in the prior researches, both on the problems of centralization and decentralization, or competition and cooperation, in the innovation cooperation will become more conflicted and more complex, hereto, existing researches have not discussed and studied enough.

2 Institutional collective action framework and interlocal agreements

In order to further compare the institutional models of intergovernmental cooperation in regional innovation integration, in particular, comparing the similarities and differences between “top-down” and “bottom-up” models by institutional analysis. This paper introduces the Institutional Collective

Action (ICA)^[22] and the theory of network governance^[23]. ICA framework derives from Olson’s collective action theory and Ostrom’s theory of autonomous governance^[24]. The ICA framework extends the contract and cooperation between individuals in collective action to the institutional actors, regarding the local government unit as a group member or an actor, focusing on the institutional unit interaction, and the core is how to promote members which have common preference for cooperation work together^[25].

In ICA framework, the nature of intergovernmental relations is based on the complex network relationships under the rational choice^[11]. And Provan and Kenis proposed three kinds of network governance modes in the regional network governance, namely, Shared Governance (SG), Network Lead Organization (NLO) and Network Administration Organization (NAO))^[26]. As shown in Table 1, SG model hasn’t agents, is a highly involved decentralized network, the network is managed by the members of the network, and the network density is high. NLO is responsible for a leading organization within the network, and other organizations are only network members. Governance is achieved through an internal single organization member (internal agent), and the responsibilities and behaviors of other members will be passed through this agent. That is, NLO is a highly centralized governance model, and there is little direct interaction between organizations and organizations. The third model NAO needs to establish an independent administrative department dedicated to network management. This administrative organization (called a network manager) tries to motivate network members to achieve the network goals and take on network costs. This form of governance is centralized with a moderate level of network density^[27].

Table 1 Key predictors of effectiveness of network governance forms^[26]

Governance forms	Trust	Number of participants	Goal consensus	Need for network-level competencies
Shared governance	High density	Few	High	Low
Lead organization	Low density, highly centralized	Moderate number	Moderately low	Moderate
Network administrative organization	Moderate density, NAO monitored by members	Moderate to many	Moderately high	High

ICA framework and the theory of network governance provide an explanatory framework and ideal model for this study. At the same time, the ICA literature describes collective action by using the more standardized Interlocal Agreements (ILAs) index, provides a normative data source for this paper^[28]. The scope of intergovernmental agreements is quite extensive: from the informal “handshake” between governmental agencies to the signing of the formal contract are both belong to the intergovernmental agreements^[29].

In this paper, we will analyze the enthusiasm, flexibility, complexity, expansibility and autonomy of the local government in regional innovation integration and cooperation through the Interlocal agreements^[3], and measure the structural characteristics of network governance^[27]. In the following empirical analysis, this paper will conduct a comparative study based on the analysis of the agreement data between Jing-Jin-Ji and Pearl River Delta. Specifically, this paper collects the data of the official website of the local governments in the two regions from 2008 to 2016, and carries out the coding, and finally obtains the relevant agreement texts. Among them, the Jing-Jin-Ji Region totals 446 and the Pearl River Delta Region of 853. Later, we use social networks and descriptive statistics for comparative analysis based on ICA framework and network governance theory.

3 Jing-Jin-Ji Region and Pearl River Delta Region: Two different governance model

3.1 Cases selection

This paper conducts a comparative study between Jing-Jin-Ji and Pearl River Delta Region. Jing-Jin-Ji is a typical product of ‘top-down’, as the Chinese “Capital Circle”, including Beijing,

Tianjin and Shijiazhuang, Tangshan, Baoding, Langfang, Qinhuangdao, Zhangjiakou, Chengde, Cangzhou, Handan, Xingtai, Hengshui and other 11 prefecture-level cities of Hebei Province. Although the concept of “Capital Circle” was already proposed by Beijing’s urban construction plan in the 1980s, the cooperation governance of Jing-Jin-Ji Region was inseparable from the direct planning of the central government. In 2004, the National Development and Reform Commission held a seminar on the development strategy of Jing-Jin-Ji metropolitan circle in Langfang. The meeting determined to establish the “Jing-Jin-Ji Development and Regular Consultation System of Reform Sector”. In 2014, President Xi Jin-ping held the “Jing-Jin-Ji Collaborative Development Report”, the “Jing-Jin-Ji Collaborative Development” became to “major national strategy” during the meeting. In the same year, Jing-Jin-Ji integration of scientific and technological innovation was formally put forward. It can be seen that the development of Jing-Jin-Ji Region is always based on superior planning; the regional innovation integration is more directly formulated by the central government as a national strategy. The basic situation of innovation, economy and government index in Jing-Jin-Ji Region from 2010 to 2015 is shown in Table 2.

Table 2 The innovation, economy and government index in Jing-Jin-Ji Region from 2010 to 2015

Category	Name	2010	2011	2012	2013	2014	2015
Innovation index	R&D Funding (¥100 million)	353.25	534.25	651.30	745.84	816.98	882.56
	R&D Active persons(one)	95203	149155	170170	191260	211917	214516
Economy index	GDP(¥100 million)	43732.4	52075	57348.3	62685.8	66478.9	69358.9
	Urbanization(%)	70.00	70.77	71.52	72.14	72.65	73.49
Government index	Financial expenditure (¥100 million)	6914.3	8578.9	9907.9	11132.5	12086.7	14602.3

According to the 2010-2015 statistical Yearbook

On the contrary, the Pearl River Delta is a typical region based on market-based extension of local governance, including Guangzhou, Shenzhen, Foshan, Zhongshan, Huizhou, Dongguan, Zhuhai, Jiangmen, Zhaoqing south-central and Shenzhen-Shanwei special cooperation zone, Hong Kong, and Macao, a total of 12 districts. As the earliest region of reform and opening up in China, Pearl River Delta’s local governments made full use of the preferential policies and flexible measures of the central government gradually formed a market-based Guang-Zhao-Fo, Shen-Guan-Hui, Zhu-Zhong-Jiang three economic circles^[7], and then in the integration of Guangdong Province, to strengthen the integration of the entire Pearl River Delta Region. Finally, in 2008, the State Council approved the implementation of “the Outline for Reform and Development Planning of Pearl River Delta Region (2008-2020)”, marking the regional integration of Pearl River Delta got recognized at the national level. In 2014, Guangdong Province put forward the “scientific and technological innovation integration action plan of Pearl River Delta Region”. In 2015, the State Council issued a formal approval of the construction of Pearl River Delta national independent innovation demonstration zone. It can be seen that the integration of Pearl River Delta Region is always based on the market with a bottom-up process. The basic situation of innovation, economy and government index in Pearl River Delta Region from 2010 to 2015 is shown in Table 3.

Table 3 The innovation, economy and government index in Pearl River Delta Region from 2010 to 2015

Category	Name	2010	2011	2012	2013	2014	2015
Innovation index	R&D Funding (¥100 million)	768.72	984.58	1161.21	1158.38	1291.19	1435.00
	R&D Active persons(one)	340060	383666	479469	489113	500920	493404
Economy index	GDP(¥100 million)	37673.26	43720.86	47779.56	53060.48	57802.21	62267.78
	Urbanization(%)	82.72	83.01	83.84	84.03	84.12	84.59
Government index	Financial expenditure (¥100 million)	3654.91	4444.97	4798.40	5240.59	5973.23	8421.36

According to the 2010-2015 statistical Yearbook

3.2 A comparison of network governance mode

In this section, a methodology of social network analysis will be used to show the structure of the agreement network, that is, with UCINET to outline the two regions of the agreement network structure and calculate cities centralization and other data. As shown in Figure 1, the innovation cooperation among the local governments in Jing-Jin-Ji Region has formed a relatively loose network structure. Jing-Jin-Ji agreement network density is low (0.3242), at the same time, the network centralization of entire agreement network is 69.23%, which are reflects its typical centralized model. The network structure is also intuitively reflected, many places only cooperate with Beijing, Tianjin, the vast majority of cities just have no more than three partners, and only Beijing have cooperated with almost all places (except Handan, the place has not participated in cooperation).

What is more, through the calculation of the centrality (as shown in Table 4), the allocation of network relationship is relatively uniform between the prefecture-level city governments, and formed a loose alliance with Beijing as the agency center. In the degree centrality, closeness centrality, betweenness centrality which is the main indicators in network analysis, Beijing is the highest in 14 cities. Among them, the degree centrality of Beijing reaches 92.308, much higher than the average of the other members of the network, which prove that Beijing is a well-deserved center of the network structure; Tianjin is the secondary center of the network. However, from the betweenness centrality, Beijing is much higher than Tianjin, and the betweenness centralities of a large number of cities and regions in the network are very low, or even 0. Because the betweenness centrality shows the intermediary capacity of a city or region in the entire network, the higher the data, the higher the status and dominance of the city in the path of the other participants' networks. Thus, the data more profoundly reflects that the entire network relies on Beijing agent. Finally, compared to the degree centrality and betweenness centrality, the difference of closeness centrality between the regions is relatively small. The smaller the gap of the closeness centrality is, the more it shows that the cooperative network is dominated by the framework of the overall cooperation while the situation of local multilateral or bilateral cooperation is relatively small^[30]. These have proved that Jing-Jin-Ji is a typical NLO model.

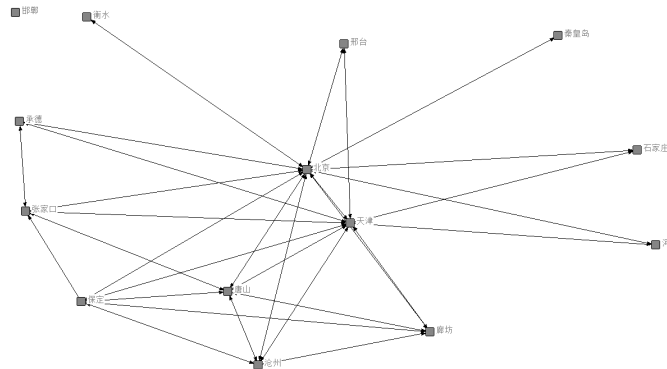


Figure 1 “NLO” innovative cooperative network governance model of Jing-Jin-Ji

Table 4 Centralities of Jing-Jin-Ji

	Degree centrality	Closeness centrality	Betweenness centrality
Beijing	92.308	50.000	43.162
Tianjin	76.923	46.429	16.239
Hebei	15.385	36.111	0.000
Shijiazhuang	15.385	36.111	0.000
Tangshan	46.154	40.625	0.641
Baoding	46.154	40.625	0.641
Langfang	38.462	39.394	0.000
Qinhuangdao	7.692	35.135	0.000
Zhangjiakou	38.462	39.394	0.855
Chengde	23.077	37.143	0.000

	Degree centrality	Closeness centrality	Betweenness centrality
Handan	0.000	0.000	0.000
Cangzhou	38.462	39.394	0.000
Xingtai	15.385	36.111	0.000
Hengshui	7.692	35.135	0.000

In contrast, the Pearl River Delta network density is higher, and the density is 0.4621; In addition, the overall network centralization of Pearl River Delta is 41.82%, we can see that the regional cooperation is more closely, and the participation and status of cooperation main bodies are more equal. As shown in Figure 2, with Hong Kong, Zhongshan, Guangdong as the boundary, the left nine spaces have formed a high density of closed polygonal network structure, and these closed places have formed a closely linked octagon, embedding in a large approximate hexagonal closed network structure. Macao, Zhaoqing and Zhuhai three cities are not only in the edge of the Pearl River Delta in geographical location, but also in a small density and the edge of the network structure that connects with other places loosely. This shows that the local governments of Pearl River Delta in scientific and technological innovation cooperation would like to choose cooperative partners by geographical adjacent. This is not only because the repeated cooperation between adjacent regions to form a mutually dependent relationship can reduce transaction costs, but also because scientific and technological innovation has strong positive externality and mobility. Such as technology spillovers and innovation diffusion, and other adjacent regions to learn and imitate the lower costs, to maximize the positive external effects of innovation and to promote the innovation regional integration of this region^[31].

Through the analysis of the centrality, we can find more details of the Pearl River Delta network governance. First, the degree centrality, also reflects the eight-sided structure in the network, that is, Guangzhou, Shenzhen, Huizhou, Foshan, Jiangmen, Hong Kong, Dongguan, Zhongshan, Guangdong all have high degree centralities. Among them, the degree centralities of Guangdong and Zhongshan both reach 100. Specifically, this model is not only different from the general sense of the highly equal SG model, but also different from Beijing as the agent of the NLO model in Jing-Jin-Ji Region. On the one hand, the highest degree centrality of the city of Zhongshan, representing that the Pearl River Delta innovation cooperation is based on the spread of geographical location, because Zhongshan is the center of the Pearl River Delta, which is also a economic circle interchange of Guang-Fo-Zhao, Shen-Guan-Hui and Zhu-Zhong-Jiang at early stages. In addition, as the centrality indicators second only to Guangdong and Zhongshan, Dongguan has formed a network center in the network structure at the same time with Zhongshan, located in the center of the network diagram. At the same time, either Guangzhou or Shenzhen are low in the degree centralities, although Guangzhou is the capital city of Guangdong and Shenzhen is the special economic zone and innovation center in China. On the other hand, although Guangzhou and Shenzhen, where political capital and economic capital are higher, have not dominated the entire network, Guangdong Province, which is a higher-level government, played an important role throughout the cooperation. In fact, it is precisely because the development of the Pearl River Delta is not simply as the general SG model, or the same level of local governments cooperation, it's based on the bottom-up feedback mechanism developed. Therefore, as a higher-level government, Guangdong can directly through the co-ordination and planning affect the entire cooperative network. Either Guangdong or any other city cannot form a network agent throughout the cooperative network, so in essence the Pearl River Delta is still a model of SG. This is also reflected in the betweenness centrality, Zhongshan and Guangdong tied for first, followed by Dongguan. Finally, the gap of closeness centrality in all over the Pearl River Delta is bigger than Jing-Jin-Ji, the level is more clear, which reflects the cooperative structure of the Pearl River Delta is a flattened structure based on a number of multilateral cooperation, rather than a centralized congregation relied on one authoritative agent to control. To sum up, the Pearl River Delta is a special SG model, on the one hand showing the general SG model in the equal rights, high consensus and high sharing, on the other hand the higher government also plays an irreplaceable role.

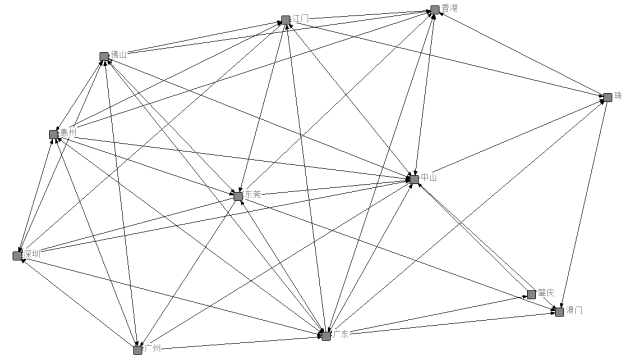


Figure 2 “SG” innovative cooperative network governance model of Pearl River Delta

Table 5 Centralities of Pearl River Delta

	Degree centrality	Closeness centrality	Betweenness centrality
Guangzhou	54.545	68.750	0.000
Shenzhen	63.636	73.333	0.303
Foshan	72.727	78.571	0.970
Zhongshan	100.000	100.000	15.273
Huizhou	72.727	78.571	0.970
Dongguan	81.818	84.615	4.303
Zhuhai	45.455	64.706	0.909
Jiangmen	72.727	78.571	2.182
Zhaoqing	18.182	55.000	0.000
Hong Kong	63.636	73.333	1.273
Macao	36.364	61.1115	0.364
Guangdong	100.000	100.000	15.273

3.3 A comparison of agreements structure

In this section, the characteristics of the cooperative mode will be analyzed by further coding the agreements data. First, as shown in Figure 3, the overall trend of the two regions is to strengthen cooperation, also reflects the current regional innovation integration is becoming the mainstream trend in China, on the other hand to find Jing-Jin-Ji suddenly began from the gentle to steep in 2014, indicating that the integration of Jing-Jin-Ji has been strongly affected by appointed as a national strategy in 2014. The whole Pearl River Delta is gentler, although affected by the Guangdong Provincial Planning and the approval of the State Council in 2014 and 2015. This means the Pearl River Delta not just impacted by higher governments like Jing-Jin-Ji.

According to the ICA framework, the following is comparing the characteristics of the agreement structure of the two regions in the flexibility, complexity, expansiveness and autonomy^[31].

First, flexibility: formal agreements and informal agreements. The difference between formal agreements and informal agreements is whether the cooperation of the government member has a formal text. Informal agreements include visits, meetings, researches, forums and other activities, which have more diversity, flexibility and low cost. So the informal agreements are easier to be selected as a mode of cooperation. In total of 853 agreements in the Pearl River Delta, there are 673 informal agreements, accounting for 78.90% of the total agreements, far more than 40.13% of Jing-Jin-Ji. This also reflects the cooperation in the Pearl River Delta region is dependent on market development, with greater flexibility, while the corresponding costs and risks are lower. Since Jing-Jin-Ji spans a number of provincial-level areas and also involves multiple administrative levels, in addition, it is based on the direct planning of the central government, and then shows more formal and more inflexible.

Second, complexity: bilateral, multilateral and common agreements. In the ICA framework, intergovernmental agreements have bilateral agreements, multilateral agreements and common

agreements. Bilateral agreements are most common and easy to reach in intergovernmental agreements, and the transaction costs of bilateral cooperation are the lowest. The common agreements include all actors in the area; the claims of such agreements are establish basic rules and determine the main programmatic purpose; therefore the transaction costs are also low. While multilateral agreements in intermediate states require more transaction costs through choosing partners, building rules, and maintaining the network^[32], so the multilateral agreements are the most complex forms. From the intergovernmental agreements of innovation cooperation in two regions, the multilateral agreements between the two are far below the share of bilateral and common agreements. Jing-Jin-Ji has only 82 multilateral agreements, accounting for 18.39% of the total agreements; the proportion of multilateral agreements in the Pearl River Delta is only 17.70%. In general, the complex level of cooperation in the two regions is very low; most agreements are common agreements and bilateral agreements.

Third, expansiveness: adjacent and non-adjacent region agreements. Geographical relations, location advantages are important factors in regional cooperation. Adjacent regions have more shared natural resources, institutional resources and organizational resources in cooperation, while the transportation costs, resource costs, and risk costs are lower and easier to reach agreements. However, cooperation among non-adjacent regions has a more pronounced positive effect on the development of actors' influences and the discovery of more appropriate partners^[33]. The degree in either regions of expansion is not high, non-adjacent region agreements of Jing-Jin-Ji accounted for 30.27% of the total agreements, although higher than the Pearl River Delta 19.81%. This means that the local government of Jing-Jin-Ji and Pearl River Delta in the field of scientific and technological innovation is still selected geographically adjacent logic instead of carrying out more regional expansion cooperation.

Finally, autonomy: agreements of higher-level government participation. Innovation has positive externality and asset specificity. Positive externality refers to the enterprise bring additional rights or increased economic benefits other economic entities to in the scientific and technological innovation activities^[34]. Thus, when participating in cooperation with local actors, the higher-level governments have shown two different utilities. On the one hand, the efficiency of the higher-level planning, that is, promoting the positive externalities of scientific and technological achievements by reducing the cooperative transaction costs and cooperative risks^[35,36]. On the other hand, too much participation and intervention in the actions of local governments by the higher authorities is to increase the legitimacy of cooperation, leading the local government to be forced to cooperate because of coercive isomorphism^[37]. From the agreement data in Jing-Jin-Ji and Pearl River Delta, the agreements without higher-level government participation are for the 269 and 420, accounting for 60.31% of its total agreement and 49.24%. This also reflects the higher-level government intervention is an important reason for the widespread diffusion of regional innovation integration.

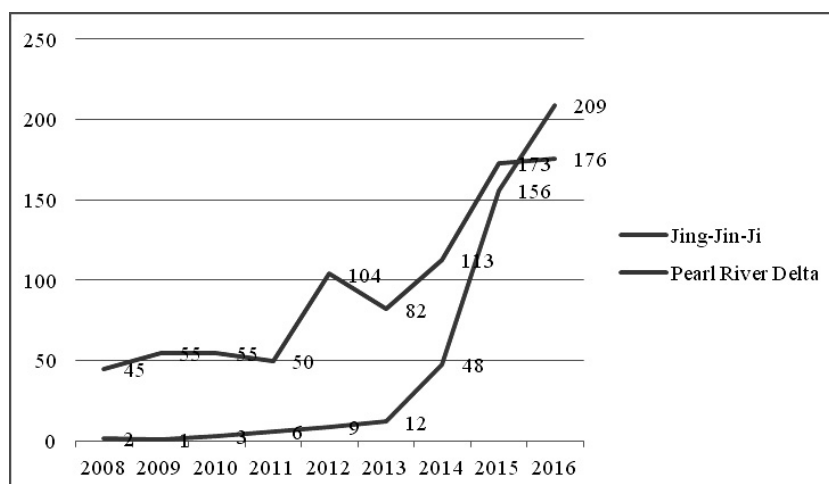


Figure 3 Number of innovative cooperation interlocal agreements of Jing-Jin-Ji and Pearl River Delta

In summary, according to the agreement structure, the main difference between Pearl River Delta

and Jing-Jin-Ji is the flexibility. Because of its bottom-up model, Pearl River Delta is easier to reach an informal agreement. But in terms of complexity, expansiveness and autonomy, both two regions are not very high, which reflects the current regional innovation and integration of local government cooperation is generally in a primary stage.

Table 6 Structural characteristics of interlocal agreements of Jing-Jin-Ji and Pearl River Delta

Structural characteristics of agreements		Flexibility	Complexity	Expansiveness	Autonomy
Index		The proportion of informal agreements	The proportion of multilateral agreements	Non-adjacent region agreements	No higher-level government agreements
Level comparison	Jing-Jin-Ji	40.13% (Moderate)	18.39% (Low)	30.27% (Low)	60.31% (Moderate)
	Pearl River Delta	78.90% (High)	17.70% (Low)	19.81% (Low)	49.24% (Moderate)
Features		Social mechanism	Cost	Geographical relationship	Communication

4 Conclusions and implications

In recent years, the trend of regional innovation integration in China is in full swing. In the current models of promoting regional innovation and integration, there is a “top-down” model represented by Jing-Jin-Ji and a “bottom-up” model represented by the Pearl River Delta. Behind the two models, in fact, reflects the centralization and decentralization of central and local relations as well as intergovernmental relations in the competition and cooperation. The previous studies have not carried out the systematic comparative study of the institution and the cooperative structure. This paper is based on ICA framework and network governance theory, with the data of interlocal agreements were analyzed. The study found that the innovation cooperative network of Jing-Jin-Ji is the NLO governance structure, the network has a moderate level of density, and more dependent on the involvement of higher-level governments; and the Pearl River Delta innovation cooperative network belongs to the SG governance structure model, with higher density of cooperation, the status of the main body of cooperation is more equal, and there is a higher goal consensus. Further analysis of the characteristics of agreement structures pointed out that the two regions in the cooperation of the complexity and expansiveness are not high, but compared to the Pearl River Delta, Jing-Jin-Ji is higher than it. In terms of autonomy Jing-Jin-Ji is still higher than the Pearl River Delta, but the Pearl River Delta is significantly higher than Jing-Jin-Ji in flexibility.

Our comparative analysis also found, “top-down” and “bottom-up” as two main models of regional innovation integration have their own different characteristics and advantages. The resistance between each other to achieve a cooperation is bigger in Jing-Jin-Ji Region because its greater political and economic structures, and the NLO model is able to use the central government’s national strategy to ensure that the risk of cooperation is reduced and local governments’ participation is strengthened. At the same time, because of the top-down “constraining process”^[38] led to a lower level of cooperation, reflected in the cooperation with Beijing agency of centralized structure, loosely cooperating with each other, while the four aspects of flexibility, complexity, expansiveness and autonomy are in a more primary stage. On the contrary, the gap of economic in the Pearl River Delta Region is relatively smaller. Based on market-oriented, from three smaller economic circles gradually changed into a large economic zone, therefore, the Pearl River Delta intergovernmental cooperation more equalization. It is worth noting that the model of the Pearl River Delta is different from the general sense of the SG model. Not the same level of governments as the core cooperation bodies in Pearl River Delta, but the active planning of Guangdong Province is promoting the innovation integration. Although, both “bottom-up” and “top-down” models are currently more dependent on the involvement of higher-level government, the two still have a difference. On the one hand, the cooperation model of the Pearl River Delta is obviously more intensive and more flexible. On the other hand, although Guangdong Province is in a high position in regional cooperation, it has not been in a unique position like Beijing in Jing-Jin-Ji Region.

In addition to comparing the two models represented by Jing-Jin-Ji and the Pearl River Delta, the two regions, as well-known representatives of Chinese regional innovation and integration, also reflect some important common problems in the current regional innovation integration, namely, complexity, expansiveness and autonomy are not too high. Of course, this is not unconnected with the short development time of regional innovation and integration in China, but also profoundly reflects the constraints that innovation its own assets specificity brings to the innovation integration. This discovery is more worthy of our reflection is that, due to the rise of the urban agglomeration and the promotion from central and provincial governments, resulting in regional integration in the policy diffusion is simplified as a panacea for solving all public affairs. However, as the study shows, higher-level planning can help to break the barriers between local governments, but its legitimacy of coercive isomorphism may lead to a loose structure and the low level of cooperation. This may be more worthy of our attention, because in fact, the current mainstream of Chinese regional innovation and integration model is under the leadership of the provincial governments, bounded by the established economic zone to implement a new round of local government cooperation.

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Construction and Case Study of Evaluation Index System on the Information Security of Smart City

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Abstract The smart city is a new modern city with the features of openness, centralization, synergy, mobility and intelligence. However, the problem of information security in smart cities is becoming increasingly prominent, and it is necessary to put forward an objective and effective information security evaluation system of smart city. According to information security evaluation index established at home and abroad and the characteristics of smart city itself, information security evaluation index system of smart city is constructed from four aspects, including management, technique, strategy and user. And the reasonability and scientificity of this system are testified by using structural equation model. The result shows that the information security of the smart city are greatly influenced by four aspects such as management, guarantee, strategy and threat. This paper puts forward some suggestions to ensure the information security of smart city according to the evaluation results, that is, we should improve the system of information security liability system, develop information security protection strategy of smart city, and consummate the information security regulation system, employee safety training and employee assessments system.

Key words Smart city, Information security, Evaluation system, Structure equation model

1 Introduction

With the rapid development of information technology, a series of new technologies, such as the Internet of things, cloud computing, big data and spatial geographic information integration, have also been derived. At the same time, under the background of cities' opening-up, the smart cities were born. Cities around the world are making "smart" investments. With the further construction of the smart city, it couldn't separate from the support of a series of new information technology such as the Internet of things, cloud computing and big data. However, in the innovation process of promoting information fusion, information sharing and promoting the service mode by using information technology, the information pattern of the smart cities had great changes in all aspects. This change will inevitably change the connotation of information security and constituting elements of the smart city, which will have an attack on information security. The attack from information media, security technology, management system, policy and regulations to citizen literacy, have formed a serious test for information security of smart cities. With the increasingly deepening of smart city construction, the information security issues become a prominent problem. The information could play an role in integration, synergy and sharing, meanwhile, it could ensure information security, which has become a practical problem in the process of smart cities' development.

Foreign scholars study the challenges of city's information security brought by the development of smart cities^[1] and consummate management method^[2] by studying the needs of public safety systems in smart cities. It also construct an security system and build a risk management framework of network physical system in the environment of the smart city^[4] from the perspective of smart devices and the elements^[3]. F. S. Ferraz proposed nine issues about information security system in smart cities, including information acquisition, information tracking, cross-visit and so on. And it is believed that these problems are closely related to urban concepts and structures and his conclusion is that the study of information security management in smart city is still in the initial stage^[5]. When domestic researchers study information security in smart cities, most of them study from two aspects, including personal information security and information security management. For example, Guo Xian put forward to build smart city information security management system and information security management regulations, establish a sound mechanism of information security management in smart city, clear the security responsibility, strengthen the security and protection of data resources for critical information system(Guo Xian,2016^[6]). Zou Kai and other researchers proposed to construct a

framework of information security indicators for smart cities from the five levels, including intelligent infrastructure, data service, information content, information management and public literacy(Zou Kai, 2016^[7]). Wang Zhen-zhen pointed out that information risk control is the basic step of risk management, and they thought we should select and implement appropriate security measures, adopt three kinds of ways such as avoid, transfer and reduce to control the risk of information system within the acceptable range according to the results of risk assessment. Four stages are included in this process, including the existing risk judgment, choice of control objectives, choice of control measures and the implementation of control measures (Wang Zhen-zhen, 2007^[8]).

Through the analysis of domestic and foreign literature, this paper argues that there are shortcomings in the research on information security in smart cities: First, there is little literature on the overall study of information security in smart city. Second, less quantitative analysis method is adopted in the study of smart city information. From an overall perspective of the system, this paper puts forward to construct an information security evaluation system in small cities, validate and modify it by using the structural equation model and then establish a scientific and reasonable information security evaluation index system of smart city.

2 Construction of information security evaluation index system in smart cities

The information security of our country includes four aspects from the perspective of information effect: physics, operation, data and management security, while the information security of European and American countries includes five aspects from the perspective of information security: confidentiality, integrity, availability, authenticity and non-repudiation. In the new information environment of smart city, the connotation of information security becomes more extensive, which mainly shows in the following aspects: It's vulnerable to be attacked, the consequences of the destruction are even worse, it lacks perfect management system and the public has an increasing influence on the information security of smart cities. To sum up, the problem of information security in smart city exists in every step from collection, processing, storage to use, and it also exists in every individual in the smart city.

Based on the multiple connotation of information security of smart city and existing research fruits and from the perspective of future construction and development of smart city, a scientific and perfect smart city information security evaluation index system is built from four aspects such as the management, technique, strategy and user. Management, including institutional management, organization management, personnel management and risk management, is the criterion and norm of information security in smart city; technology, including physical environment, storage and communication, system security and human and financial resources, is the guarantee of information security in smart city; strategy, including information security development strategy, strategic position of management department, capital investment strategy and staff quality assessment strategy, is the guidance of information security in smart city; the user, namely, public safety literacy, is a comprehensive embodiment of the application service information security consciousness and ability. Through the top-level design and coordination, a systematic information security evaluation index system of smart city is formed. As shown in Table 1.

The design of questionnaire is applied to the information security evaluation index system in smart city, and the survey was conducted on the builders, managers and citizens of smart cities by completing paper and electronic questionnaires. A total of 274 valid questionnaires were collected, 226 of which were electronic questionnaires, accounting for 82%. The paper questionnaire was 48, accounting for 18 %. Likert scale is used in all indicators in the questionnaire.

3 Calculation and analysis of the model

Before using empirical data to analyze the theoretical model, the validity and reliability of the questionnaire are the premise and basis of the research results. If the validity and reliability of the index cannot be satisfied, it's not acceptable even if the model of structure equation is established.

Table 1 Smart city information security evaluation index system

Grade1 indicators	Grade 2 indicators	Grade 3 indicators	Explanation of the indicators
Smart city information security evaluation index system	Management H1	Institutional management H1a	Information security management system, level protection system and registration system, etc.
		Organization management H1b	Organizational structure, human resources, equipment and data, etc.
		Personnel management H1c	Personnel quality requirements, responsibilities, monitoring and audit, etc.
		Risk management H1d	Natural disasters, data leakage, technical loopholes and data management
	Technology H2	Physical environment H2a	Monitor, power, anti - theft, server defense capability, etc.
		Storage and communication H2b	Communication operation security and encryption, data security and backup, etc.
		System security H2c	System upgrade, protection, response risk, etc.
		Human and financial resources H2d	Professional technical ability, financial input, etc.
	Strategy H3	Information security development strategy H3a	Information security development strategy and its strategic position
		Strategic position of management department H3b	The establishment, responsibility and authority of the management department
		Capital investment strategy H3c	Annual financial input to ensure information security
		Staff quality assessment strategy H3d	Employee’s degree, technical level, professional ethics, training, etc.
	User H4	Public safety literacy H4a	Public information security awareness level

As is shown in Figure 1, the structural equation model of information security is constructed according to the above evaluation indicators. The relationship between structural variables is also presented:

- H1: “Management” has an obvious positive impact on “smart city information security”;
- H2: “Technology” has a significant positive impact on “smart city information security”;
- H3: “Strategy” has a significant positive impact on “smart city information security”;
- H4: “User” has a significant positive impact on “smart city information security”.

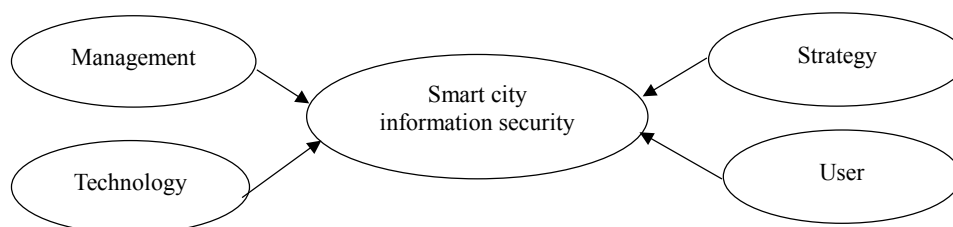


Figure 1 Smart city information security concept model

3.1 Reliability and validity check

Reliability analysis mainly refers to examine whether there are stability, consistency, and reliability of the scale in the study when we measure the relevant variables. In general, the reliability of the scale was checked by the internal consistency of the sample. The stability, reliability and internal

consistency of the measured variables are positively related to the reliability analysis. According to previous research, the Cronbach Alpha reliability measurement method is a very effective way to test the scale reliability. SPSS 21.0 software is used to obtain the coefficients of Cronbach's alpha, and the results are shown in Table 2.

Table 2 Data reliability analysis of Cronbach's a coefficient

Latent variable	Cronbach's α	Cronbach's α based on the normalized term	Number of projects
Management	.932	.934	4
Technology	.865	.877	4
Strategy	.762	.790	4
User	.834	.836	1
Total	.962	.964	13

From the test result in the above table, it can be seen that the Cronbach's alpha coefficient of four potential variables such as management, technology, strategy, and user had exceeded 0.8 level and the overall reliability of the scale also exceeded 0.9, which indicates that the questionnaire used in this study has a higher consistency and reliability and passes the reliability test.

In statistics, the most common way is factor analysis to test construction validity. In this study, Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett test of sphericity to verify whether data was suitable for factor analysis. The results prove that: the KMO values of management, technology, strategy and users are 0.639, 0.913, 0.653 and 0.817 respectively, and the significant probability of the χ^2 statistic (Sig.) in the Bartlett test of sphericity is 0.000. According to the view of Kaiser, if the value of KMO is greater than 0.6, the sample data is suitable for factor analysis. Consequently, this sample data is suitable for factor analysis(Wu Ming-long,2001^[9]). As shown in Table 3.

Table 3 KMO value and the results of Bartlett test of sphericity

Take the Kaiser Meyer-Olkin metric of sufficient sampling (KMO)						.859
Bartlett test of sphericity	Management	Technology	Strategy	User		Sig.
	0.639	0.913	0.653	0.817	1955.192	.000

3.2 Model calculation

On the basis of factor analysis, the software began the modeling and calculating by using AMOS 7.0 software. And equation analysis, efficiency and Goodness of Fit of the equation model are obtained subsequently. The results are shown in Table 4.

Table 4 Hypothesis testing results

Research hypothesis	SE	P	Result
H1: Information security \leftarrow Management	0.55	***	Support
H2: Information security \leftarrow Technology	0.84	***	Support
H3: Information security \leftarrow Strategy	0.74	.032	Support
H4: Information security \leftarrow User	0.54	.012	Support

The path coefficient of the model is shown in Figure 2. Among them, the numerical value is the standardized path coefficient.

3.3 Model evaluation

The major evaluation indexes of model fitting are generally divided into two categories, one is the absolute matching test. The evaluation index is based on the covariance matrix and sample variance matrix of implicit index of the hypothesis model, includes CMIN/DF, P. When CMINDF is less than 3, it is acceptable, but generally it is appropriate when it's less than 2(CMINDF is the statistic of the similarity between the sample covariance matrix and the estimated covariance matrix, and the theoretical expectation is 1); The P in the chi-square test is generally greater than 0.05, and it shows that the assumption is not formed and the structure model is good for data fitting. Another is the

relative matching test. The evaluation criteria are indicators such as GFI, TLI, CFI and RMSEA. These indicators are closer to 1, which means the model fit is better. If these measures are generally greater than 0.9, the observation data supports the hypothesis. The RMSEA requirement should not exceed 0.08(Shi Ya-yi, 2001^[10]). The fitting index of this model is shown in Table 5, and it can be considered that the setting model can fit well with the sample data.

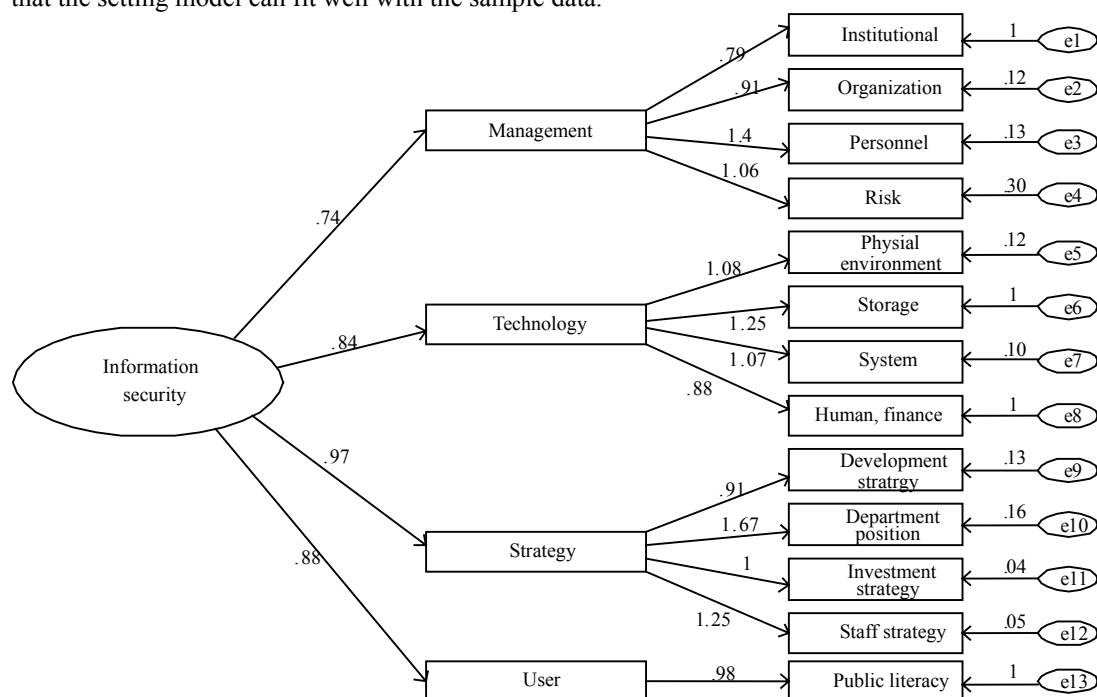


Figure 2 Model standardization path coefficient

Table 5 The evaluation criteria of the overall model fitting degree

Classification	Absolute fitness index			Simplified fitness index		Increment fitness index	
	CMIN/DF	GFI	AGFI	RMSEA	PGFI	CFI	NNFI(TLI)
Value range	< 0.3	[0,1]	[0,1]	< 0.10	[0,1]	[0,1]	
Best reference standard	< 2	> 0.9	>0.8	<0.08	>0.5	the closer to 1, the better	
Self-built model	1.69	0.964	0.901	0.038	0.532	0.787	0.746

4 Conclusions

The key of information security evaluation of smart cities is to establish a systematic, comprehensive evaluation index system, which runs through the whole process of information security in smart cities and takes all the beneficiary into consideration. Meanwhile, it provides accurate and objective basis for the builders of information security in smart cities. According to the research on information security evaluation index at home and abroad and the characteristics of smart city itself, information security evaluation index system is established from four aspects including management, technique, strategy and user, and it's validated by the structural equation model, which makes the choice of information security evaluation index more objective and overcomes the subjectivity of expert ratings. But there is not professional assessment agency or evaluator for information security in smart cities, so the data collectors have definite subjectivity about influence extent of the influence factors, which leads to some deviation of the result. The establishment of the information security evaluation index system in smart city is a good foundation for the future development of smart city

information security, which will help the healthy and sustainable development of the smart cities' construction.

From the analysis results, we can get some enlightenment on protecting the information security of smart cities. From the perspective of management, we should implement the construction of the information security management and strengthen the organizational construction of information security. First, we should strengthen the establishment of the information security risk assessment mechanism of smart cities, and provide guidance for the information security construction and management of smart cities through identification, control and handling of risks. Second, we should establish a classified protection system of information security. In addition, we should also standardize information security work in the development, operation and management of information system. The power and responsibility should be clarified and the work of the information security should be supervised by fixed department head, department and professional people, which ensures that the confidential information is not public. Finally, we should implement the system that information security officers train first and then work. We should also clear the detailed working rules and supervise their behavior. From the perspective of technique, we should strengthen the development, application and promotion of technology. First, we should increase the amount of money and introducing advanced talents, support the cooperation between enterprises and university research institutes, adopt adaptive security protection technology and build up technical protection system according to the different levels of technical characteristics for smart city construction. Second, we should improve infrastructure construction of information security, enhance defense capabilities such as monitor, power, guard against theft, server and so on, ensure communication security, data storage and backup security and so on. Finally, we should ensure data sharing security. From the data itself, we should ensure that data is not being attacked, intercepted, or tampered in transfer process by relying on data technology and data intelligence detection techniques. In the case of data transmission network, we should conduct strict censorship and supervision on network nodes to prevent illegal invasion by depending on protocol encryption technology, boundary isolation technology and security review technology. From the perspective of strategy, we should build the strategy of information security in smart cities. First, we should develop strategies for information security development in order to guide the construction of information security. Second, we should establish the information security management organization of the smart city and formulate the overall plan and the annual implementation plan of information security in smart city. Finally, we should formulate employee quality assessment strategy and make a detailed plan of employee's academic qualification, technical level, professional ethics and training and so on. From the perspective of user, we should build a national information security system of smart cities, increase investment to popularize knowledge, improve user's quality about security and provide comprehensive guidance for the protection of personal information security.

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New Perspective for “Internet+ Government Service” Practice in China: Case Study of the Zhejiang Province, China

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Abstract At present, in addition to the accelerated integration between “Internet +” and traditional industries, there are new changes to the e-government that drives the optimization and upgrade of government service mode. As the development of Chinese e-government has been at the stage of integration, it is the urgent need to improve the level of government service and the government’s administrative efficiency. Thus the concept of “Internet + Government Service” is proposed by the Chinese government in due time. So this article presents a case study of the Zhejiang “Internet+ Government Service” practice in China and set out of a perspective to research the external environment from the factors of political, economy, society and technology, and take an in-depth analysis on Zhejiang government service portal from three perspectives of open government data, whole-of-government service and online government service. In addition, the main purpose of the research is to explore “Internet+ Government Service” at the local level and provide a new perspective for future research.

Key words Internet+, E-government, Government service, Case study, Environment

1 Introduction

It’s the step-down and progressive process for the development of e-government. Each stage for the development of e-government has its own value. From the office automation that improves the working efficiency to the government online project that changes the government function, from the service-oriented online services to the user-oriented whole-of-government services, they are all important links for the construction and development of e-government.

There have been different opinions on the development stages of e-government by scholars at home and abroad. For instance, the e-government is divided into four stages by European Commission, namely the communication, interaction, online transaction processing and integration^[1]. Besides, Clay C.Wescott divided the e-government into six stages according to his study on the development of e-government in the Asian-Pacific region^[2].

Over the years, United Nations Department of Economic and Social Affairs has performed the evaluation on the development of e-government in all the countries in the world, mainly the building and service level of government websites, from which five stages have been summarized, including the presence, improvement, interaction, online transaction and integration. At the stage of presence and improvement, the government mainly provides the citizens with the static government information through the web-pages; at the stage of interaction, it mainly makes use of internet technology to achieve the communication and exchange between the government and citizens^[3]; at the stage of online transaction, the government online services experience the process from the partial supply to the basic supply and the mature supply; from the distributed supply to one-stop supply and the personalized supply; at the stage of integration, the government integrates the backward transaction process and department functions to provide the seamless online services to the public.

The 2016 UN e-government survey highlighted to a higher level of positive trend in the development of e-government^[4]. One of the most important trend is to promote to the public as the center of development, we need pay attention to provide the public with customized, personalized and convenient service^[5]. The opportunities offered by the digital development of recent years, whether through online services, big data, social media, mobile apps, or cloud computing, are expanding the way we look at e-government. In addition, a new trend in e-government has been the evolution towards the provision of integrated public services online through, among others, one-stop platforms allowing to access a range of public services. As reviewing the UN surveys on the e-government over the years,

UN's five-stage theory was adopted in this paper, considering that the e-government in all countries is evolved towards the stage of integration.

In the meanwhile, some scholars proposed that the stage of integration could be divided into the data integration, process integration and service integration from the angle of technical implementation^[6]. The data integration refers to the open, sharing and connective integration of various government data to build the unified database; the process integration centers on the efficiency that sorts and integrates the backward government business process; and the service integration focuses on users to create a seamless and interactive service support platform^[7].

At such development stage, Chinese government proposed the concept of "Internet + Government Service" in due time. The proposal of "Internet + Government Service" brings along the new look to the e-government, which is not only the electronization and online process of existing government services, but also the process that the government makes use of internet thinking, technology and resources to achieve the integration and innovation^[8]. For the aspect of data, the government data sharing refers to the concentration and sharing of data among departments, while the means of data digging and association analysis are used to achieve the accurate analysis and active push for the potential demands of citizens^[9]. For the aspect of process, the limit among departments of government is broken to provide the wholly-new platform for the reconstruction^[10] and optimization of government business process and effectively solve the long-term existing island problem of information system for the local government^[11]. For the aspect of service, "Internet + Government Service" switches from the "department perspective" to the "user perspective" and provides the integrated services around people's demands and based on the problems^[9].

The practice of "Internet + Government Service" in Zhejiang Province has always been the model in such field, which provides the good example for other regions. Therefore, starting from the integration stage of e-government evolution, this paper mainly focused on the specific performance of "Internet + Government Service" in Zhejiang Province.

2 Analysis framework

Adopting the method of case study and taking the practice of "Internet + Government Service" in Zhejiang Province for an example, a new research perspective was expected in this paper from the aspects of external environment and internal service supply. The analysis framework is as Figure 1.

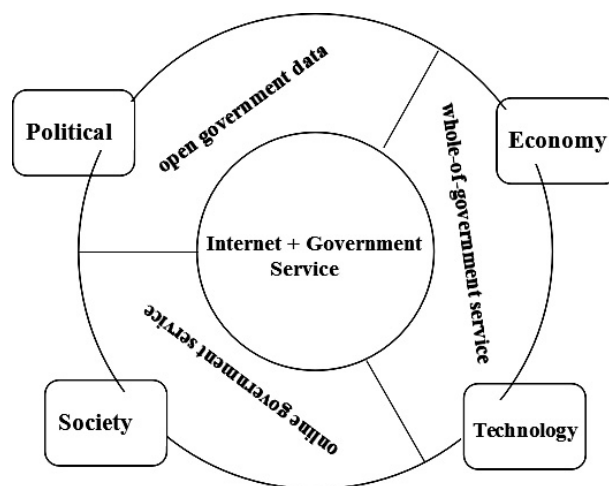


Figure 1 "Internet + Government Service" analysis framework

The analysis of environment is central to the study of e-government activity as it helps to assess the value of projects. To perform the visual and in-depth analysis on the realistic environment of "Internet + Government Service", the systematic analysis was performed on the external environment of "Internet + Government Service" in Zhejiang Province from the objective perspective and using

PEST analysis. PEST analysis describes a framework of macro-environmental factors, usually including four factors of political, economy, society and technology. Therefore, the environmental analysis would be performed on the practice of “Internet + Government Service” in Zhejiang Province from the aspects of political, economy, society and technology.

Considering the internal service supply, Zhejiang government services portal is designed to provide the comprehensive public services through the internet, including the one-stop platform that allows the citizens to access a series of public service and makes it easier to be interacted with the local government and receive the sufficient and all-round response for the inquiries and required information. In consequence, this paper referred to UN’s survey report on the e-government and started from the integration stage of e-government evolution, which focused on analyzing the services available on Zhejiang government services portal, namely the specific performance of open government data, whole-of- government service and online government service.

3 Analysis of environmental

3.1 Political

As the main body of institution supply, the government accelerates the function transformation and provides the citizens with more convenient, efficient and high-quality public service, which has been the common sense for the transformation and development of government services. The concept of “Internet + Government Service” was explicitly proposed in 2016 report on the work of government of China, which pointed the way for the working of e-government in the context of “Internet +”. Since May 2015, Chinese government has launched many important decisions regarding the government services. For instance, Chinese government issued *Guidelines for the Technical System Construction of “Internet + Government Service”* in January 2017, in which it requires the completion of nationwide technical and service system of “Internet + Government Service” with the functions of overall linkage, department coordination, provincial arrangement and one-stop processing by the end of 2020, in order to achieve the standardization, precision, facilitation, platformization and coordination of government services^[12].

Required by the relative policies of central government, Zhejiang Province has launched several policy documents about the construction of “Internet + Government Service”. In March 2016, *Key Points for Construction of 2016 Zhejiang Government Services Portal* was printed and distributed, in order to further optimize the top-down design, solid the base platform, perfect the service function, promote the application performance, strengthen the integration and sharing and accelerate the centralization of power affairs, the centralized supply of online services, the centralized disclosure of government information and the centralized sharing of data resources^[13]. Furthermore, Zhejiang Province launched the plan of “Internet +”, strengthened the overall planning and top-down design of “Internet + Government Service” and formulated the development plan of big data and some other documents. Meanwhile, to strengthen the standardized operation of “Internet + Government Service”, it made different specification documents for the online operation of management affairs such as the administrative approval. Anyway, a series of central and local policies have laid the stable political foundation for the practice of “Internet + Government Service”.

3.2 Economy

Presently, Chinese economy has been at the stage of the new normal and internet applications have been embedded into the social public service system from the top to the bottom. Using the internet technology and thoughts, “Internet +” has been applied in the industries of finance, medicine, agriculture and education to promote the transformation and reform of traditional industries. In recent years, the development of big data, cloud computing and mobile internet promotes the penetration of “Internet +” in the field of e-government. The application and development of internet technology make it possible for the government to provide diversified service modes and rich service contents, and also achieve the wider channel for the public to join in the governance. On one hand, the accelerated integration between the internet and public services such as the medicine and education promotes the construction of government information resource sharing and online service platform; on the other hand, the government increases the purchase and promotion of emerging technologies and relies on the

internet to build the service platform and enhance the working efficiency of government.

Located in the south of the Yangtze River Delta and facing to the vast East Sea, Zhejiang Province is one of most flourishing economic provinces in China. In the beginning, the economic take-off was driven by the development of private economy. Now being promoted by the development of internet enterprises that is represented by Alibaba, the internet economy of Zhejiang Province now shows the vigorous activity and enormous motive force. The widespread entrepreneurship is encouraged by means of internet to achieve the reasonable usage of resources and gain the direct economic traction. The stable development of economy in Zhejiang Province provides the solid economic foundation for the practice of “Internet + Government Service”.

3.3 Society

In the era of internet, the e-government is now at the new stage of development, which requires the government to change the instrumental application of internet in the past and establish the value-oriented thinking that can represent the essential property of internet. The internet spirit of interconnection and shared governance has been gradually penetrated in the society. In recent years, the enterprises such as Alibaba, Tencent and Baidu have reached the cooperation with the government in the field of public services, which can enhance the social governance of government. For instance, Zhima Credit that is subordinate to Ant Financial reached the cooperation with supreme people’s court in July 2015. Meanwhile, the cooperation between the enterprise and government also provides the great convenience for the life of citizens. For example, citizens can check the violation information through the mobile apps such as Alipay and WeChat.

In addition, the change and application of technologies bring along the individual and diversified trend of service demands. The public has not been content with the release and disclosure of information for the services provided by the government any more, but longing for the guiding and practical services and one-step solution. On the whole, the penetration of internet spirit and the constant change of user needs lay the wide social foundation for the practice of “Internet + Government Service”.

3.4 Technology

The government deeply digs into the means of government service and develops the key technologies such as the big data in using the technologies of “Internet +”. The new generation of information technology, including the big data, cloud computing and mobile internet, has been turned from the concept into the application, which gradually accelerates and deepens the new generation of information infrastructure and greatly meets the demands of overall expansion of “Internet + Government Service”. The big data breaks the limit among departments of the government and the one between the government and the public, which extremely reduce the problem of information island and improves the collaborative office efficiency and convenience efficiency. The cloud computing is applicable to the demands of e-government that develops the intensive construction and intelligent management, which is capable to provide the strong technological support for the government services and greatly reduce the input cost. The application of mobile internet in the government online service can dramatically increase the convenience and practicability of services and make it possible for users to enjoy the active government services at any time and in any place.

Presently, the government departments at all levels try to meet the innovation needs of people and basically achieve the goal to offer the government services through its own online platform. These new technologies have been applied in the innovation of government services, which plays a critical role in promoting the efficiency and level of government services and lays a solid technical foundation for the practice of “Internet + Government Service”.

4 Service analysis: Zhejiang government services portal

“Internet + Government Service” was piloted Zhejiang Province and some successful experiences have been obtained. Zhejiang government services portal went live on June 25, 2014 officially that greatly promote the construction of service-oriented government, transparent government and law-based government^[14]. Zhejiang mode of “Internet + Government Service” has been preliminarily formed. Starting from the services available on Zhejiang government services portal, an in-depth

analysis will be performed on three aspects of open government data, whole-of-government service and online government service.

4.1 Open government data

Open government data is a new approach that can help public sector institutions improve the quality of their decision-making processes and of public services. Open government data refers to “government information proactively disclosed and made available online for everyone’s access, reuse and redistribution without restriction”^[4]. Transparency and accountability of institutions can be enhanced by opening up government data.

In this regard, after the release of *Action Plan for Promoting the Development of Big Data* by Chinese government, the column of “open data” was firstly launched on Zhejiang government services portal in September 2016. When it went live, the information available on the portal site made it possible for citizens to access the government data and encouraged the development of creative tools to offer the diversified services. Though the data column was just released last year, it had contained over 350 data sets by January 2017, including the economy, community and education, environment, architecture and transportation.

In fact, there are 100 data resources that can be downloaded, 137 data interfaces and 8 mobile APPs on such portal site. Meanwhile, relying on the achievements of legal person, geospatial underlying database and Credit Zhejiang and electronic document library, 8 special columns regarding the data application such as the credit information and file data have been launched. On one hand, the open data plan of Zhejiang Province provides multiple opportunities for the independent e-government project and network development to make use of those data; on the other hand, the government is capable to perform the analysis based on the data of access paths and search keywords to figure out the user needs and thus take the revision and optimization of website.

4.2 Whole-of-government service

According to the United Nations E-Government Survey’s description, whole-of-government can be defined as “agencies working across portfolio boundaries to jointly achieve integrated responses to the issues of policy development, program management and service delivery”^[15]. This marked a whole-of-government approach in online service delivery, where services are available in a more integrated fashion from various departments; local and central governments. The government provide better service by integrating services and thereby saving time and resources and increasing citizens’ trust in government.

The government can provide better services through the integration to save the time and resources and enhance the citizens’ trust on the government. Presently, there have been “2+4” functional modules on Zhejiang government services portal. Two main modules are personal service and legal service that gather the government service resources over the province according to the topics and departments; four special modules are sunshine government affairs, administrative approval, convenience service and open data, which represent the functions of rights to sun online, online exercise, online benefits to people and data benefits to people.

The whole Zhejiang government services portal collects all main administrative services provided by each government department to promote the efficient e-government service. The portal gathers over 60,000 approval matters on a single service page and provides over 150,000 pieces of convenience messages for citizens that cover 14 topics such as the marriage and adoption, education and training, tax payment, medical care, social insurance and certificate application. From one portal, citizens can find all services available on the portal easily and quickly. The Province of Zhejiang continues to implement its new vision for government operations, called “Government 3.0,” placing emphasis on openness, sharing, communication and collaboration. For instance, to provide the online services, Zhejiang government services portal reaches the cooperation with the well-known internet platform to design the mobile client of government services (APP) and the WeChat public account.

4.3 Online government service

As the price of mobile phone ownership continues to fall, many more people are likely to own and use a mobile device. As people have their devices wherever they go, the online services can provide in places previously non-conducive to government. With the basic infrastructure in place, Zhejiang

government's attention was turned to ensuring faster and more innovative adoption of new technologies for online service delivery. The government provides different kinds of mobile apps to offer more and more online services and the customized services according to the individual needs, as well as the one-stop services for citizens and enterprises. The one-stop online services are aimed at improving the interaction between the government and citizens and provide the all-day and no-rest convenience services. Zhejiang government services portal strives for gradually improving the operation and management ability of portal site and optimize the online services such as integrating the search and personalized services, and promote the efficiency of online services. Citizens can use the online reservation services. Taking the option of "housing" in the column of personal services for an example, five service matters can be handled online and the average number of times to handle affairs at the real hall is one.

Meanwhile, to promote the timeliness and validity of government feedback, the government makes more effective and more harmonious policies for those complicated problems. In this regard, Zhejiang government services portal opens the convenient online communication channel and the working personnel should answer the related questions within the required time. Furthermore, it has been proved that such portal can collect the feedback opinions of citizens and guarantee the participation of citizens in services. The government also adopts more active attitude to the public and believes that citizens can become the valuable partners who can create the public value together, including the opportunities for citizens to join in the online discussion and fill in the interactive feedback forms.

5 Conclusions

The e-government is the way for the government to achieve the goal of serving the people better. At this point, Zhejiang government services portal, namely the online government service platform that covers the levels of province, city and county, provides the good reference for the practice of "Internet + Government Service". According to the analysis on the practice of "Internet + Government Service" in Zhejiang Province from the perspectives of external environment and internal services, it can be concluded that:

Firstly, the opening and sharing are the core properties for the era of internet and also the inevitable requirements to optimize the resources and information, build the data and service ecosystem and achieve the business collaboration. The government should get rid of "large and comprehensive" thoughts and adopt the top strategy to perform the overall planning for the open data and the construction of service platform, establish the standard system of service data, integrate and coordinate the data information among departments and thus achieve the opening, sharing and interconnection of data.

Secondly, the integration refers to "integrating everything" on the internet and achieves the application interconnection, data interconnection and service interconnection of online government services: for the foreground, change the progressive vertical service mode, build the flat service structure, get close to users to achieve the close encounter with citizens and reduce the cost for citizens to get the available services; for the background, reconstruct the process, simplify the links, integrate different departments, achieve the business coordination and enhance the supply quality and efficiency of public services.

Thirdly, the online services provide citizens with the all-day and non-stop services, as well as the friendly relationship with the public. The government can also provide the online services for more and more certificates (such as the birth, marriage and social security), which can save the time and money for citizens, have the significant impact on them and also contribute to the improved administrative efficiency of government. Despite the constant application of new technical means in the online services, the government should try harder to provide the online service in major fields related to the government services.

Fourthly, "Internet + Government Service" is the new ideas and methods of governance for the online transaction through the internet government service platform. Its nature is to follow the user habit and thinking mode of internet to reconstruct the mode and process, transform the instrumental

application of internet in the past into the deep integration of internet value and nature. The “human-oriented” ideas are adopted to rebuild the process and reconstruct the mode of traditional offline government services.

In a word, Chinese e-government has been gradually developed from the presence stage to the improvement stage, then the interaction stage and the stage of online transaction, and the integration stage now. But in the environment of new politics, economy, society and technology, Chinese government proposes the new development direction for the e-government at the integration stage, namely “Internet + Government Service”. “Internet + Government Service” is based on the spirit of internet connection, opening, sharing and cooperation to change the separated state of different government departments, achieve the data sharing and business collaboration and promote the overall service efficiency of government. In Zhejiang Province and even over the country, the local practice of “Internet + Government Service” is now being implemented orderly. Despite some achievements, there are certain problems that require the further theoretical learning and practical exploration, in order to provide the more complete, more convenient and more efficient government services for the society and the public in deed.

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Discussion on the Problems and Countermeasures of Bike-sharing Management from the Perspective of Smart City Construction —A Case Study of Chengdu

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Abstract The management of bike-sharing is essentially a microcosm of smart city construction. The article takes Chengdu, China as an example to discuss the problems and challenges of bike-sharing management from the view of smart city construction, which could be divided into two kinds: urgent problems needing a solution, such as problems of disorderly parking, arbitrary destruction, security risks, follow-up maintenance and scrapping, and so on; challenges and tests that will be encountered in the future, for example, management and guidance of the bike-sharing enterprises still need to be strengthened out, the syntax between the bike-sharing management and the sharing-integrity is not strong, the monitoring mechanism of bike-sharing still requires to be improved, the problems of bike-sharing management have become increasingly prominent and the modes of bike-sharing management and “Internet +” thinking is not effectively fit with each other. The article concludes that China is entering the era of smart management of bike-sharing and strives to explore the typical samples of smart city construction. Therefore, the author puts up with suggestions as follows: first, to make the top design perfect; second, to play the leading role of enterprises; third, to improve the government’s regulatory services; sixth, to increase the investment in science and technology and the construction of supporting intelligent facilities. In short, the bike-sharing management needs to base on the concept of sharing-integrity, plans scientifically and operate intelligently, so as to stimulates the vitality of urban development, making a strong impetus to the sustainable development of smart city construction.

Key words Smart city construction, Bike-sharing, Social governance, Sharing integrity

1 Background and connotation: Smart city construction and bike-sharing management

Nowadays, “smart city construction” has become a new idea or new thinking¹ to explore the sustainable development of the city worldwide. However, it has been relatively so macroscopic that the system is massive, lacking medium or micro carrier and supporting mechanism. The emergence of shared bicycles in recent years, as a typical “Internet +” type of innovative thing, not merely produces a new form of integration with the real economy, but also has solved “the last mile” problem, made up for the shortcomings of public transport and been in line with the concept of green development, which becomes the iconic thing or micro-carrier in the smart city construction. A shared bike seems like to be simple, though, gathered the technology and data of wisdom innovation, including the intelligent electronic locks which support the function of three-mode positioning, built-in Internet chips which can produce an average of 1TB travel data per day, and a data artificial intelligence platform which could manipulate the shared bicycles as the strong background support. As of the end of 2016, the total number of shared bike in China has reached 18.86 million.² According to the third-party data research institution BigData-Research: “In 2017, shared bike users will show a substantial increase, and by the

1 In abroad range, South Korea has “U-City plan”, and Singapore has “smart country plan”; while in domestic scope, there are “smart Shanghai”, “smart Shuangliu” and so on. After the financial crisis in 2008, IBM for the first time put forward the fresh idea of “smart planet”. In 2010, IBM formally put forward the vision of “smart city”, hoping to devote their own strength to the world and China’s urban development.

2 Wang Mu-tian. To See the Internet Innovation from the Bike-sharing. Learning Times, July 30, 2017.

end of the year the number will reach 50 million.”¹ As of March 2017, the investment of bike-sharing industry has reached 7 billion yuan, and there are more than 30 brands of shared bike in China.²

The author believes that the so-called smart city construction: bases on the Internet, Internet of Things, telecommunications networks, radio and television networks, wireless broadband network; relies on the combination of cloud computing; regards the highly integrated intelligence technology, intelligent industry high-end development, and efficient and convenient intelligent service as the significant characteristics. ³Moreover, its essence is by the use of advanced information technology and artificial intelligence, to achieve smart city management and operation, and then create a better life for the mankind, at the same time, promote the city’s harmonious, stable and sustainable development. The so-called bike-sharing is a time-sharing rental model, that is, enterprises provides bike-sharing services in the public service area, bus stations, communities, schools, subway stations, commercial areas, squares and other places, which is a new form of shared economy. In additions, the management of bike-sharing, mainly is the methods or means taken by the government, enterprises and citizens to solve the current and possible problems in the future for the bike-sharing.

Some scholars believe that the top design of smart city should include the system of smart city basic element, the system of the smart city operation and management, the system of smart city public service, the system of smart city technical support, the system of smart city assessment.⁴ The author believes that the management of shared bicycles embodies in the top design of the smart city, more exactly, in the system of smart city public service and the system of smart city technical support, because the public service, technical innovation and other characteristics of the shared bikes are in line with the requirements of the smart city construction, which shows the close connection between them.

In fact, the management of bike-sharing is essentially a microcosm of the smart city construction. The smart city construction must rely on technological innovation and the development of high-tech industries, and the continuous optimization and upgrading of bike-sharing also sounded the horn of the technological revolution; smart city construction advocates green development concept, and operation and management of bike-sharing just adheres to the goals and objectives of green development, cyclic development, low-carbon development ; the smart city construction provides equalized public services and regards solving the livelihood problems for people as the first meaning, on the other hand, the convenience, service, intelligence of bike-sharing management mode effectively contribute to the management and service functions of smart city construction.

2 The problems and challenges: The tests that bike-sharing management faces under the vision of smart city construction

In the process of smart city construction and bike-sharing development promoting each other, the management of bike-sharing are facing and will face many problems and challenges.

2.1 The emergent problems to be solved

2.1.1 The problem of disorderly parking

In the operation of bike-sharing, the biggest advantage is that you can stop and park casually, yet which without rules is easy to become disorderly parking. Disorderly parking of the shared bikes is not only easy to lead to the loss of pedestrians (especially the blind and children), hinder the green channel and other security risks, but also more obviously impact the city appearance. Behind the problem of disorderly parking, first is the personal qualities, which is the subjective factors; the second is the objective factors, such as the lack of designated parking sites in the city, the parking space is limited or

1 Luo Xiu. Innovative Research of the Business Model of the Bike-sharing Based on the “Internet +” thinking. National Circulation Economy, 2017, (11): 7-8

2 Zhang Zi-xuan, Wu Wei. The Status and Problems of the Bike-sharing and Its Countermeasures and Suggestions. Modern Business, 2017, (17): 162

3 Zhang Yong-min, Du Zhongchao. The Status Quo and Thinking of China’s Smart City Construction. China Information Industry, 2011, (02): 29

4 Lu Xiao-min, Chen Jie, Yuan Wei. Thoughts on the Top Design of the Smart City. E-government, 2014, (01): 17

so far away from the park sites that is not convenient to park and there are not parking sites in rural areas and other factors; third, there are problems in the management of enterprises, for some shared bicycle companies failed to take the initiative to assume the responsibility of social management of bike-sharing, which brings about disorderly parking, the fault car, zombie car failure to repair and clean up and affects the order of the city; the last is the problem of normative constraints, due to the lack of appropriate institutional constraints and supervision mechanisms, the behavior of disorderly parking is allowed.

Because some people disorderly park the shared bikes, many residential properties even alley have to share the ban on the shared bikes. However, these prohibitions have not been recognized and understood by the public, but have led to resentment and confusion. Therefore, it is very important to solve the problem of bike-sharing.

2.1.2 The problem of wanton destruction

The problem of wanton destruction of shared bikes is still very prominent. On February 20, 2017, in a ditch of a farmhouse in Sansheng Town, Chengdu, there are more than ten shared bikes which were burned; On February 28, 2017, Chengdu, the first case of theft of Mobike held a court session in People's court trial of Longquanyi District. The case involves a man named Lv who stole and destruct the shared bicycles, as a result, the final court sentenced to three months, and fined 1,000 yuan.

As of April 18, 2017, the Chengdu Municipal Public Security Bureau had received a total of 9 reports including intentional damage, theft of shared bikes and other illegal behaviors. 8 cases had been cracked, including 7 public security cases and 1 criminal case.¹ Another example, Mobike enterprise in Shanghai invested ten thousand shared bikes, in two months, there are 150 vehicles were destroyed.² Altering the two-dimensional code on the shared bikes, seat damage, unauthorized lock for personal use are more common problems.

2.1.3 The security problem

With the development of the bike-sharing, it gradually highlights a lot of security risks. First is the quality of the shared bikes. Due to the high failure rate of bicycles, even some failures cannot be easily distinguished out, many people think of checking the handbrakes, car chains and so on after the problems are caused. For individual citizens, once riding a hidden security risk bike, when the traffic safety problems happen, due to the difficulty of evidence investigation, it is difficult to divide the responsibility. Therefore, the purchase of accident insurance must draw lots of attention from the public. Second, security risks caused by inadequate infrastructure problems. In the systems of public transportation in many cities in China, most of the bike lanes must be shared with motor vehicles lanes or sidewalks, and even developed cities such as Shenzhen is also facing the problem of bicycle lane planning. With the increase in the number of bikes and cyclists, the imperfections of the supporting facilities can also lead to great hidden dangers.

2.1.4 The problem of subsequent maintenance and scrapping

At present, the main obstacles to the bike-sharing still includes disorderly management, no maintenance issues, and the old and bad car that cannot be recovered (because of high recovery costs), will seriously affect the image of the city and is not conducive to environmental protection and sustainable development. According to the China Bicycle Association official website reported that in 2016, nearly 20 brands released about 2 million shared bicycles, and the number is expected to reach 20 million in 2017. When these bicycles scrapped, nearly 300,000 tons of scrap metal will be produced, equivalent to the weight of five aircraft structural steel. Especially for the bike-sharing business, maintenance and operating costs are higher than the cost of re-placing the new car, and in the cycle of scrapping, the most valuable part is only the bicycle frame, so many recycling industry is not willing to recover them. Therefore, the scrapped shared bicycle to smooth out the market circulation, is very difficult.

1 Dai Lu-ling. Chengdu Introduced a Bicycle Management Program and Multi-sector Jointly Interpret the New Policy. Sichuan News Network, 2017-04-18

2 Cheng Cheng. Bike-sharing: The Joy and Pain of the Urban Movement. Environment, 2017, (03): 74

2.2 Challenges and tests in the future

For the bike-sharing, in addition to the current difficult problem, in the future it will face a lot of challenges and tests. The following questions worth thinking about:

2.2.1 The management mechanism of bike-sharing enterprises need to be straightened out

For bike-sharing enterprises, it is necessary to think about how to construct a scientific and rational management system in the future, including how to regulate the operating mechanism and quality control mechanism of bike-sharing, how to maintain the follow-up maintenance, retirement mechanism and how to establish good cooperation and coordination mechanisms with the government and other issues.

2.2.2 The syntax between the bike-sharing management and sharing integrity is not enough

Sharing integrity involves the integrity of government, enterprises, citizens and other subjects. In other words, only all the involved management subjects and service objects are included in the social integrity system, could the management of shared bicycles be effectively promoted. However, at present, the main body of the integrity system of these three aspects has not yet been established or improved, so the lack of constraints among them is not conducive to the effective management of bike-sharing.

2.2.3 The regulatory mechanism of bike-sharing needs to be improved

Although cities in China, including Shenzhen, Chengdu, Shanghai etc, have developed relevant approach or advice on the regulation of shared bikes, but overall, the bicycle monitoring mechanism has not yet been improved. The weak or unsupervised mode of operation of bike-sharing, makes it a failure to effectively protect the personal safety and vehicle safety, and many hidden dangers exist. On the one hand, some brands of shared bikes have a lot of security risks, which cannot effectively protect the personal safety and vehicle safety; on the other hand the deposit model of the bike-sharing becomes a new way of corporate finance, and it is estimated that the amount of deposit on some platforms may have reached 1 billion yuan magnitude¹, whose flow and security could lead to many risks. In the area of regulation, the responsibility of the government cannot be prevaricate, and the guiding role of the government must be played well. In addition, the supporting regulatory policy of the relevant government departments failed to follow up or introduced, which also has been obstacle in the development of the bike-sharing.

2.2.4 The issues of bike-sharing according to the law are becoming more and more prominent

Bike-sharing as a new thing, will also face the new issues in accordance with law. For example, the legal dispute caused by the theft and destruction of shared bikes; the issues of privacy disclosing of shared bicycle data platform; the large number of deposit in fact is the deposit of financial class attributes by the enterprises, so it needs to be verified whether legitimate, and how to regulate businesses' the use of the deposit, also needs the further regulation of laws and regulations.

2.2.5 The management of bike-sharing and the "Internet +" thinking failed to effectively fit in with each other

In the "Internet +" thinking table, bike-sharing makes an integration of innovation and forward-looking in the traditional cycling industry chain. Compared with the traditional bikes, the APP trading platform, GPS and Internet technology that shared bikes rely on are traditional competitiveness. Therefore, only by putting the management of bike-sharing into the process of smart city construction, could the latest vitality be injected. However, the currently domestic means or ways of bike-sharing are in short of "Internet +" thinking.

3 Cases and empirical study: taking Chengdu, China as an example to explore the mode of bike-sharing management

On July 7, 2017, the Ministry of Transportation Science Institute and other relevant agencies, jointly released "2017 Major Cities' in China Cycling Report (Q2)", that uses the city integrated riding

1 Cheng Cheng. Bike-sharing: The Joy and Pain of the Urban Movement. Environment, 2017, (03): 75

index as the indicators of a city's bike-sharing development levels, selects the indicators¹ of Shanghai, Beijing, Shenzhen, Chengdu and other 20 major cities' bike-sharing development level to make a horizontal comparison, which turns out that Chengdu has risen to the first place in the second quarter from the second place in the first quarter². In fact, in May 2017, Mobike already released the "shared bike spring travel report" and "Mobike riding index". The "report" shows that Chengdu's bike-sharing index ranks first, and Chengdu is the national per capita riding farthest city. Therefore, Chengdu's bike-sharing management model is impressively typical and representative.

In the following, the author will verify the Chengdu's mode of bike-sharing management from the system construction, platform operation, conference consultation and exploration of the pilot point.

3.1 System construction

In order to better regulate the management of cycling problems, Chengdu, takes different kinds of measures simultaneously, and firstly speed up the pace of system construction. On January 9, 2017 Chengdu Municipal Transportation Commission announced the "Chengdu on the encouragement of the development of bicycles to encourage the development of the views (draft)." On March 3, Chengdu City Commission, City Management Committee, City Public Security Bureau jointly issued the "Chengdu on the encouragement of the development of bicycles to encourage the implementation of the pilot" (hereinafter referred to as "trial opinion"). This is the firstly issued nationwide bike-sharing management basis. On April 17, Chengdu City Commission, Chengdu Public Security Bureau, Chengdu Urban Management Committee jointly issued the "On further strengthening the sharing of bicycle management program." It is reported that, in order to regulate the shared bikes, there are many supporting policies are being developed in Chengdu, such as "shared bicycle operation of enterprise service quality credit assessment management approach", that requires to carry out assessment from standardize the operation, safety, quality service, social responsibility, social evaluation.

In fact, Chengdu's top design of bike-sharing system construction, closely integrate with the smart city construction. For example, the "trial opinion" proposed to adhere to technological innovation, requiring bike-sharing enterprises should rely on the modern information technology innovation in vehicle facilities and equipment management, so as to enhance the level of shared bike services and management. On the other hand, Chengdu is revising and perfecting the "central city non-motor vehicle parking planning and implementation plan", proposed to speed up the central city's scientific planning of non-motor vehicle parking point to ensure the full coverage of the central city of non-motor vehicle parking point, to facilitate public parking, and to promote the seamless docking and healthy development between the city's slow public transport system and rapid public transport system.

3.2 Platform operation

It is reported that, in order to build a good bike-sharing industry monitoring platform, on the one hand, Chengdu is accelerating the start of "Chengdu shared bicycle industry monitoring platform" construction, which could assess to operating enterprises, vehicle information, operating data and user credit and other information, so as to accomplish real-time data sharing, and provide the data support for strengthening the bike-sharing industry regulation and improvement of the slow system planning construction. On the other hand, Chengdu is developing the "shared bicycle operating enterprises service quality credit management approach" to further promote the construction of bicycle monitoring platform, which not only regulate the business behavior of enterprises, but also establish credibility

1 The indexes adopted by "2017 Major Cities' in China Cycling Report (Q2)" include the level of bike usage (20 points), the level of energy saving (20 points), the level of parking facilities (20 points), the level of service environment (15 points), the level of energy consumption (20 points), The level of social civilization (15 points) and the level of health contribution (10 points). The "report" comprehensively evaluate the situation from these 6 aspects., The average score of 20 major cities by horizontal comparative analysis is 62.2 points. And Chengdu scored 84 points, ranking the first place. Tian Cheng-chen, Li Xia. Powerful! The Development of Chengdu's Shared Bicycle Level Leapt to the Top of the Country, and the Rate of Complaints of Destruction is the Lowest! Chengdu Daily, http://www.sohu.com/a/156550052_355475 Sohu Reprinted, 2017-07-12

2 Shen Juan-zi. The Development of Shared Bicycles in Chengdu Ranks First in the Country and Chengdu is Planning to Build the Shared Bicycle Electronic Fence. China Civilization Network, http://www.Mingwen.cn/dfcz/sc/201707/t20170714_4339456.shtml, 2017-07-13

system for the users. Disobeying the traffic light and other misbehavior will be recorded in the platform, in order to create a favorable environment for development for the bike-sharing.

3.3 Conference consultation

In the newly issued “work plan on further strengthening the sharing of bicycle management”, the “3 + 7 + N” meeting consultation system was established in Chengdu, which was led by the Chengdu Municipal Commission. The main participants include the municipal commission, the public security bureau, city management committee, five districts and high-tech district, Tianfu new district and bike-sharing enterprises, and NPC deputies, CPPCC members, democratic parties and experts and scholars and other broad participation will be actively invited. The meeting consultation will be held every half a month. This “3 + 7 + N” conference consultation system has changed the past trouble of “alone” that can only solve a single part of the problem, into the synergies of multiple departments or two levels of municipal and district, which could timely and effectively solve the bike-sharing management problem.

3.4 Exploration of the pilot

From the beginning of 2017, Chengdu has begun to actively explore the government-led unified standard electronic fence pilot construction, which means that in the future the shared bikes may be parked in a fixed position in Chengdu. Specific operation mode embodied as follows: First, the “electronic fence” acquires the real-time data from the shared bikes with intelligent equipment, then sends them to the unified electronic management platform. Second, the “electronic fence” via the induction device capture the data of the shared bikes in the sensor area, which could make the error controlled in the sub-meter level. Third, the “electronic fence” can monitor the total number of bicycles in the region, standard parking and other data and understand the shared bikes enterprises’ offline operation of investment, standardize the situation, so as to contribute to helping the relevant departments’ reasonable control and flexible scheduling.

Through the electronic fence pilot construction, on the one hand, “electronic fence” will set up a unified platform, and “fence” can be compatible with different enterprises’ bikes, through data sharing controlling the total amount of bicycle delivery. On the other hand, the electronic fence pilot construction is an effective manifestation of the smart city construction, which not only need urban management, traffic control, territorial street, community and other parties to support and coordination, but also a lot number of bike-sharing companies involved to complete pre-technical docking, through the intelligent operation to achieve effective regulation of shared bikes delivery and parking issues.

3.5 The summary of effects

Through the implementation of the above measures, Chengdu’s intelligent traffic management has been effectively realized. First of all, the most obvious effect is the decline in congestion index. According to the Chengdu Municipal Public Security Bureau news, since March, 2017 Chengdu’s congestion index every month, has declined monthly, and has not been effected by car growth and subway construction. Second, the number of people taking public transport in Chengdu is on the rise. For example, though the Chengdu subway is in the absence of the increase in the number of kilometers, the daily number of passengers is rising, and the average number of people reached more than 200 million times. ¹Third, the lowest rate of bike damage complaints. Still according to the “2017 major cities in China riding research report (Q2)”, Chengdu holds the lowest bicycle damage rate of complaints among the cities, which is inseparable to the implementation of Chengdu “on the encouragement of the development of bicycles to encourage the development of the views”. The “Opinions” pointed out that the public security organs should increase the intensity of law enforcement, and deliberate destruction, theft and other acts of bribery should be investigated and dealt with according to law. If constitute a crime, criminal responsibility must be held and promptly published to the community, in order to create a good rule of law for the bike-sharing development.

¹ Li Huang. Which City Holds the Lowest Rate of Complaints of Shared Bikes in China? Daily Economic News, 2017-07-14

4 Countermeasures and predictions: the interaction of smart city construction and bike-sharing management

If 2016 is the flourishing age for bike-sharing, then from 2017 onwards, we gradually have entered into the era of management of bike-sharing. In the perspective of smart city construction, the model of bike-sharing management should advance further. To this end, on the basis of perfect top-level design, for enterprises, government, citizens, the author suggests as follows:

4.1 To make the top design perfect

Top-level design can be either macroscopic or microscopic. Macro design includes:

First, put the bike-sharing management directly into the wisdom of the city public service and smart traffic sequence, and the shared bicycle management system into the smart city construction planning, as to achieve the effective syntaxis between the shared resources and information. For example, the Shenzhen Municipal Transportation Commission made a clear planning of 2017 bike lane construction, and strives to complete the construction and upgrading of 100 km bike lane by the end of 2017. ¹Another example, on the basis of intellectual property and data assets and their industrial benefits of the bike-sharing enterprises, one is to achieve the seamless docking between the shared bicycle data and the data platform of the government departments, the second is to make regulatory list in the data trading, data use and other aspects.

Second, put the bike-sharing management into the track of rule of law, because only by implementing the spirit of the rule of law, contract law and the concept of fair competition, could the bike-sharing management develop in a healthy and orderly way. It is suggested that the central or local governments can support the development of shared bicycles in a policy-oriented manner. It is necessary not only to introduce relevant systems or opinions in time, but also to promote the construction of smart city and the bike-sharing management to the level of laws and regulations. For example, limit the access threshold of the shared bike enterprises from the legal and regulatory level, then gradually increase the access threshold, and encourage the enterprises to consciously accept the supervision from the traffic administrative departments located in the places that their service agencies are established in.

Third, integrate the bike-sharing management and scientific elements closely to develop a globally common bike-sharing management model. Specifically: First, the bike-sharing management should continue to “innovate and upgrade”, that is, by use of the large data, satellite positioning system, mobile payment and many other scientific and technological achievements, plan the urban non-motor vehicle lane, road network scientifically, so as to build a number of sample cities that have a fine operation of smart shared bikes; the second is by the use of the Internet and large data to make bike-sharing management intelligent, technical, and can be timely corrected, optimized and upgraded.

Micro-design includes: first of all, it is necessary to speed up the planning of shared bikes parking point, the full completion of parking point planning of important sections, the main business district and intensive office areas; second, investigate thoroughly the situation of shortage of non-motor vehicle parking points in subway, bus hub station, as to determine the supplementary plan and accelerate its implementation; It is necessary to actively explore the government-led unified standard electronic fence pilot construction in Chengdu and other cities, and strive to achieve the smart function of the bike parking and management.

4.2 To play the leading role of enterprises

Enterprises should not only bear the social responsibility in the bike-sharing management, but also should take the initiative and play the leading role in the smart city construction.

First, enterprises should not only optimize and upgrade the operation technology of bike-sharing, ensure the security of Internet third party payment platform funds settlement, but also according to the law regulate their own business behavior, protect the privacy of real-name registered users.

Second, the enterprise should ensure the standard quality of shared bicycles. The technical performance of the shared bicycle should meet the national and industry standards, and enterprises

¹ Li Kun-hao. Research on the Countermeasures of Bike-sharing Development Based on the Perspective of Shared Economy. City, 2017, (03): 69

should ensure the safety and reliability of cycling, body design simple and beautiful, encourage the implementation of domestic satellite navigation and intelligent communication controlling lock.

Third, enterprises should regulate their own business behavior. For example, in the aspect of privacy protection, enterprises should further protect the privacy of real-name registered users, not free to disclose their information; enterprises should strengthen the accuracy of the third-party payment platform capital settlement to ensure the safety of capital settlement; enterprises should set up professional operation and maintenance teams to strengthen the maintenance and recycling.

Fourth, enterprises should use electronic information means for fine management. First, enterprises should also timely and actively put the information of shared bicycle use and credit evaluation to government designated platform, in order to achieve the effective connection between the business and government information management platform. Second, according to the large data analysis, adjust the number of releasing and parking of the shared bike, the parking areas, the number of scrapped, the number of operation and maintenance people in timely manner, to ensure the intelligent of the bike-sharing management.

4.3 To improve the government's regulatory services

The purpose of Strengthening the government's ability to monitor and serve the bike-sharing is to further regulate the healthy development of shared bicycles. To this end, the author suggests:

First, through the construction of information technology regulatory platform, the government should strengthen the monitoring and services of the operation of shared bicycles, including the disorderly parking, environmental remediation supervision and management, and enhance the publicity of credit vehicles and illegal law enforcement efforts.

Second, to achieve the balances of regulator divisions. There are lots of departments to manage the bike-sharing, and different departments may be crossed in the powers and responsibilities. Therefore, before the introduction of the policy, it is suggested that the responsibility of the relevant departments should be cleared, as to promote the various departments in the implementation of the supervision and management of bike-sharing operating enterprises to play their roles well in their respective positions, and achieve the balances and effective supervision of regulator divisions, and the service capacity would be improved.

4.4 To enhance the public's moral literacy

The public not only have the right to fully enjoy the fruits of smart city construction, but also bear the duty to effectively follow the rules of it. In the management of bike-sharing, it is suggested to both from the moral aspect to encourage and guide all the people, and in the laws and regulations to make mandatory provisions, and stressed the efforts to increase penalties, thus actively guiding the public to ride with civilization.

First of all, persuade the public emotionally. Strengthen education and training efforts of community to guide the public to use the shared bikes reasonably, to prohibit intentional damage, disorderly parking and other bad behavior.

Secondly, use the law to regulate people. With the "seven law-into"¹ planning steps and propaganda efforts, the public should not only comply with the "People's Republic of China Road Traffic Safety Law" and other basic road regulations, but also be in accordance with the regional non-motor vehicle regulations restraint.

Thirdly, restrict the public with the responsibility. First, build a shared bicycle user credit system to promote the convergence of the bike-sharing enterprises' users credit system and the governments' citizen credit system, to dynamically regulate the user's credit, and to implement the responsibility. Second, increase the intensity of law enforcement. In Shenzhen, Chengdu and other places, after the relevant advice and approach on the bike-sharing management began to implement, the illegal behaviors should bear legal responsibility, and give feedback to the public timely.

4.5 To improve the integrity of the system by multi-subjects' interaction

In the multi-objective interactive consultation, it is recommended to learn the practice of Chengdu. It is advisable to promote the work of the government, enterprises and users to make concerted efforts

¹ Seven law-into: the law into the organs, into the schools, into the countryside, into the communities, into the temples, into the enterprises, into the units

of orderly parking management, play the role of the “3 + 7 + N” regular meeting consultation system and deal with the problems of honesty in the development of bike-sharing in a timely manner; it is imperative to issue the credit assessment methods of shared bicycle service standards and service quality, start the construction of shared bicycle monitoring platform, improve the integrity of the system, so as to create a favorable environment for the development of bike-sharing.

4.6 To increase the investment in science and technology and the construction of supporting intelligent facilities.

First, to further increase investment in science and technology, and constantly use and enhance scientific and technological means to further enhance the convenience and intelligence of bike-sharing management. Through the maintenance and optimization of the Internet, intelligent mobile client, will the scattered resources of bike-sharing resources and demand side match accurately, in order to avoid idle resources and meet the huge demands of the market. Second, to continuously introduce and cultivate the high-tech talents and the develop the specialized intelligent software, as to achieve the accurate positioning and effective services of shared bicycles. Third, to adhere to the “Internet +” thinking, promote the construction of the supporting intelligent facilities and regularly optimize the background management system. Such as increasing the pilot efforts of the bike-sharing electronic fence, scientifically planning the electronic fence, through the combination of satellite positioning and electronic fence technology to provide new ideas for the effective management of shared bikes’ parking problems.

5 Conclusions

China is stepping into the era of smart management of bike-sharing and building a typical sample of global smart city construction. Whether it is with the “Internet +” thinking, big data or artificial intelligent platform, all of them are merely the means or manner. While in fact, the core of smart city construction is the integration of resources, that is, to effectively play the subjective initiative of people and mobilize the enthusiasm of the main parties. Meanwhile, the healthy development of bike-sharing industry also needs to integrate the government, business enterprises and the public and other resources, make the market demand-oriented, rely on technological innovation, establish the scientific and effective information sharing mechanism, build a credit system, and stimulate the vitality of urban development, which would effectively promote the effective management of bike-sharing and the sustainable development of smart city construction.

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A Study on the Application System of Intelligent Community Service from Sino-American Comparative Perspective *

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Abstract With the development strategy of intelligent cities included in the “National New Urbanization Planning (2014-2020)”, the scale of intelligent communities which has been taken as the pilot and applicable hot spot areas currently promoting intelligent cities is constantly expanding. The practice of China’s intelligent communities is facing new challenges with increasingly evident abuses. Based on the comparative analysis of the application system of intelligent community service in China and the United States, this paper puts forward some suggestions on the development of the application system of intelligent community service in China.

Key words Intelligent community, Service application system, Comparison between China and the United States

1 Introduction

During the period of 13th Five-Year, our country proposes that the construction of the modern information infrastructure should be strengthened, promoting the development of the big data and substance internet, and the construction of intelligent cities (or communities) at a large scale. These are important ways to promote new-type urbanization. Intelligent communities are rapidly built in many cities of the United States, making significant breakthroughs in many application fields with a rich practical experience about intelligent community management and services. Stones from other hills may serve to polish the jade of this one. Therefore, this paper puts forward some suggestions on the development of application system of intelligent community service in China through the comparative analysis of that in China and the United States.

2 Analysis of the application system of existing intelligent community service in China

2.1 Sustained and rapid development of network infrastructure

In the context of a-new-height development of information technology as those substance internet, next-generation Internet as well as cloud computing, the alleged intelligent community as “the last mile” in an intelligent city emerges. The initiation and application of many intelligent projects such as intelligent transportation, intelligent health and care, intelligent campus, intelligent security and intelligent property lay a practical foundation for the innovation of the intelligent community service. The construction of the application system of the intelligent community is based on the urban informatization. The application management and service platform of intelligent community is the aggregation of series of information technology (Wu, 2013^[1]). Therefore, the information level of the community indicates the level of the development of the application system of the intelligent community.

The tri-networks integration is the integration of the telecommunications networks, cable TV networks and the internet, which plays a crucial role in constructing the network infrastructure of intelligent community. Take Beijing (where there has most DTV users throughout the country) and Shanghai as examples. According to data shown in Table 1 and Table 2, the capability of offering the DTV service in some big cities has experienced a prominent improvement. Three cities including Beijing, Shanghai, and Guangzhou continuously integrate and optimize resources, perfect the information network infrastructure. These cities make great effort to integrate different types of

*This article is financed by National Social Science Fund Project titled “Research on Personal Privacy Protection in Big Data Age” in China (Project No.: 14BXW031).

accessing ways, such as cable broadband, wireless 3G, wireless 4G, WIFI, WLAN, offer some application services like tri-networks and substance internet, and enhance the level of their informatization. Additionally, there exists a big difference among cities in terms of the level of network infrastructure due to the different economic background. Therefore, by and large the construction of network infrastructure in China is still at the early stage, and there is a long way to go.

Table 1 Completion of tri-networks integration in Beijing and Shanghai

	Users of cable digital TV (ten thousand)	Percentage	Users of super clear digital TV (ten thousand)	Percentage
Beijing	560	97.4	460	80
Shanghai	662	92.2	243	33.8

Data source: “Beijing Informatization Yearbook (2016)”^[2], “2015 Shanghai National Economic and Social Informatization Statistics Bulletin”^[3]

(Note: the figure “accounted for” is based on the total number of cable TV users)

Table 2 Completion of network infrastructure construction in Beijing, Shanghai and Guangzhou

	Capability of family broadband average bandwidth access (Unit:Mbps)	Fiber to the home (Coverage%)	Communication base station (4G base station) (Unit: Ten thousand)	Internet export bandwidth (Unit: Gbps)
Beijing	/	/	4.1	5386.2
Shanghai	35.7	95	2.3	984.4
Guangzhou	35	62.3	6.7	2000

Data source: “Beijing Informatization Yearbook (2016)”, “2015 Shanghai National Economic and Social Informatization Statistics Bulletin”,

“The Thirteenth Five-year Development Plan of Guangzhou Informatization Development (2016 - 2020)”^[4]

It is suggested by some scholars that the intelligent community will be not only the future of the development of communities but also the goal of network operators in the tri-networks integration for improving their core competitiveness (Zhang, 2014^[5]). In other words, the rapid development of the network information technology is the necessary prerequisite of promoting the intelligent communities nationwide. Therefore, in order to deal with the problem that the network infrastructure is constructed at different levels in different areas, National Development and Reform Commission of the People’s Republic of China and Ministry of Industry and Information Technology formulated a plan called *Three Year Action Plan for Big Projects of Information Infrastructure Construction*^[6], which can help to enforce the strategy called Broadband China and enhance the level of information infrastructure. This can lay a solid foundation for promoting intelligent communities nationwide.

2.2 Perfecting the application system of management and services

Intelligent community is a new kind of community with new mode of management which makes good use of the communication technology such as the substance internet, sensor networks to integrate the systems of security and property, aiming to provide residents with a safe, cozy, convenient and modern living environment. The application system of intelligent communities employs cloud service to build intelligent communities and offer services, which is based on the construction of terminal induction layer and internet layer, and is also the interaction among intelligent transportation, intelligent health and care, intelligent education, intelligent property, and is the integration about public resources and other resources from the society, enterprises and individuals (see Figure 1).

For deploying the information benefiting projects, enhancing the ability of offering information services in the field of people’s livelihood, increasing the inclusive level of the equalization of public services in intelligent communities’ construction, China is devoted to increasing the standard at different aspects including the plan of intelligent communities, business platforms, engineering design of application system, and the enforcement of system engineering. The general system architecture of intelligent communities in the *Guidelines for the Planning of Intelligent Cities and Communities*^[7] is the basis of forming index system and series standard of intelligent communities, which is beneficial to

guide the construction of intelligent communities and support the planning of intelligent communities' construction. It means that people with their associated elements can be managed and served in an unified public information platform. However, the traditional working mode is that different elements were managed in different platforms and due to its long history, a series of industrial standards have been formed. By comparison, the construction of intelligent communities is at an early stage, different industries and enterprises may have different understanding of intelligent communities and no industrial standards has been shaped. This leads to the fact that intelligent communities are constructed randomly in different areas and the difference of intelligent communities among these areas is huge. Besides, the construction of intelligent communities lack an evaluation system in practice, which fails to build a well-recognized and efficient system for the intelligent communities' management and services (Yu, 2011^[8]).

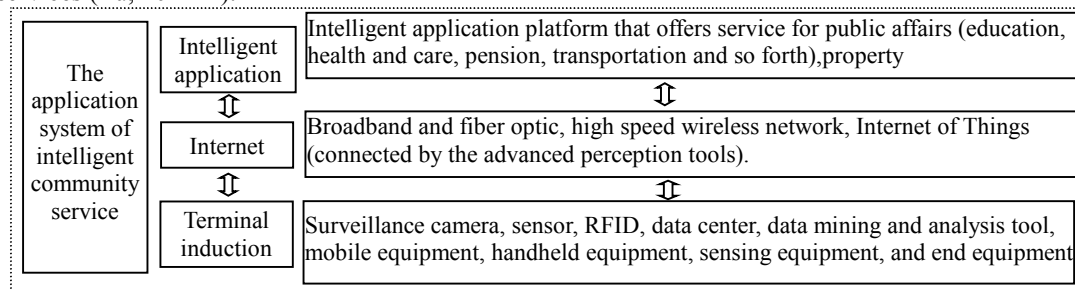


Figure 1 General architecture of application system of intelligent community service

2.3 Increasingly to open information sharing and enhance the willingness of citizens' involvement

As it is mentioned above, information construction is a critical approach to promote the management and services of intelligent communities and information sharing is significant in the construction of application system of intelligent communities. However, the routine practice of Information Resources Department formed for a long history results in the problem that every department monopolizes the information resources collected by themselves and it impedes the information sharing.

Due to some historical reasons, citizens in China lack the awareness of self-management and self-service, which is one of the main reasons why citizens need a powerful government to some extent. On the contrary, a powerful government may neglect the social power and shrink the room for self-growth of communities. In the process of promoting intelligent communities in China, citizens currently have some progress in participating in community management and services. However, there are some problems. For one thing, local governments fail to devolve power to communities, which deprives community residents' rights of involvement. For another, community residents lack the awareness and ability of applying information technology, which hinders the improvement of the quality of goods and services provided by intelligent communities.

To perfect the management and services of intelligent communities, the core problem that should be addressed is to reflect the spirit of social cooperation and public involvement effectively. As the leader of the construction of intelligent communities, governments should make good use of the scattered social management resources and integrate these resources in an effective way. Additionally, governments should motivate different kinds of power to have some interaction and cooperation and build an application system of multi-direction and three-dimension to meet the multilevel need of community residents. With the reform of political system being enforced much further, government is devoted to exploring a new approach, trying to decentralize the power by purchasing the services, building an effective and harmonious public-private partnerships, and introducing social resources to community construction, which aims to maximize the public interest of communities, decrease the fiscal pressure of governments, improve the overall performance of management and services of intelligent communities.

3 The characteristics of the service application system in US intelligent communities

3.1 Broadband key and city informatization

Intelligent transportation systems of real-time control, intelligent grid technology applications and so on are dependent on the field of broadband network access and the expansion of the application scope. To this end, at the strategic level, the United States took the lead in presenting the National Information Infrastructure (NII) and the Global Information Infrastructure Program (GII), which basically developed “broadband technology” as the goal of developing and building intelligent cities. In 2009, the US federal government invested \$ 4.7 billion to implement the Broadband Technology Opportunities Program, which was used to achieve national broadband Internet accessing and to encourage and support the provision of basic Internet facilities in community agencies across the country with input of funds to ensure that the vast majority of people are able to access and use Internet facilities to provide broadband technology opportunities for all citizens in both coverage and targeted groups. The Ministry of Agriculture has implemented a \$ 4 billion “Rural Public Service Program” to enhance rural broadband access.

Today, through the corresponding broadband initiative, the United States provides technical assistance to the community and conducts relevant academic seminars nationwide. At the same time, through the publication of various materials, it helps the community have a better understanding of broadband, including a variety of financing guidelines and related investment of Public-Private Partnerships. For example, more than 20 cities in the United States—university cooperative organizations initiate a total investment of one million Metro Lab network, funded by John and Catherine MacArthur Foundation, to take advantage of efficient professional resources solving difficulties and challenges between various cities and regions. Based on the platform provided by the network, the emerging city-university cooperative organizations can share successful projects and coordinate their research work. Metro Lab Network members have jointly decided to launch more than 60 projects in 2016, which will increase the efficiency and effectiveness of cities, community infrastructure and services while increasing the productivity and competitiveness of regional economic bodies (Li, 2016^[9]).

3.2 A mode can be copied and expanded

The Intelligent Internet Community Framework, published by the NITRD program on 25 November 2015, is dedicated to coordinating network information technology research and development respectively exploiting the advantages for many US federal agencies, thus avoiding duplication of effort and improving the interoperability of R & D products, thereby lead basic research and promote the transformation of research results into expandable and reproducible intelligent community solutions. The framework proposes a common goal for the Ministry of Energy, Ministry of Communications, the National Institute of Food and Agriculture, the National Institutes of Health, the National Institute of Standards and Technology, the National Science Foundation, the National Aeronautics and Space Administration and other participating agencies in the technology research and development, deployment of new technology drivers and the whole process of infrastructure facilities, to create the next generation functions of intelligent community through promoting and using Cyber Physical Systems, intelligent systems, social technology systems and other emerging technologies, processes and policies; through the development of data analysis technology to enhance the quality of life, health and safety of the population; to better accomplish the objectives and tasks through the establishment and expansion of resources in specific areas or shared areas by introducing intelligent interconnected communities; Through promoting intelligent community solutions of high interoperability and high degree of standardization to reduce deployment costs and implement a modular architecture to meet the needs of the community. The deployment of technology for intelligent community with guidance and scale will be eventually formed, showing its replication, feasibility, sustainability and scalability of the activity results. For example, the National Institute of Standards and Technology (NIST) has launched the Global Urban Team Challenge (GUTC) to encourage synergistic development and development of evaluation criteria for isolated and custom dilemmas for current US intelligent community projects^[10]. This action will help the community to benefit from the successful experience of others in order to improve construction efficiency and reduce construction

costs.

3.3 Strong sense of cooperation

The basic mode of the American intelligent community operation is government-led, community managed, enterprises, and non-profit departments and residents involved in the introduction of government guidance, community designated construction program and construction scheme, that is, community planning is usually constructed by the state or provincial government Implementation, community implementation. In the process of building an open data platform in New York City (see Figure 2), the government plays a role as building leader and maintainer, creating and digging high-tech talents and enterprise exploitation and data research and development by a large number of individuals, innovating cutting-edge technology and applications, so that large-scale public data services people’s lives and promotes the capabilities of intelligent community service in depth^[11].

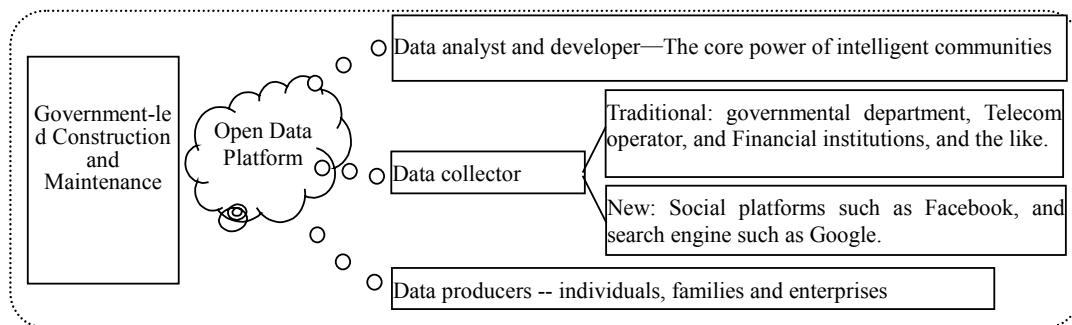


Figure 2 Open data platform

Lindskog(2004^[12]) argues in *the Projects of Intelligent Community* that because the building of an intelligent community is based on the characteristics of the community itself and the different interests of the demands, different countries may use different ways to build an intelligent community. But the establishment of all intelligent communities have a common determinant, that is, the construction of a successful intelligent community is the product of joint efforts of the enterprise, education, government and individual citizens. Common participation makes cooperation possible, so that the individual factor can be improved more quickly and become a key group that participates, knows, being well trained and contributes to the construction of intelligent communities. The United States in addition focusing on mobilizing the participation of various social forces, actively expands cooperation with foreign countries, as the two governments of the United States and India have established a dialogue platform of city trade and investment, the enterprises for both countries deepening the degree of commitment and cooperation.

3.4 Community’s green ecology and sustainable development

The US government has long realized that the energy costs saved by economic reform and reduction of environmental pollution have contributed to the promotion of urban economic development and can improve the lives of the population. In order to achieve the green sustainable development goals of cities, the government has carried out a series of new initiatives such as intelligent public transport, intelligent city buildings, networked area energy use, and development of CHP systems. It is worth mentioning that the city of Columbus, after the basic completion of basic construction of intelligent city, in 2010, it used up to \$ 7.4 million energy efficiency subsidies to start a series of transformation easing the energy waste of buildings. With a long-term cooperation of government, enterprises and high research institutes, green energy projects quickly enter the industrial channel, effectively reducing the pollution of the environment and realizing the repeated recycling of renewable resources for sustainable development of the intelligent city of Columbus.

4 Comparative analysis of application system of intelligent community services between China and the United States

Through comparative analysis of application system of intelligent community services between

China and the United States, we find that although the two countries have different national conditions, since both countries' intelligent communities are carried out in the context of urbanization, there are similarities: they are inseparable from governments' guidance, and according to the basic situation of the community, application system construction for intelligent community and the process its carrying out are basically similar. However, there reflects more differences: the starting point of the construction, broadband and urban informatization base, top-down and bottom-up mode of operation, the strong sense of social cooperation of different social forces and so on. It show mainly as follows:

4.1 The starting point of application system of intelligent community services between China and the United States is different

The United States is problem-oriented, because of the existing crisis and demand for reform; and China is to see the development potential of intelligent community. However, there are also views that the United States intelligent community is the inevitable result of natural products and the gradual integration between industries under the high degree of development of the tertiary industry in the military, economy, science and technology, finance, film and television, restaurants, services; while in our country, all developments of the tertiary industry in military, economy, science and technology, finance, film and television, restaurants, services are weaker than the United States, but China's anti-corruption storm, as well as the aging of the domestic population, China's industrial layout and structural adjustment and other national conditions make China should speed up the construction of intelligent community. Here, the author is not set, and would like to consider the problems needed to be faced in the exploration of the construction of application system of intelligent community services in our country.

4.2 The development level of broadband and other network infrastructure in China and the United States is different

The construction of information technology in the United States started early, fast, based on the national strategic vision of the grand goal of broadband network construction, and through increased investment and multi-party cooperation to continuously expand the breadth and depth of national informatization. China's urban information construction started late comparatively in recent years, and the pace of development is accelerating with advancing triple play, but there is a big gap in the development of various regions. So on the whole, China's urban community information development is far behind than the United States.

4.3 There's a difference in the main bodies of construction and the modes of operation

There are two main modes of promoting the construction of application system of intelligent community service: government-led and social-oriented. Government-led model is mainly funded by the government and the management is from the inside out. Social-oriented model is to rely on social capital, extensive cooperation and participation, with the help of powerful commercial companies, research institutions and think tanks, to develop detailed strategic planning and top-level design, promoting digital integration. Government does not invest or invest less, a model from outside to inside. Both of which have respective advantages. The former one can provide more efficient infrastructure and new services for the urban public sectors and development agencies, while the latter one, which is brainstorming, can solve the different problem of financing.

When the United States launched building of intelligent communities, it clearly realized the importance of local autonomy and bottom-up implementation(Lindskog, 2004^[12]). Therefore, the construction of US application system of intelligent community service was enterprise-led, and at the same time, the US government also recognized the importance for the government investment as the main body of infrastructure construction. Americans believe that everyone is the technology maker as well as a consumer. Technology, production and cost reduction can bridge the gap between wealth and knowledge. The transparent and orderly operation of all the work in the intelligent community makes the mentor of community building collect the wisdom of all in a more efficient way and form an inclusive decision. In general, the operation mode of US intelligent community is bottom-up, with government guide, by mobilizing a variety of social forces to build together. In our country, the top-down government-dominated model is clearly more conspicuous, such as the formation of those successful projects as systematic or characteristic Haishu intelligent community, Tsinghua Park street

intelligent community, both strongly advocated and implemented with promotion by the government. Therefore, a successful intelligent community can be run like a bottom-up model in the United States, or a top-down model like our country, but it is inseparable from the active participation of various sectors of the community, businesses and residents.

4.4 There is a difference in the strong sense of cooperation between various departments and organizations

The US intelligent community emphasizes the importance of cooperation—involving the parties included institutions, private agencies, voluntary organizations, schools, residents, and the like. In the eyes of Americans, the establishment of application system of intelligent community service is based on a prerequisite as integrated circuit computer infrastructure. Without actual participation of governments, private institutions, spontaneous organizations, businesses, schools and residents with voluntary cooperation, there is no intelligent community (Lindskog, 2004^[12]). Therefore, the United States in the Initiative of White House Intelligent City “stressed the creation of applicable test platform of substance internet, exploring new cross-sector collaboration model; municipal government and private technology organizations cooperate with implementation of cross-community cooperation, in particular, expanding and copying feasible programs. In contrast, China’s intellectual community construction is mainly independent with each other, lacking horizontal communication. Isolated information and redundant construction is comparatively serious, not conducive to mobilize the initiative of residents, businesses, non-profit organizations to participate in, thus affecting the efficient and sustainable construction of application service of intelligent community .

5 Path analysis for perfection of application system of our country’s intelligent community service

We can not copy the American model because of the differences between the starting point, the construction foundation, the construction subjects and the mode of operation of application system of intelligent community service in China and the United States, but we can provide new research perspective promoting the intelligent community for our country., help us solve the dilemma. Through the comparison and analysis of the construction situation between China and the United States, the following suggestions are put forward according to the existing problems.

5.1 Make top-level design well and strengthen the construction of information and communication infrastructure

The widespread use of high-tech, especially modern information technology, is an important feature of the intelligent community. Through perception technology, make a sense of and interconnect the information of people and substances in a high degree, integrate a variety of information and elements into the intelligent platform. And then with the intelligent platform co-configuration, establish the pan-information source of intelligent community, so that to realize the fact that all the people and substances in the intelligent community can be analyzed, perceived and interconnected, greatly improving the community’s management and service delivery capabilities. The realization of all this depends on a strong, well-planned information and communication infrastructure. Therefore, China should be having, in the strategic level, the implementation of unified planning of community informatization, strengthening the communication and collaboration between departments and organizations to break up the situation of information isolated island; at the operational level, China should improve the supporting information laws and informatization regulations as soon as possible, fully considering reconfigurability and scalability characteristics of the information service platform. On the basis of following the overall planning of honest informatization, the intelligent community can therefore promote information sharing and business collaboration to adjust the relevant resource allocation according to the actual needs of the community.

5.2 To solve the practical problems in target facing the community

China’s construction of the application system of some intelligent community service cited foreign planning model, lacking the consideration of their own actual situation. It pays attention to hardware investment with less in-depth analysis of the problems facing the community. The objective location is not carried out from the actual needs of residents, and community humanistic construction

is inadequate. Therefore, it is recommended to draw lessons from the experience of the United States building the application system of intelligent community service, pay attention to the integration of community stakeholders, the public, academia, industries and those other benefits related. Taking into account the standardization of programs and individual needs, jointly design solutions to avoid a simple copy of the standardization program as to such environmental protection, information security and other issues concerned by those stakeholders. Thereafter, the plight of the community faced in the course of construction of intelligent community service will be ensured to solve.

5.3 To strengthen local autonomous participation with government decentralization

Compared with the United States, China's construction of application system of intelligent community service depends too much on government in funds and many other aspects, greatly subject to administrative interference. Generally speaking, the neighborhood committee is the legal body of community management and service, and also the basis of intelligent community management and service construction. In the course of the construction of application system of intelligent community service, the neighborhood committee is the platform and the entrance of the service provider to implement the one-stop service. It should play the service function of the main body, fully mobilizing the resources of the parties to participate in the construction of the intelligent community. At this stage, however, government departments and neighborhood offices are still in an absolute core role under the control of the vast majority of community resources and inadequate participation of other participants. If we can not face up to this reality, not concerned about the cultivation of community residents' sense of autonomy as well as the creation of good conditions for self-development to communities, then our community is difficult to be mature, independent and autonomous like the US. Therefore, how to carry out the process of the construction of the application system of intelligent community service and promote the process of community autonomy, completing the transformation from government service to self-service mode as soon as possible, is the turning point and effort momentum for the next period of time in China's service construction of intelligent community.

6 Conclusions

The construction of the application system of intelligent community service in China can lay emphasis on improving the top-level design. Moreover, with the government decentralization and the local autonomous participation, some construction proposals can be put forward aiming to cope with problems that different communities face and satisfy their individual needs. Therefore, it can not only improve the integrity of the construction of the application system of intelligent community service in China, but also ensure that the construction of the application system of intelligent community service in China is specific and targeted, which can improve the application system of intelligent community service in China in an effective way.

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Analysis on the Characteristics of Population Spatial Distribution in Chengdu, China *

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Abstract Based on the latest data of Sixth National Population Census in China and related statistical yearbook, this paper focuses on the study of characteristics of population spatial distribution in Chengdu from the perspectives of space attribute and social attribute. Having analyzed the selected data by means of the population structure index and related statistical methods, the research outputs can be concluded from two aspects. In the context of space attribute, the total population of Chengdu is quite unevenly distributed with wide disparities. The total population is decreased concentrically from five main urban areas to the suburbs. Meanwhile, the centrality and disequilibrium of population are on the rise. In the context of social attribute, the minority population is mainly distributed at west and northwest of Chengdu; the floating population is distributed at central district and industrial park around Chengdu; highly educated population is grouped in the area of universities and science academy; the population of primary industry, secondary industry and tertiary industry is distributed outwards from the city center

Key words Population spatial distribution, Characteristics analysis, Population structure index, Chengdu

1 Introduction

The differentiation of urban social strata has become a prominent problem in China's economic transition. The differentiation process has guided and reshaped the spatial distribution pattern of the population in cities of our country, and thus promoted differentiation in aspects such as family, residence, employment and education among the population of different strata. The spatial distribution of urban population refers to the geospatial and temporal manifestation of population development process along with the process of urban socio-economic development, that is, the spatial distribution of population distribution in space and time^[1]. The spatial distribution of urban population is an important manifestation of the present situation of urban social and economic development, and can show the comprehensive situation of urban development objectively. Therefore, the spatial distribution of urban population has been the concern of scholars.

Foreign scholars started the study on the spatial distribution of urban population earlier from the perspective of urban population density. Between the 1950s and 1960s, Jefferson, Clark and Newling discussed the spatial distribution and variation of population in typical cities in Europe and the United States^{[2][3]}. In the 1960s and 1990s, western scholars gradually shifted to the spatial structure of the urban population, and a large number of empirical studies were carried out on the spatial structure of the population of the developed cities^{[4][5]}. From the 1990s, foreign scholars gradually diversified their research interests, including the analysis of the factors influencing the spatial distribution of population, the spatial and temporal evolution of population distribution, and the population distribution of different groups^{[6][7][8]}. Although domestic scholars started the study later, they also achieved some results. For example, Mr. Hu Huanyong summarized from his study the basic pattern of China's population distribution, that is, dense in southeast, sparse in northwest, and for the first time proposed "Aihui - Tengchong" population geographical boundary^[9]. Wang Lu etc. based on the previous census data, utilized Logistic model to systematically predict the population scale of China's sub-counties in 2020 and 2030, quantitatively analyzed the basic pattern of China's future population distribution, the

*Financed by National Natural Science Foundation of China: The Formation and Reshaping Mechanism of Chinese Urban Community: Urban Space Planning, Social Transformation and Citizen Public Service (Project No.: 71561137003).

population change in different regions, and the population agglomeration change^[10]. Kuang Wen-hui^[11], Li Ding^[12], and Xiao Bao-yu^[13] utilized GIS technology or related population analysis method to study the spatial distribution of population in Beijing, Shandong, Shaanxi and Fujian.

Chengdu as the core city of Western Development, the Belt and Road, the Yangtze River Economic Zone and other development strategies, is a key pole to lead and promote the development of the western region under the current Chinese “winter” economy, and to drive China’s economy through the “winter”. At the same time, Chengdu is also the pilot area of the national urban and rural comprehensive reform, which has earlier carried out the reform of household system, land property rights system and rural investment and financing system, and attracted a large number of labor and ethnic minorities inside and outside the province to move into the city. By 2014, Chengdu urbanization rate has reached 70.4%, ranking first in the western capital cities. Chengdu has become a metropolis that achieves diversified development of multi-ethnic, multi-cultural blending. The social population structure in Chengdu has undergone tremendous changes. Therefore, based on the sixth census data and the related population data in the statistical yearbook, this paper uses the population structure index and the relevant statistical indicator to measure the spatial distribution of population in Chengdu, analyzes the social spatial distribution characteristics of population in Chengdu from the spatial attribute level (the overall population distribution of the city) and the social attribute level (distribution of population of different types), and aims at providing reference for Chengdu urban planning and the formulation of population policy.

2 Research region, data and methods

2.1 Research region and data

Chengdu city is located in the middle of Sichuan Province, and has jurisdiction over 9 districts, 4 cities, 6 counties and Chengdu Hi-tech Industrial Development Zone, which can be divided into three circles. This study only covers the current “urban development area” of Chengdu, including Jinjiang District, Wuhou District, Qingyang District, Jinniu District, Chenghua District in the first circle and Longquanyi District, Qingbaijiang District, Xindu District, Wenjiang District, Shuangliu County, Pixian in the second circle (See Figure 1). In 2010, this study area has a total population of 9.5916 million and covers a total area of 3677 square kilometers.

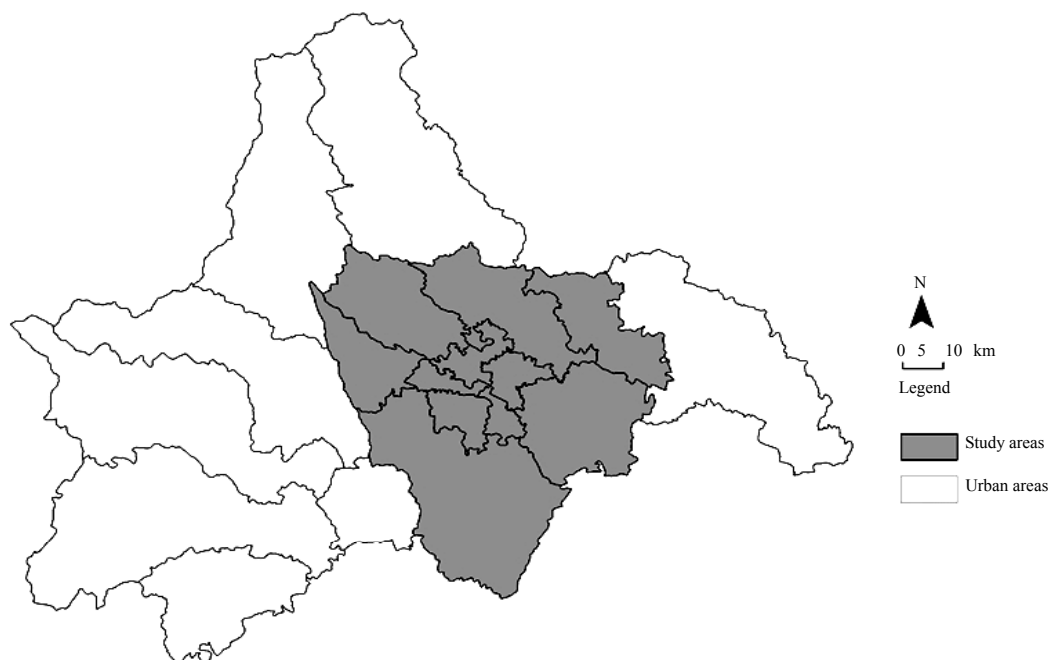


Figure 1 Research region

The basic data is from the sub-district, township (town) information of the 2010 sixth census in Chengdu and the Chengdu statistical yearbook in 2001 and 2010. Related indicators in the census data include general statistical indicators, ethnicity, age, education, family, death, migration, housing, occupation, industry, marriage and fertility. Since the study on urban population differentiation of domestic and foreign scholars mostly focus on population attributes, employment, education, migration and other aspects, this paper also analyzes Chengdu population spatial distribution characteristics from the above several levels of indicators.

2.2 Research method

The structural index of population distribution refers to using the unbalance index (U) and the concentration index (C) to simulate the trend of population concentration or dispersion, that is,

where n is number of regions, x_i is the proportion of the population in i administrative unit over the whole studied region, y_i is the proportion of the land area in i administrative unit over the whole studied region. The smaller the value of U and C , the more balanced the spatial structure of the regional population, and vice versa^[12].

$$U = \sqrt{\frac{\sum_{i=1}^n \left[\frac{\sqrt{2}}{2} (x_i - y_i) \right]^2}{n}} \quad (1)$$

$$C = \frac{1}{2} \sum |x_i - y_i| \quad (2)$$

3 Spatial distribution characteristics of population in Chengdu

3.1 Population distribution characteristics in spatial attribute level

The distribution of the total population, household population and migrant population in the first and second circles of Chengdu is different, showing an unbalanced distribution (Figure. 2). From the perspective of total population and household population, the population is more concentrated in the central five districts, with the population of the suburban satellite districts Wenjiang and Qingbaijiang ranking bottom. According to Push and Pull theory, in the population migration process, the immigrant areas has advantages in economy, culture, infrastructure and other aspects over the out-migration areas, forming “pull” effect to attract population inflow^[14]. The Chengdu district area has advantages over suburb area not only in economic development degree but also in public infrastructure and service improvement. Thus, the attractiveness of the migration population is so huge that it promotes a large number of people inside and outside the province to move in the district area.

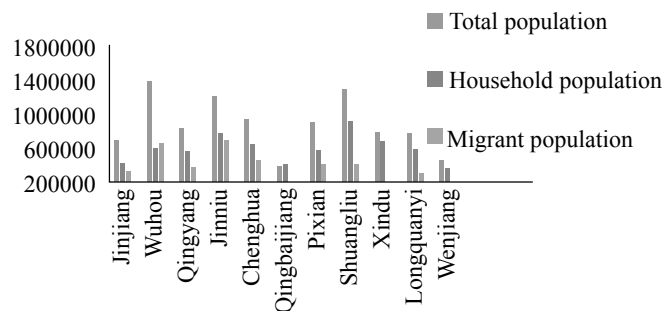


Figure 2 Population size in the 1st and 2nd circles in Chengdu

In 2010, Chengdu’s first and second circles have a total population of 9.5916 million and a total land area of 3677 square kilometers. The average population density is about 2068 (person / km²). The population density pattern is roughly an “S” shape in Figure 3. The population density of the five urban districts is above 5900 (person / km²), while the density of the suburbs is about 1000 (person / km²), which is a big difference. The population density is generally centered on five main urban areas and reduces sharply from the concentric center to the outskirts. From the sub-district scale, the population density is the largest in Lion Rock Street (109,722/ km²) and Xinhua West Road (44,588/ km²), and the

smallest density appears in Wanxing Township of Longquanyi (229/ km²). The gap between the former two is close to 109,000 (person / km²). Thus, there is a big difference in spatial population distribution. In general, the densely populated streets are concentrated in the urban central area, and particularly in the southeastern part of the urban area. The sparsely populated streets tend to be located at the townships in the northwest suburbs. The spatial density of urban and rural areas is obviously different. At the same time, the densely populated streets of the suburb districts are concentrated in the center of the region, such as Wenjiang Liucheng Street, Shuangliu Dongsheng Street. This is because the economy, transportation, employment in these areas is better than the surrounding streets and towns.

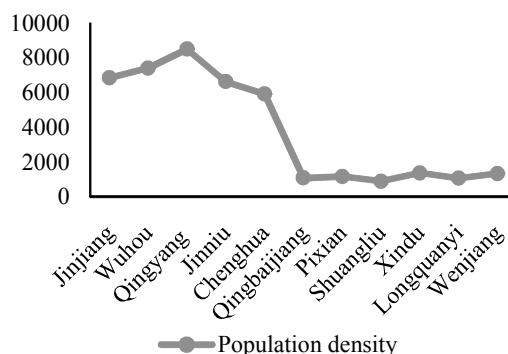


Figure 3 Population density in the 1st and 2nd circles in Chengdu

In order to further reflect the evolution trend of the spatial differentiation characteristics of the population in different districts and counties of Chengdu, the paper measures the population structure index of Chengdu’s first and second circles 2001 and 2010 respectively. These results are shown in Table 1 and Table 2.

Table 1 Population structure index of Chengdu’s first and second circles in 2010

Districts	C index in 2010	U index in 2010	Districts	C index in 2010	U index in 2010
Jinjiang	0.0148	0.0063	Pixian	0.0317	0.0135
Wuhou	0.0348	0.0148	Shuangliu	0.0951	0.0406
Qingyang	0.0220	0.0094	Xindu	0.0302	0.0129
Jinniu	0.0244	0.0104	Longquanyi	0.0433	0.0185
Chenghua	0.0204	0.0087	Wenjiang	0.0174	0.0074
Qingbaijiang	0.0292	0.0124	1 st and 2 nd circle zones	0.3633	0.0555

From the structure index of population distribution in the first and second circles of Chengdu in 2010, the 11 districts and counties of Chengdu’s first and second circles have relatively small concentration index and unbalance index that are both less than 0.1. Among them, the concentration index is between 0.0148 and 0.0951 and the value is relatively small. The concentration index of Chengdu’s first and second circles is 0.3633 and value is generally small. The concentration index of the first circle is between 0.0148 and 0.0348, among which the largest C index occurring in Wuhou District is only 0.0348 and the value is generally low. For the other six districts and counties in Chengdu’s second circle, the concentration index between 0.0174 and 0.0951. Shuangliu County’s concentration index is largest reaching 0.0951 while the smallest value 0.0174 occurs in Wenjiang District. Thus, compared to the first circle of Chengdu, the second circle of Chengdu has larger concentration index and its variance is large. This shows that the population distribution in the second circle of Chengdu is not uniform. The unbalance index of Chengdu’s first and second circles is 0.0555, and the value is generally small. This indicates that the population distribution of Chengdu in 2010 is relatively balanced. The unbalance index of Chengdu’s first circle is between 0.0063 and 0.0148, of which the lowest occurs in Jinjiang District and the highest occurs in Wuhou District. The unbalance index of Chengdu’s second circle is between 0.0074 and 0.0406 with the highest value in Shuangliu

County and lowest in Wenjiang District.

Table 2 Population structure index of Chengdu's first and second circles in 2001

Districts	C index in 2001	U index in 2001	Districts	C index in 2001	U index in 2001
Jinjiang	0.0263	0.0079	Pixian	0.0173	0.0052
Wuhou	0.0316	0.0095	Shuangliu	0.0685	0.0207
Qingyang	0.0315	0.0095	Xindu	0.0126	0.0038
Jinniu	0.0368	0.0111	Longquanyi	0.0325	0.0098
Chenghua	0.0333	0.0100	Wenjiang	0.0105	0.0032
Qingbaijiang	0.0180	0.0054	1 st and 2 nd circle zones	0.3189	0.0327

In Table 2, the C index of Chengdu's first circle in 2001 is between 0.0263 and 0.0368. The value is relatively small. Among them, the Jinniu District has the highest C index, followed by Chenghua District, and the lowest in Jinjiang District. Compared with the districts and counties of Chengdu's first circle, the C index of the districts and counties of Chengdu's second circle has a large variance and the value is between 0.0105 and 0.0685. The highest value is in Shuangliu District while the lowest is in Wenjiang District. The U index of Chengdu's the first circle is between 0.0079 and 0.0111, and still the highest in Jinniu District and the lowest in Jinjiang District. The U index of Chengdu's second circle is between 0.0032 and 0.0207 with the lowest in Wenjiang District and the highest in Shuangliu County.

By comparing Table 1 with Table 2, we find that Chengdu's U index and C index in 2001 and 2010 are both small. And the difference of these values between the year 2001 and 2010 is relatively small. This shows that Chengdu's population is relatively uniformly distributed. This phenomenon is consistent with the topography and economic development characteristics of Chengdu. That is to say, the population distribution level across the whole city has little difference. On the whole, the U index and C index in Chengdu's first and second circles has been increasing during the past decade, with C index increasing from 0.3189 to 0.3633 and U index from 0.0327 to 0.0555. This indicates that the overall population of Chengdu tends to be concentrating. From viewpoint of each circle, the development trends during the past decade of the first and second circles show inconsistencies. That is, the C and U indices of the main urban area in the first circle are decreasing while those of the second circle are increasing. This shows that due to Chengdu's economic development in the past decade, the population distribution in the central urban area is generally balanced and the population of the second circle is developing unevenly.

3.2 Characteristics of spatial population distribution from the level of social attributes

Based on the sixth census data of Chengdu, the characteristics of spatial population distribution are analyzed from four micro levels (minority population, floating population, educational background population and employment population).

First of all, as far as minority population is concerned, there are 94,000 minority people in the first and second circle layers of Chengdu, accounting for 1% of the total population, and they are mainly Hui, Zang and Yi people. Most of them are distributed in four areas (Wuhou, Jinniu, Pixian County and Shuangliu) which are in the west of Chengdu, and population is averagely more than ten thousand. Seeing from the street level, there is largest minority population in Jianxi Street, Xihanggang Street and Xipu Town, which are in the west and northwest of Chengdu. While the streets whose population is less than 100 are mostly located in Qingbaijiang, Longquanyi and Shuangliu district in the southeast of Chengdu. It can be seen that the spatial distribution of minority population is wide, and they live in scattered places. Most of them live together with Han nationality population, and most minority population migrated here due to engaging in business deals, work and other reasons. So they mostly live in urban areas with more jobs, better economy and big passenger flow or satellite towns with more industrial enterprises, for example, there are a few minority people who live in villages and towns of Wuhou District and Pixian County.

The floating population in first and second circle layer of Chengdu can be divided into the floating population in the province and the floating population outside the province. Until 2010, the floating population in the study areas is 3.98 million, accounting for 43% of the region's total population, and among them, the floating population in the province is 3.44 million, accounting for

36% of the region's total population. The spatial distribution of floating population in the province is mainly concentrated in Jinniu, Wuhou, Pixian County, Shuangliu and Chenghua District, where the population migrated from other provinces is mainly concentrated, namely, they are central urban areas with developed economy, concentrated population and complete infrastructure facilities and suburb cities where the industry, manufacturing industry and service industry are developing and growing. The causes of population migration in Chengdu can be divided into four types (social reason, removal reason, study and work), which accounts for 51% of the entire migrant population, and which are the main motive of population migration. The migrant population engaging in work and business in Jinhuaqiao Street, Qinglong Street, Anjing Town, Hezuo Town and Dongsheng Street is more than 40,000, and this kind of migrant population is mainly living in these areas. First of all, these streets have a large population base, better economic conditions and public service facilities, which provide a favorable environment for the business population; Secondly, industrial enterprises are more concentrated in these regions, and the high-tech enterprises and manufacturing enterprises provide a large number of jobs for the migrant population.

Looking from the spatial distribution of education population, the highly educated population of first and second circle layers in Chengdu is mainly distributed in five central urban areas and Pixian County, while the illiterate population is mainly concentrated in Shuangliu, Qingbaijiang, Xindu and suburban areas. The highly educated population is mostly distributed in Wangjiang Street and Jiangxi Street in Wuhou District; Xihua Street and Jiulidi in Jinniu District; Shizi Street in Jinjiang district; Liucheng street in Wenjiang, Hezuo Town and XiPu Town in Pixian County, where have a plenty of high-tech enterprises and science and technology parks, and the institutions of higher learning and scientific research institutes. But most illiterates live in Xindu Town and Xianfan Town in Xindu, Dongsheng street and Huayang Town in Shuangliu, and Qingquan Town and Xiangfu Town in Qingbaijiang and other city suburbs which are relatively backward, so the spatial distribution of illiterates forms a relatively obvious contrast to that of highly educated population.

The employment population of the first and second circle layers in Chengdu can be divided into the primary industry population, the secondary industry population and the service industry population. The primary industry population is concentrated in Shuangliu, Xindu, Longquanyi, Pixian County, Qingbaijiang and Wenjiang and their city suburbs, and villages and towns of these city suburbs, such as Xinfan Town and Shibantan Town in Xindu, Youai Town in Pixian County, Fuhong village in Qingbaijiang, etc. In general, the primary industry population presents a ring shape which surrounds the central city; The secondary industry population is mainly distributed in Pixian County, Shuangliu, Wuhou and Longquanyi District. Anjing Town and Hezuo Town of Pixian County, Jinhuaqiao Street and Jitou Street of Wuhou, and Jiujiang, Dongsheng and Huayang of Shuangliu are the streets where the secondary industry population lives, and it is mainly because there are relatively large processing enterprises in these streets and regions, such as Foxconn Group in Hezuo Town of Pixian County, etc. A large part of service industry population is distributed in commercially developed areas of the central city and a small part in suburbs and downtown.

4 Conclusions and discussions

Based on the latest data of Sixth National Population Census in China and statistical yearbook of Chengdu, this paper analyzes the characteristics of urban population spatial distribution of Chengdu in 2010 from the perspectives of spatial attribute and social attribute, focusing on the index of population size, population density, minority population, floating population, educated population and employment population. Additionally, this paper calculates the evolvement of population spatial differentiation of Chengdu from 2001 to 2010 by means of the population structure index. The research outputs can be concluded from two aspects.

(1) In the context of spatial attribute, the total population of Chengdu is quite unevenly distributed with wide disparities. The total population is decreased concentrically from five main urban areas to the suburbs. Meanwhile, the centrality and disequilibrium of population are on the rise. Having analyzed the selected data of 2001 and 2010 by means of the population structure index, the results indicate that the centrality index is 0.3189 and the disequilibrium index is 0.0327 in 2001; the

centrality index is 0.3633 and the disequilibrium index is 0.0555 in 2010.

(2) In the context of social attribute, this paper reaches four conclusions. First, the minority population is mainly distributed at west and northwest of Chengdu. The spatial distribution covers a wide range and the minority population is scattered among Han population. Second, the floating population is distributed at central district and industrial park around Chengdu. Hunting a job and engaging in trade are the main impetuses for floating population to move into the city. Third, the highly educated population is grouped in the area of high technical industries, universities and science academy. Fourth, the population of primary industry is mainly distributed in the townships of suburbs; the population of secondary industry is mainly distributed at the street of large-scale processing enterprises; the population of tertiary industry is mainly distributed at commercial developed area of city center and a few central area of suburbs.

The spatial distribution pattern of urban population reflects the objective reality of the status quo of urban social-economic development. The reasons causing the above characteristics of population distribution are as follows.

First, the distribution is affected by the urban natural geographic environment. Chengdu features plains with a gentle slope, which makes the urban development rarely without restriction from the topography of mountainous and hills.

Besides, Chengdu has great potential for further growth result from the low cost of spatial development and broad development space. The characteristic of urban development in Chengdu is shown from its centre out to the periphery, featured a single center and concentric circles.

Third, the distribution is affected by the implementation of urban planning and the adjustment industrial layout. The Urban Planning of Chengdu in 1996 and 2003 set the strategic adjustment of “suppressing the second industry and developing the third industry”. The strategic adjustment makes the formation of Central Business District and vigorous development of the tertiary industry. Besides, the second layer cities become the undertaken area to suppress the second industry. Many industrial parks with functionalities is gradually taking shape, which makes the population of secondary industry and floating population gathered here. In general, after four times of overall city planning and implementation, the urban functional partition has been promoted to a great extent, and cities gradually transform their structure from “single center plus cyclic type” to “multi-center plus cluster type”.

Fourth, the distribution is affected by overall urban-rural development and rapid urbanization. As a pilot city of integration of urban-rural development, Chengdu has carried out many policies to break restriction of the urban and rural binary system. The reform of the household registration system loosens the limitation and realizes the free floating of labors, which makes a large number of population flock to Chengdu.

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The Developing Process of Administrative Service Center of Local Government: The Case of Yuhang in China

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Abstract For more than thirty years, the reform is the focus of national development in China Mainland, and one of the most important achievements of the administrative system reform is the development of the Administrative Service Center. In this paper, we took the development of the Administrative Service Center of Yuhang as an example of local government, by document study and empirical methods of questionnaire surveys and depth interviews; we investigated its developing process for the past more than ten years. In addition, we try to analyze the existing problems from different angles of Administrative Service Center, other government departments and society, and then put forward the countermeasure.

Key words Government governance, Political trust, Economic development, Social welfare, Pure public goods

1 Introduction

On March 29, 1993, the first meeting of the eighth National People's Congress through *The amendment of the constitution of the people's Republic of China*^[1], specifically "to implement the socialist market economic system in the country". "Service-oriented Government" is a governance model which is adapted to socialist market economy and consistent with the purpose of the ruling party. In the report of the Eighth National Congress of the Communist Party, set the goals "to build a scientific function, structure optimization, clean and efficient, people's satisfaction of the service-oriented government". Service-oriented government construction has become a long-term policy in China.

In the recent 10 years, the development of Administrative Service Center is one of the most important organization construction achievements in the process of service-oriented government construction. Over the past 10 years of development the Administrative Service Center of Yuhang District has accumulated some achievements in the construction of hardware and software. Its development process in Hangzhou and the middle and lower reaches of the Yangtze River has a certain representation. To a certain extent, it reflects the common process of the construction of a service-oriented government at grass-roots government.

2 Methods

The paper focuses on the development of Administrative Service Center of Yuhang District (Hangzhou City, Zhejiang Province, China Mainland), through literature study, depth interviews and other methods to study the development process of the driving factors and background.

3 The evolution of Administrative Service Center

3.1 Development and current status

3.1.1 Initial stage

The Hangzhou City Yuhang District Administrative Service Center was established on February 18, 2004. The Center is a full financial budget organ and equipped with three subordinate organizations. The main responsibility is on behalf of the district government exercise matters relating to administrative examination and approval, services of organization, coordination, supervision and management functions. With 15 approval service windows of functional departments to provide 95 kinds of services, with more than 70 staff, and dealt with approximately 28, 000 approval service items in 2004. Enterprise is the main service object. Over the next few years, the Administrative Service Center has been continuously developed under the promotion of the actual needs of the approval

system reform and investment promotion work. Departments, item types, staff and quantity of transactions are gradually increased. All of the departments and transactions are related to the investment and project approval procedures. The quantity of transactions has increased from about 28,000 in 2007 to about 36,000 in 2004. In a few years, the major function of the internal managerial department is daily management and coordination of the problems of office space and stationed personnel.

Without the right of administrative examination and approval, the Administrative Service Center has difficulty in obtaining a stable role in promoting the project examination and approval work and the construction of the service-oriented government, and its function is limited. At the same time, because it is a new mechanism, there are more areas to explore and improve in the management of stationed staff, and owing to the complex of the members, administrative efficiency is unable to reach a normal level. Since there is no formal legal status, the internal management of Administrative Service Center is often compared to “property management company”. Similar situation is widespread among the grass-roots governments.

3.1.2 Function development

Financial storm in 2008, local economic development faced a severe test. In order to enhance competitiveness and promote enterprise development and the investment, Hangzhou municipal government proposed that some government officers would be appointed as an agency staff to help the public in cracking the “approval difficult” in examination and approval procedures.

In July 2008, Yuhang District Government improved the convenience service agent center of township, three-level service system, and to set up Investment Project Approval Agency Service Center. The center is in the Administrative Service Center. The main responsibility of Investment Project Approval Agency Service Center is to coordinate and manage the whole investment project examination and approval of the service work, and to accept and handle the service work of investment project of examination and approval, and responsible for training the agency staff.

As a result, the coordination, supervision and management function Administrative Service Center had been effectively improved. The establishment of Investment Project Approval Agency Service Center makes Administrative Service Center has the ability to effectively participate in the administrative examination and approval process, and to coordinate the relevant functional organs in the transactions^[2].

The Administrative Service Center is the only institution which has the ability to coordinate and manage the project approval in the district. This is not only a good opportunity for its own development, but also a new fulcrum for the service-oriented government construction.

3.1.3 Function extension

In October 8, 2010, officially opened the Public Service Center, and took department accumulate advantages to launch the One-stop service model which is covering three certificates of real estate, enterprise registration and project approval.

The first floor of the Administrative Service Center is Convenience Hall which has concentrated ten government and public service sectors, which focus on “real estate certificates” services. People just go to “Public Service Center”, they can apply for a series of procedures, such as the property ownership certificate, telephone, internet service, etc. By the way of integration, the Approval Hall on the second floor mainly provide one-stop service of “enterprise registration” and “investment project approval”, 24 departments including the Commerce Administration Bureau, the State tax (Local tax) Bureau, the Development and Reform Bureau, the Economic Development Bureau, the Construction Bureau and the Environmental Protection Bureau; more than 10 service agencies of Yuhang have been concentrated and set up service windows to facilitate the public, and relevant departments.

As a result, the “Administrative Service Center” transformed into the “Public Service Center”. The center which only served for the transactions of enterprise has transformed into an organ with a comprehensive service to the public and the whole society to provide the majority of government social services and management functions. There are many stationed departments, such as the administrative examination and approval departments, public service departments, banks, intermediaries and commercial centers. The Public Service Center became a more efficient public

product supply platform. In addition, the center also relies on the e-government system of Yuhang to establish the “Online Administrative Service Center” and “Online Public Center”, which have three functions: transaction, interactive and information, which achieved the further extension in time and space, and improved the service and strengthen the function.

3.1.4 Reform of administrative examination and approval system

To 2013, there are 6 times of administrative examination and approval system reform. The basis of the reform is the transformation of government functions, and the key is to reduce or cancel the examination and approval items, reduce the direct management of the government to the market. There were a cancellation and adjustment of 2497 administrative examination and approval items, which is 69.3% of all^[3].

In the recent 2 times of the reform of the administrative examination and approval system, the Administrative Service Center had become the core of the reform of grass-roots government. The coordination and management capabilities of Administrative Service Center have been fully displayed. The Administrative Service Center changed its role from the “property management” into “administrative examination and approval business management”.

The Administrative Service Center got deeper involved in the process of the administrative examination and approval. Although according to the original function of organization, the center has no province to participate in the process of the administrative examination and approval, because of the district government constantly issued the authorization documents during the process of reform, the Administrative Service Center has already become the key organ in the reform.

3.1.5 Improvement

In recent years, the reform of administrative examination and approval system has gradually accumulated. In December 2013, Yuhang district government comprehensively promoted the work of “two concentrated two and high degree of completion”. It means: all levels organs of administrative examination and approval functions concentrate in a department; all the administrative examination and approval departments get into the Administrative Service Center. The transaction of the administrative organs in the center should be carried out; the window staff should be fully authorized. By setting up a new organ or adding new function, each organ set up the department of administrative examination and approval, to complete the internal concentration of functions.

To the end of December 2014, Yuhang Public Service Center had been stationed by 35 departments, 9 public service, 4 banks, 13 intermediary institutions and 2 business center; with a total of about 200 service windows; the 659 of approval service matters has been stationed in the district administrative service center. The stationed rate of functional departments of examination and approval was 100%, the stationed rate of examination and approval items was 93%. On the one hand, all the examination and approval items and transactions concentrated to the center; on the other hand, the staff had been concentrated to the center from the various functional organs. More and more government officers come to the positions in the Public Service Center. In the core position of 3-level convenient service system, the district Administrative Service Center has the staff of about 400 persons; its subordinate branches have about 200 persons.

In 2014 the quantity of transactions of examination and approval or service was 1.18 million; it is 42 times as much as the first year. The center completed the most of the work of the administrative examination and approval for natural person and legal person in Yuhang District.

3.2 Development of typical functional organ

Market Administration Bureau is the earliest organ which set up the service window in the Administrative Service Center. It also has the largest staff, and it is a core organ of the administrative examination and approval for enterprise. Its development process has a certain representation.

January 1976, its predecessor Yuhang County Industrial and commercial administration restored its functions; in July 1982, it set up an independent agency. September 1976, the administrative stations of industry and commerce were established in 5 towns, it was increased to 13 in 2014, and experienced several adjustments of names, functions and management. May 1997, the reform of enterprise registration and management system changed the examination and approval system into the registration system. In 2004, it became one of the earliest in the administrative examination and

approval service center window. During several times of the reform of administrative examination and approval system, the related functions had gradually been concentrated, and gave service window the corresponding authority. In the 4 sub-centers, the Market Administration Bureau of the service window has the largest staff and dealing with the largest quantity of enterprise related transactions.

4 Background

In 1999, the first comprehensive administrative service center was established in Jinhua of Zhejiang Province^[4]. Based on the development of the society, the government set up the organization. In the early 1990's, China's reform and opening up was in the bottleneck. Deng Xiaoping's southern Tour in 1992 promoted the many important reforms^[5], including the implementation of the tax system in the financial system in the beginning of 1994.

In the process of reform, the administrative powers and public revenue between the central government and the local government were re-divided. The local government appears financial difficulties^[6]. Turn pressure into motivation. To develop economy, it needs to develop the second and the third industry, need more investment projects; to improve the investment projects not only need to attract investment but also need to provide convenience service on the administrative examination and approval. A group of people from the relevant functional organs had been specialized in promote the project investment. The temporary work team gradually has the fixed office place and institutions, and the Administrative Service Center appears.

In 2004, the implementation of the *People's Republic of China Administrative Licensing Law*^[7] confirmed the grass-roots government's practices in the administrative examination and approval work, such as "functional centralization" and "one-window acceptance" and so on. In this period, a large number of similar institutions appeared in China. However, there is no corresponding direct superior of such institutions in the national and provincial governments. The center was established to meet the market demand. Although the center was directly authorized by the local government, without the support of the laws and regulations, the center played as a supporting role during the whole administrative system.

In 2008, the financial crisis has had a profound impact on the development of society and economy^[8]. Local governments made great efforts to improve their ability to cope. The administrative center and its subordinate organizations are the only departments with the ability to coordinate the administrative relationship and the examination and approval service. This also enables the Administrative Service Center to have the conditions for direct participation of administrative examination and approval process. In the next few years, following the society development, the reform of the administrative became a key work of the national administrative system reform. Grass-roots governments depended on the platform of Administrative Service Center to achieve centralized functions, streamlining matters and optimizing processes. Staff and approval items were concentrated in the center; meanwhile, the government opened the sub-center to make extension in space in order to facilitate the public. In addition, some processes could be carried out by the network, which further extended the administrative examination and approval service.

5 The driving force of development

After carrying out the reform and opening policy, China ushered in the rapid economic development opportunities. The Administrative Service Center, set up by local government, has received a higher evaluation from society; it is very rare that the center keep on developing in more than ten years.

Compare the changing trend of the GDP of Yuhang District and the quantity of transactions in Administrative Service Center^[9], as shown in the figure 1, we can find the change process of the Administrative Service Center of social service work from passive to active. After 2010, as the "Administrative Service Center" transformed into the "Public Service Center", the growth rate of the transaction quantity is significantly higher than the speed of economic development.

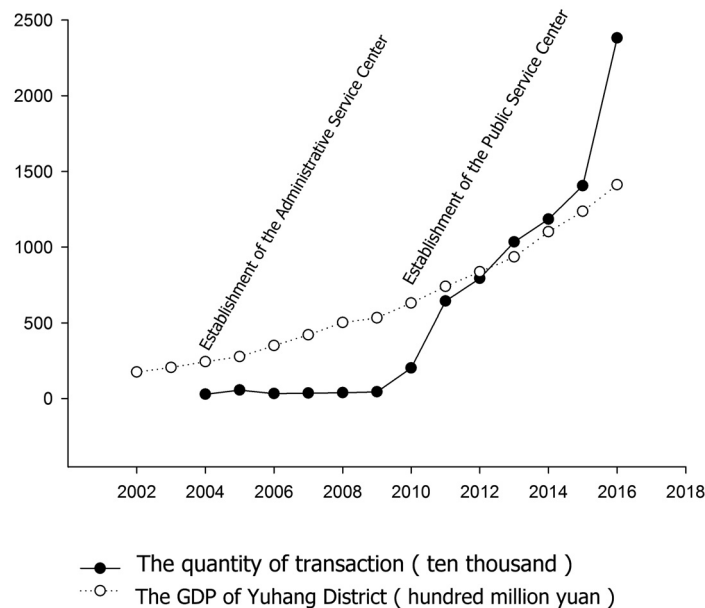


Figure 1 Changing trend of the GDP of Yuhang District and the quantity of transactions in Administrative Service Center

However, the development of the center is mainly due to “demand” or active adaptation to change, not guided by a theory or a single idea, therefore, it cannot interpret the mechanism of development, based on the existing theory. In our opinion, the main driving force for the development of this mechanism is the four aspects as follows:

Firstly is the demand of the society. In Chinese society, the grass-roots government is closely linked with the society, whatever the change of economic situation or social opinion, the grass-roots government will get to know in the first time. At the same time, due to the unique position of the government in the society, the grass-roots government is also very easy to take action to fit the change. Almost all the changes and reform of Administrative Service Center more or less reflected the demands of society. The development of the society and the development of Administrative Service Center have an interactive relationship. The coastal economic developed area in China Mainland has a more mature market economy environment than other areas, and the vigorous development of its Administrative Service Center also shows this.

Secondly is the development opportunity in the process of reform. Reform itself is not simply a product of social demand or the will of ruling party, in our opinion. This is more of a process of interaction and exploration. The reform of the administrative examination and approval system reflects the change of the relationship between the society and the government, and it also becomes a part of the political reform and economic reform. Reform reflect the economic and social development from the planned economy to the market economy, showing that the government respond to public demands with a “walk” of “small steps, high frequency” in many areas. Under the background of China’s social development, and having a solid foundation, the reform of the Administrative Service Center can only go forward and deepen, which also ensures that the center can continue to grow and develop.

Thirdly is the given space from superior government. China is a country with huge regional differences. To subordinate institutions, national and provincial government agencies of management are just guidance and less “clear rigid requirements”. At the same time, in many areas of law and regulations the restrictions for the grass-roots government are relatively weak. To a certain extent, it is beneficial to the grass-roots government more effective to respond according to the regional social and economic changes or the demands of the public.

Fourthly is the inner power of administrative service center. An administrative department is established, it will have a certain degree of “self-development capability”. Although at the beginning,

the function of the Administrative Service Center is relatively clear. But, the social and economic development, national administrative system reform and service-oriented government building push forward the functions and powers of Administrative Service Center broke through the original setting, and gradually changed compartmentalization of the situation of the administrative functions of examination and approval in grass-roots government.

6 Conclusions

Understanding the development of the Administrative Service Center, and we can easily understanding the role and behavior of the government in Chinese society, and also will be more understanding the thinking of “maintaining the flexibility to pursue standardization and innovative”.

We think that after the completion of the functions and personnel concentration, responsive to needs of social, higher department and its own development, and rely on the good infrastructure; mature team and advanced network technology, the development of Administrative Service Center will focus on the service of the diffusion in the next period of time. Service network construction will further enhance the value of Administrative Service Center in the social development and administrative system. Whether through the construction of the entity center or the improvement of online services, the mode of construction of large centers will gradually shift.

The developing of Administrative Service Center is associated with the increasing understanding of the reform and the function of Administrative Service Center. The Administrative Service Center can effectively promote the reform of the administrative examination and approval in a certain extent, and its development is the important way to construct a service-oriented government. However, its inherent shortcomings also make it a must that follow-up development must overcome many difficulties, such as clearing the functions of departments, enhancing the social cognition, improving the internal management and the constructing organizational culture.

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Transcending Institution Dilemma of Peasant Self-organization Development: Based on the Modern Transformation of Rural Social Capital *

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Abstract The institution dilemma of peasant self-organization development mainly include two aspects: the external institution dilemma of peasant self-organization and the internal institution dilemma of peasant self-organization at present. The external institution dilemma include three aspects: legal constraint, management system constraint and social organization constraint. The internal institution dilemma include three aspects: institution formation path dilemma, institution improvement principle dilemma and institution system dilemma. The modern transformation of rural social capital is beneficial to transcending the institution dilemma of peasant self-organization development. Meanwhile, transcending the institution dilemma of peasant self-organization development is beneficial to constructing social capital based on institution trust, reciprocity norms formal institutionalization and organization network extension.

Key words Peasant self-organization development, Institution dilemma, Rural social capital, Modern transformation

1 Introduction

The development of peasant self-organization exists institution dilemma in China at present. The peasant self-organization institution dilemmas include two aspects: the external institution dilemma and the internal institution dilemma. One of the reasons is that peasant self-organization and its members are deeply restrained by the traditional rural social capital. That traditional rural social personal trust, rural social reciprocal norms non-institutionalized and rural social network homogenization have become the constraints of peasant self-organization development. That traditional rural social capital are embedded in peasant self-organization and the institutional constraints of organizational behavior are inadequate which hindered the improvement of the organizational institution. Therefore, it's especially necessary to explore the path to transcending institution dilemma of peasant self-organization development from the perspective of rural social capital's modern transformation, thus the author done the following three aspects research which based on rural social capital transformation and the institution dilemma of peasant self-organization development: firstly, analyzing the institution dilemma of peasant self-organization development; secondly, exploring the path to transcend institution dilemma of peasant self-organization development which based on the modern transformation of traditional rural social capital; thirdly, studying the path of the modern transformation of traditional rural social capital which based on the transcendence of institution dilemma of peasant self-organization development.

2 Institution dilemma of peasant self-organization development

The research on institution dilemma of peasant self-organization development mainly include two aspects: the external institution dilemma of peasant self-organization and the internal institution dilemma of peasant self-organization in the current academic circles. Concretely speaking, firstly, the external institution dilemma of peasant self-organization: law absence, multiple management system and social organization constraints. Secondly, the research on internal institution dilemma of peasant

* Financed by National Social Science Fund Youth Project "The Research on the Improvement of Peasant Self-organization Public Participation in the Process of Village Governance Modernization" (Project No.: 15CZZ029); Zhejiang Province Philosophy and Social Science Planning Project "The Research on the Improvement of Zhejiang Peasant Self-organization Public Participation in the Process of Village Governance Modernization" (Project No.: 15NDJC029Z)

self-organization, Relative research mainly include three aspects: institution formation path of peasant self-organization, the principle of institution perfection and systematization of institution.

2.1 The external institution dilemma of peasant self-organization

The external institution dilemmas of peasant self-organization specifically include legal restrictions, management system restrictions and social organization restrictions. Firstly, legal restrictions. The lacking of related law of peasant self-organization will result in organizational legitimacy dilemma, at the same time that will lead to the lack of peasant self-organization institution self-supply, low institution supply efficiency and low institution operation efficiency. As Song Lian-bin and Yang Ling thought, “As a kind of civil organizations, The institution dilemma that arbitration agency can’t be non-governmentalization essentially lie in the lack of civil organization legislation in China. They have the constitutional protection of association freedom, but the legislation of civil organization still exist many problems: the lack of law, low efficiency etc.”^[1] Secondly, management system restrictions. The peasant self-organization is multiple-managed by local government and trade association at present, which lead to registration dilemma and institution operation dilemma of peasant self-organization. As Cao Yuan-yuan pointed out, “Due to institutional design problems, grass-roots organization suffers adverse effects in organization legitimacy and social recognition degree.”^[2] And Tao Chuan-jin pointed out, “The management of trade association caused ‘two government’ management and cooperation difficulties.”^[3] Thirdly, social organization restrictions. The peasant self-organization is in rural social organization system, the institution construction and improvement of peasant self-organization is restricted by other rural social organization. It is difficult to really integrate into rural social organization system that caused rural social governance dilemma. Gao Bao-qin thought, “The key to achieving rural good governance is bring new organization into the system, establishing the institutionalization participation channel and cooperative game mechanism of rural pluralistic organization, forming the resultant forces of pluralistic organization participation in rural governance.”^[4]

2.2 The internal institution dilemma of peasant self-organization

The internal institution dilemma of peasant self-organization specifically include three aspects: institutional formation path dilemma, institutional improvement principle dilemma and institutional system dilemma.

Firstly, institutional formation path dilemma of peasant self-organization. Deng Li-ya and Wang Jin-hong pointed out, “The formation of the institution often has two paths, the one institutional construction model is social leading and government reaction from bottom to up, another one is government leading and social reaction from up to bottom.”^[5] According to the self-organization characteristics of peasant self-organization, the institution of peasant self-organization should be supplied independently by the members of peasant self-organization, adopt the path from bottom to up. It is benefit to overcome constraints and obstacles that come from social reality and reduce the distortion and failure of institution construction, when peasant self-organization adopt formation path from bottom to up.

Secondly, the organization principle dilemma of peasant self-organization institution improvement. The institution construction of peasant self-organization should take its organization principles as institution concept and institution guidance. The organization principles of peasant self-organization mainly include mutual aid, mutual benefit, openness and transparency. Based on peasant self-organization principles, the institution construction of peasant self-organization should be benefit to the cooperation among peasant self-organization members, especially promoting endogenous cooperation of peasant self-organization members. However the institution construction of peasant self-organization doesn’t show up its peasant self-organization principles and the institution construction of peasant self-organization is restricted to the external institution constraint of peasant self-organization.

Thirdly, the institution systematization dilemma of peasant self-organization. The institution systematization dilemma of peasant self-organization specifically include three aspects: decision-making institution dilemma, operational institution dilemma and benefit distribution institution dilemma. Firstly, decision-making institution dilemma of peasant self-organization. Decision-making institution arrangement of peasant self-organization remains peasant self-organization member’s

decision-selecting rather than participating in decision-making really, which causes the decision-making dilemma of peasant self-organization. Zhao Quan-min pointed out, “The first principles that the cooperative should follow are democratic control principle and the member of cooperative master and control decision-making power.”^[6] Secondly, operational institution dilemma of peasant self-organization. The first one is autonomy dilemma of peasant self-organization’s operational institution. Zhu Qian-yu and Ma Jiu-jie analyzed self-decision-making, self-management, self-motivation and self-restraint of peasant self-organization concretely.^[7] The peasant self- organization’s institutional implementation process is lacking of autonomy and participatory at present. The second one is insufficient supply dilemma of peasant self-organization’s operational institution. Hao Xiao-bao pointed out, “The property right’s boundary of most of the existing cooperative economic organization is confused easily; The benefit affiliating mechanism is fragile; The scientific principal-agent mechanism has not yet been established; The effective incentive mechanism is absent at present”.^[8] The third one is benefit distribution institution dilemma of peasant self-organization. Sun Ya-fan pointed out, “The distribution of profits among patrons is the core of institutional arrangement; The democratic management of cooperative member is the guarantee of the realization of the distribution institution”.^[9] The benefit distribution institution is the dynamic mechanism of the peasant self-organization members, The imperfect distribution mechanism of peasant self-organization leads to the low performance of peasant self-organization operation institution.

3 Transformation of rural social capital and transcending institution dilemma of peasant self-organization development

3.1 Transformation of rural social capital and transcending external institution dilemma of peasant self-organization development

Firstly, transformation of rural social capital and transcending relevant laws dilemma. One of the external institution dilemmas of peasant self-organization development is lack of relevant laws and weak executive ability, The peasant self-organization exists legitimacy dilemma. The reason for the lack of law is that peasant self-organization member’s legal consciousness is not strong, which lie in the peasant self-organization member’s weak rights consciousness, low obligation consciousness and low participation consciousness. The transformation of rural social capital is benefit to cultivate peasant self-organization member’s citizen consciousness and play an active role in enhancing the current legal cognitive, cultivating legal consciousness and improving the relevant laws. The first one, strengthening peasant self-organization member’s cognition about related law, enhancing peasant self-organization members cognition about own rights and obligations and regulating its organizational behavior. The second one, cultivating peasant self-organization member’s constitutional consciousness and legal consciousness which is benefit to peasant self-organization members to point out the current relevant departments’ deficiencies in the process of law enforcement and further cultivate legal thinking and improve the legal consciousness in practice. The third one, guiding peasant self-organization members to play a role in relevant legal perfection.

Secondly, transformation of rural social capital and transcending the peasant self-organization management system dilemma. The development of peasant self-organization is restricted to dual management system which comes from the joint management of government and trade association at present. Therefore it must realize the transformation of peasant self-organization management system and the aim is to establish peasant self-management system under the guidance of government and trade association. The management system transformation of peasant self-organization need to strengthen communication and exchanges among peasant self-organization members, government and trade association, which needs peasant self-organization’s member to actively participate in the peasant self-organization management system reform. The transformation of rural social capital is benefit to cultivate peasant self-organization members participation consciousness, expand communication channels among peasant self-organization members, peasant self-organization, government and trade association, construct peasant self-organization’s self-management system.

Thirdly, transformation of rural social capital and transcending other social organization constraints dilemma. The current development of peasant self-organization should correctly handle the

relationship with other social organizations. The rural social resources are scarce at present, thus leading to the conflict between peasant self-organization and other social organizations in the process of acquiring resources. The resolution of conflicts need to strengthen communication between peasant self-organization and other organizations and enhance the enthusiasm of peasant self-organization members to participate in organizational communication. Therefore it must expand the organizational communication networks, enhance organizational trust and construct inter-organizational communication norms. So it is necessary to realize transformation of rural social capital. Meanwhile the transformation of rural social capital is benefit to integrate peasant self-organization and other social organizations, achieve the development of peasant self-organization and transcend other social organization constraints dilemma.

3.2 Transformation of rural social capital and transcending internal institution dilemma of peasant self-organization development

Firstly, transformation of rural social capital and transcending institution formation dilemma of peasant self-organization. According to the self-organization characteristics of peasant self-organization, the path that peasant self-organization's institution formation should be from bottom to up. Therefore peasant self-organization's institution should be self-supplied by peasant. However the main body of institutional supply of peasant self-organization include government, trade association and core members of peasant self-organization. The autonomy of peasant self-organization institutional supply is insufficient thus causing the insufficient institutional supply of peasant self-organization. The main reasons for peasant self-organization institution's insufficient self-supply include three aspects: low self-organization members' trust degree, imperfect formal institution of reciprocity norms and narrow networks relation. The first one, self-organization members' low trust degree caused the free-ride behavior and the high supervision cost of institution supply. The second one, imperfect formal institution of reciprocity norms caused peasant self-organization institution security deficiency, thus reducing the enthusiasm of peasant's participation in institution supply. The third one, The limitation of communication networks among peasant self-organization members caused the inadequacy information resources of self-organization institution supply, the lag of supply idea and institution supply divorced from reality. Therefore, the institution construction dilemmas of peasant self-organization come from the thinking constraints and behavior obstacles originated from traditional rural social capital characteristics. So realizing the modern transformation of rural social capital, breaking through traditional rural social trust, constructing reciprocity norms based on the formal institution and expanding organization network, which is benefit to realize the self-supply of peasant self-organization institution and break through the path dilemma of institution construction.

Secondly, transformation of rural social capital and transcending the construction dilemma of peasant self-organization principle. The principles of self-organization include four aspects: mutual benefit, autonomy, voluntary and adaptation. At present, the principle of peasant self-organization in China is still based on self-interest, passive, bureaucratic and stability. The transformation of rural social capital is benefit to the scientific and democratization of peasant self-organization principles. The first one, the rural social capital transformation led to peasant self-organization members to enhance the citizenship, shaping the principle of responsible organization. The promotion of civic consciousness is benefit to foster the awareness of peasant self-organization members' rights, the sense of obligation and the sense of responsibility, so as to realize the peasant self-organization principle from benefit to responsibility. The second one, the transformation of rural social capital is benefit to shape the principle of peasant self-organization. The expansion of rural social capital network provides comprehensive information for peasant self-organization operation and development, which is benefit to the organization of members to participate in organizational principles, reduce the blindness of organizational principles and realize the scientific and democratic peasant self-organization principle.

Thirdly, transformation of rural social capital and transcending institution perfection dilemma of peasant self-organization. The current system of peasant self-organization system needs to be improved, including decision-making system, operation system and benefit distribution system. However, due to the influence of peasant self-organization members on traditional rural social capital that leading the institution perfection dilemma of peasant self-organization. The first one, transcending decision-

making system dilemma of peasant self-organization. The decision-making process includes finding the problem, setting the goal, making the decision-making, selecting the decision-making, making the decision-making and evaluating the decision, and the peasant self-organization general members are not involved in the decision-making process. The current decision-making system is limited to the peasant self-organization core members and government departments. The transformation of rural social capital is benefit to the peasant self-organization of the general members to participate in the formation of decision-making, is benefit to its participation in the decision-making process, is benefit to peasant self-organization decision-making system. The second one, transcending the operation system dilemma of peasant self-organization. The operation system dilemma of peasant self-organization mainly includes two aspects: insufficient system supply and peasant self-organization members lack of system supply conciseness. The “free ride” behavior in the system supply leads to the high cost of the system supply, which leads to the insufficient supply of the system. The transformation of rural social capital is benefit to the construction of institutional trust among peasant self-organization members, to enhance the trust of self-organization members, to reduce the supply cost of peasant self-organization system, and to transcend the insufficient system supply dilemma of peasant self-organization. Meanwhile, the transformation of rural social capital is benefit to the propaganda of peasant self-organization culture and organizational concept, to enhance the peasant self-organization participation consciousness, to promote the peasant self-organization participation system supply and to improve the peasant self-organization system.

4 Transformation of rural social capital based on transcending institution dilemma of peasant self-organization

At present, the limitations of rural social capital in our country have had a negative impact on the improvement of peasant self-organization system. Concretely speaking, the trust, reciprocity norms and network system of traditional rural social capital are inconsistent with the perfection of peasant self-organization system, which is one of the institution dilemma factors for peasant self-organization development. Therefore, it is necessary to construct modern rural social capital based on transcending the system dilemma of peasant self-organization. On the basis of analyzing the limitations of traditional rural social capital, the author explores the modern transformation path of rural social capital which is based on the system dilemma of peasant self-organization.

4.1 The limitations of traditional rural social capital

First, the informal institutionalization of traditional rural social capital trust characteristics. The trust characteristics of traditional rural social capital are based on blood relationship, genetic relationship and regional relationship, so that it presents informal institutional characteristics. In particular, its limitations are reflected in three aspects: The first one, the traditional rural social capital characteristics’ lacking of institutional protection, trust degree is not high; The second one, the accountability mechanism that contrary to the rural social capital trust is missing, low cost of violating trust; The third one, the traditional rural social capital trust characteristics are not adapted to peasant self-organization development.

Second, the informal institutionalization of traditional rural social capital reciprocal norms characteristics. Its limitations are embodied in the following aspects: The first one, the traditional rural social capital reciprocity norms established on the basis of the village rules, while the subjective of village rules are relatively strong; The second one, the village rules are impacted by the concept of modern society and cultural, and thus executive ability that established on the traditional rural social capital reciprocity norms are not strong; The third one, the traditional rural social reciprocity norms break away from the modern rural social structure, rural governance system and rural economic system, which hindered the development of peasant self-organization. The peasant self-organization development requires that the rural social system norms should be established in the modern contract norms, organizational system and legal system.

Third, the traditional rural social capital network characteristics present parochialism, closeness, regional and other limitations. The first one, the traditional rural social network gradually disintegrated, mainly due to the collapse of the traditional rural patriarchal clan and rural public space atrophy; The

second one, the requirements of traditional rural social capital network and the requirements of peasant self-organization development network are inconsistent. The network relationship of peasant self-organization development is based on the work network among peasant self-organization members, the network connection between people and organizations, the peasant self-organization and other social organizations and the relationship between peasant self-organization. And these network relationships come from the working relationship, job relationship and organizational resource sharing relationship, the network junction nodes of the peasant self-organization development are stakeholders.

4.2 Transformation of rural social capital based on transcending institution dilemma of peasant self-organization

It is benefit to construct a new type of social capital based on institutional trust, formal system reciprocity standard and organizational system network, which is beyond the institutional dilemma of peasant self-organization development, perfect peasant self-organization system and promote the transformation of rural social capital.

First, institutional trust. The establishment of peasant self-organization system trust is helpful to enhance the objectivity of peasant self-organization's trust, which is benefit to change the trust concept and perfect trust system of peasant self-organization members. Peasant self-organization members' trust change and trust degree promotion are benefit to promote the modern transformation of rural social trust, and benefit to the transformation of rural social capital.

Second, the construction of reciprocity norms based on peasant self-organization system. The key to institutionalization the reciprocity norm of peasant self-organization members is to perfect peasant self-organization benefit distribution system, and the institutionalization of peasant self-organization members' benefit distribution is benefit to cultivate the contractual spirit of peasant self-organization members, which is benefit to the modernization of the traditional rural social capital system and the modernization of the system, which is benefit to promoting the modern transformation of the traditional rural social capital.

Third, the construction of modern organization network relationship, to achieve organizational resources sharing, and promote the transformation of rural social capital. With the development of peasant self-organization, the network relationship among peasant self-organization members breaks through the characteristics of traditional rural social capital network relationship. Peasant self-organization network relationship is constructed among peasant self-organization, peasant self-organization and its members as well as peasant self-organization and other social organizations based on the sharing of resources. The occupation relationship and resource sharing relationship have become the basis of modern organizational relations, so as to promote the modern transformation of rural social capital network relationship and realize the modern transformation of rural social capital.

5 Conclusions

The development of peasant self-organization exists organizational institution dilemma in China at present. The institution of peasant self-organization exists two dilemmas: the external institution dilemma and the internal institution dilemma. One of the reasons is that traditional rural social capital is embedded in peasant self-organization which hindered the institution perfection and development of peasant self-organization. The modern transformation of rural social capital is benefit to transcend the institutional dilemma of peasant self-organization development. Meanwhile transcending the institutional dilemma of peasant self-organization development is benefit to the transformation of rural social capital, which is benefit to the construction of new social capital based on institutional trust, formal system reciprocity norms and organizational system network.

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Study on the Influence of Social Support on the Choice Behavior of Middle-aged Pension Mode in China

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Abstract Under the background of population aging, various pension problems have frequently come out. Dealing well with these problems has become the key to cope with the aging society in the period of economic and social transition. Because the effective allocation of pension modes is an important part to ensure that the public can enjoy their lives in their old years. Therefore, this paper takes the middle-age people who are approaching the aging population as the research objects and explores the influence of social support on the choice behavior of their pension modes. The results have shown that the objective support from the middle-aged people and the degree of their use of support affect the choice behavior of their pension modes, and the subjective support has no obvious influence on the choice behavior of their pension modes. Besides, academic qualifications, professions, the number of children in a family, healthy condition and monthly income also play a significant role in their choice behavior of pension modes. Based on those mentioned above, this paper aims to provide some suggestions and ideas for the government to set pension mode service.

Key words Social support, Middle-aged people, Pension mode, Influence and affect

1 Introduction

Population aging refers to an increasing senior population in a certain region due to declining fertility rates and rising life expectancy. In this trend, the population of young people decreases and the elderly population increases. According to the international standard, when the portion of the elderly who are over 60 in a country or a region accounts for 10% of the total population, or the portion of the old people who are over 65 accounts for 7% of the total population, it is considered that the country or the region is the state of aging society^[1]. In accordance with this standard, China has entered the aging society in 2000, and gradually shows some characteristics: a large population base, rapid growth, aging, disability, and empty nest situation. In addition, because of the old-before-rich situation and small-sized family structure, aging population has brought about tremendous pressure to the state, society and family, which also enforces Chinese social and economic development to face severe challenges. Therefore, effectively dealing with the pension problems has become the key to solve the aging population problems in the period of economic and social transition. Hence, most of researchers think that choosing a reasonable pension mode is an important way to solve pension problems.

Currently, the pension mode in China has shown a trend of diversification. With the implementation of the family planning policy and the emergence of only one child in many families, the self-support mode for the aged people has gradually developed. At the same time, due to the rapid development of industrialization and urbanization, there comes out institutional pension, community pension and other pension modes, and traditional family pension mode is no longer the only choice for the elderly. Furthermore, the existing researches on the pension modes mainly take the old people as the research object and there are a few scholars who take the middle-aged people as the research object. However, studying on the choice behavior of middle-aged people not only is beneficial to help the middle-aged people enjoy their late years, but also beneficial to provide the predictive policies for pension problems. Therefore, this paper tries to explore the influence of social support on the choice of middle-aged pension mode under the background of aging population society, so as to provide theoretical reference for government to establish pension policies, build relevant pension service institutions and improve the pension service systems.

2 Literature review

As to the choice willingness of pension mode and its influencing factors, most of the foreign

scholars focused on discussing the factors affecting the choice of pension mode and residence for the elderly from the perspective of sociology and demography. John, B. Casterline and other scholars had found that personal situations and family status were the main factors which affected the way of living style for the elderly, and influencing factors of different regions were obviously different and had the obvious regional characteristics^[2]. Da Vanzo and other scholars took Malaysia as the example, and used Logistic regression analysis to prove the impact of income, home address, housing costs, age, healthy condition, marital status, family structure on the choice willingness of pension mode for Malaysia residents^[3]. Compared with the researches abroad, the scholars at home mainly used the quantitative research methods, and they had found that age, gender, marital status, education level, occupation, income, health condition, family status were the factors of influencing the choice of public pension mode. For instance, Song Bao-an had pointed out that sex, age, educational background, marital status, living places, healthy condition, profession, family relations and status had an impact on the attitudes of pension mode, and only family income had no relationship with pension attitudes^[4]. Taking one-child families as the example, Shang Xiao-ying pointed out that except sex factor, other factors in the personal characteristics had a significant impact on the pension mode of one-child family in the city, and the different pension needs also had an influence on the choice of pension mode in one-child families^[5]. In addition, some studies had found that public awareness of pension risk and the concept of pension had an impact on the choice of pension mode. When Zhu Gui-lin studied the Tibetan farmers' choice willingness of family pension mode, he thought the concept of "raising children against the old age" had significant effects on the pension mode in addition to those factors such as education, personal annual income, family population, per capita income, and current pension mode^[6].

Although research results concerning the pension mode choice are abundant, there are few research papers about social support on the choice of pension mode through scanning literature review. Among them, Zhou Jian-hong and some researchers used ANOVAs and found that those old people in nursing homes and in the communities had different opinions on the QOL and social support. These two groups had no obvious difference in QOL, support utilization, depression scores and loneliness scores, and the elderly in the nest family of community were better than those in the nursing homes in the aspect of QOL and social support^[7]. The studies from Xin Yuan and other scholars thought that families, friends and community support had a positive effect on the leisure life of the elderly people, but only the influence of friends' support was notable^[8].

In summary, the present studies related with the choice of pension mode mainly carries on the discussion from the perspective of personal characteristics, family characteristics, economic factors or the awareness of pension risks and so on. Few researches explore the individual effects of social support on the pension mode. In addition, some domestic studies that discuss this issue from the perspective of social support have found that social support has a close relationship with pension mode and elderly life, which suggests the important role of social support. However, the studies mentioned above all investigate the social support of the elderly. The relationship between social support and the choice of the middle-aged pension mode is in the blank, it should therefore be further explored.

3 Research hypotheses and the variable measurement

The purpose of this study is to examine the effects of social support on the choice of middle-aged people. Based on this purpose, this paper takes the choice behavior of middle-aged people's pension mode as the dependent variables, takes the social support from middle-aged people as the independent variables, and put forward the research hypothesis, namely, social support will affect the choice behavior of middle-aged pension mode. Specifically, this paper divides the pension mode into family pension, self-support pension, institutional pension, and home-based community pension, so the dependent variable "the choice behavior of pension mode" can be reflected through which kind of pension mode the respondents choose; as to the independent variable "social support", this paper refers to the social support revalued scale from Xiao Shui-yuan, divides the social support into subjective support, objective support and the utilization degree of support, finally respectively comes up with the following hypothesis:

H1: Subjective support influences the choice behavior of middle-aged pension mode

The choice of middle-aged pension mode is related to the subjective support among the social support. The middle-aged people who have more close friends and can get support and help from them have relatively strong dependence on self-care ability. These middle-aged people have less dependence on their children and their willingness to choose self-support pension mode and home-based community pension mode will become more intense; those who can get well with neighbors and colleagues can get help and support from their surroundings in daily life, and they are more inclined to choose self-support pension mode and home-based community pension mode; those middle-age people who can get more support and care from other family members have a higher dependence on their family members and children, and they tend to choose family pension mode or home-based community pension mode. Therefore, suppose the choice of pension mode has a relationship with the subjective support of middle-aged people, the middle-aged people who have more close friends and get along well with neighbors and colleagues can get more supports and care from their family members. So these middle-aged people are more likely to choose self-support pension mode or home-based community pension mode.

H2: Objective support influences the choice behavior of middle-aged pension mode

The middle-aged pension mode has a bearing on the objective support among social support. Those middle-aged people who live with family members, friends and colleagues can get better care, and they prefer to choose family pension mode and home-based community pension mode; in case of emergency situations, those who get more financial support, help and comfort have more objective social support and their independence in daily life is more weak at the same time, so their willingness to choose family pension mode and home-based community pension mode is more strong. Therefore, suppose that the choice of pension mode is concerning with the objective support of middle-aged people, those who live with family members and friend and get more objective support in the emergent situations tend to choose family pension mode and home-based community pension mode.

H3: The utilization degree of support influences the choice behavior of middle-aged pension mode

The choice of middle-aged pension mode has something to do with the utilization degree of support. When encountering troubles, the middle-aged people who are good at pouring out the troubles to others can better take advantage of social support and are more likely to choose family pension mode and home-based community pension mode. Those who are adept at seeking help for others also have a high utilization degree of social support when they meet troubles, and their willingness to choose family pension mode and home-based community pension mode are more intense; the middle-aged people who frequently participate in group activities and have higher initiative will be more accustomed to group activities and group life, and they will have higher recognition for institutional pension mode or home-based community retirement. Therefore, if the choice of middle-aged pension mode is related to the utilization degree of social support, those middle-aged people who are good at confiding, asking for help and actively participating in the group activities are more inclined to choose home-based community pension mode.

Besides, in order to better examine the influence of social support on the choice of pension modes, other factors that influence the choice of pension modes also need to be controlled. Based on the existing researches, this paper also has found that gender, occupation, marital status, economic income, education level, the number of children, the situations to live with children, health condition and the participation of pension insurance will exert an impact on the choice behavior of public's pension mode^[9,10]. Based on this result, this paper will take the influence factors mentioned above as the controlled variables of this study. The measurement of variables in this paper is shown in Table 1.

Table 1 Variable assignment table

Variable name	Variable assignment
Dependent variable	
Pension mode	Family pension=1, Self-support pension=2, Institutional pension=3, Home-based community pension=4
Independent variable	

Variable name	Variable assignment
Subjective support	Subjective support score
Objective support	Objective support score
The utilization degree of support	The utilization degree of support score
Control variable	
Gender	Male=1, Female=0
Education level	Primary school and below=1, Junior middle school=2, High school / Secondary specialized school / Technical school=3, College degree or above=4
Occupation	Unemployed=1, Farmer=2, Worker=3, Liberal professions=4, Company employee=5, Administrative organ / Staff of public institutions=6, Other=7
The number of children	Childlessness=1, One=2, Two=3, Three=4, Four and above=5
Marital status	Unmarried=1, Married=2, Divorced=3, Widowed=4
The situations to live with children	Yes=1, No=0
Relationship with children	Very bad=1, Not so bad=2, General=3, Good=4, Very good=5
Health condition	Very unhealthy=1, Relatively unhealthy=2, General healthy=3, Relatively healthy=4, Very healthy=5
Monthly income	2000 yuan below=1, 2001-4000 yuan=2, 4001-6000 yuan=3, 6000 yuan above=4
Ownership of property	None=1, One=2, Two=3, Three=4
The participation of pension insurance	Yes=1, No=0

4 Data sources and data analysis

4.1 Data sources

Because this study focuses on the choice behavior of middle-aged pension mode, the research objects are middle-aged people. At present, as for the different age groups in middle age, this paper refers to the definition of the middle-aged and young age by the National Bureau of statistics, the UNESCO and the WHO. So this paper chooses to take the 35 to 59 years old group as the survey object. Then, according to the measurement definition of variables, the author of this paper designs the corresponding questionnaires, and sends and returns back the questionnaires online and offline at the same time. Among them, the snowball survey method is adopted online while taking the field research to do the offline survey through entering the community. Eventually, 408 questionnaires are collected and incomplete questionnaires are eliminated, and this paper gets 376 effective questionnaires and the effective rate is 92.2%.

4.2 Description of sample data

According to the distribution of the pension mode chosen by respondents, it can be seen that the middle-aged people who choose home-based community pension mode are the most in the sample data, accounting for 35.1%; the followed by the self-support pension mode, the number of people who choose this mode are 128 with the percentage of 34%; the number of middle-aged people who choose institutional pension mode and family pension mode is small, accounting for 19.7% and 11.2% respectively.

Analyzing the overall situation of the sample data, the results are as following. Among the interviewees, the female respondents account for the most with the percentage of 66.5%; the education levels mainly distribute in junior middle school education(17.6%), high school/technical secondary school/vocational school(25%) and college education (55.8%); the respondents occupations' are mainly the staff of administrative organizations or institutions with the number of 158, accounting for 42%, which is followed by the employees in the company, taking up 13.8%, and the number of workers and liberal professions is almost equal with the percentage of 11.2%; 85.6% respondents have only one child; the respondents who have got married are 87.8%; as to the number who live with their children, 63.8% respondents are living with their children; from the perspective of cognition with their children, the vast majority of respondents are living in harmony with their children, better relationship accounting for 21.8% and the best relationship accounting for 69.1%; in the aspect of healthy condition, the people with the best healthy condition account for 21.3%, the people with better healthy condition

account for 47.3% and the general healthy condition account for 27.1%; for the economic conditions of respondents, their monthly income is mainly concentrated between 2001 yuan to 6000 yuan, accounting for 72.4%. The people who own 1 and 2 sets of real estates account for the most, respectively 58% and 23.4%; as to the situation of purchasing the insurance, the vast majority of respondents have bought basic pension insurance and medical insurance, respectively accounting for 91.5% and 97.3%. In addition, through calculation, this paper gets the average scores of subjective support, objective support and the utilization degree of support are 1.56, 5.15 and 7.87 respectively.

4.3 Multi-variable logistic regression analysis

Because the data type of the dependent variable of choice behavior of pension mode belongs to the four category data, therefore, this paper chooses the multi-variable logistic regression analysis to determine the influencing factors of middle-aged pension mode, in order to accurately analyze and verify the research hypothesis. Then, this paper takes the home-based community pension mode as the reference group, sets gender, occupation, marital status, whether or not to live with their children and whether to participate in pension insurance as the dummy variable, and takes education, the number of children, relationship with children, health status, monthly income and property ownership as the regression variable to make an analysis. The significance level of the regression analysis model is 0.000, which suggests that the model has a significant meaning.

The regression analysis results of independent variables, controlled variables and dependent variables are shown in Table 2. Model One is the logistic regression model of family pension mode/home-based community pension mode; Model Two is the logistic regression model of self-support pension mode/home-based community pension mode; Model Three is the logistic regression model of institutional pension mode/home-based community pension mode.

Table 2 Regression analysis result

Variable	Model 1	Model 2	Model 3
	B	B	B
Intercept	-0.586	21.151	15.132
Subjective support	-0.005	0.029	0.083
Objective support	-0.047	-0.077	0.660*
The utilization degree of support	-0.169	-0.223*	-0.288**
Gender (male)	0.568	0.418	0.048
Education level	-0.236	0.123	-0.574*
Occupation (farmer)	21.942***	0.058	1.104
Occupation (worker)	20.903***	0.733	1.176
Occupation (liberal professions)	21.718***	0.282	1.114
Occupation (company employee)	20.680***	0.351	2.377*
Occupation (administrative organ / staff of public institutions)	20.722	0.195	3.158**
Occupation (other)	2.598	-0.208	1.461
The number of children	-0.090	1.559**	0.570
Marital status(married)	-21.268	-20.390	-20.620
Marital status(divorced)	-22.435	-22.483	-20.299
Marital status(widowed)	-39.677	-20.701	-18.823
The situations to live with children (yes)	0.309	-0.568	-0.006
Relationship with children	-0.389	-0.002	0.005
Health condition	0.849**	-0.132	0.324
Monthly income	0.419	-0.539*	-0.027
Ownership of property	-0.543	-0.018	-0.533
The Participation of pension insurance (yes)	0.506	-0.798	1.054

* p<0.05; ** p<0.01; *** p<0.001

In the Model One, subjective support, objective support and utilization degree of support have little effect on the middle-aged pension mode; compared with home-based community pension mode, the middle-aged people whose professions are farmers, workers, and liberal profession and workers in the company are more inclined to choose family pension mode than those without a profession; as for

the healthy condition, the middle-aged people who are more healthy are more likely to choose family pension mode; the influencing factors such as gender, education, marital status, number of children, whether to live with their children, and the relationships with children, monthly income, property ownership and whether to participate in pension insurance are not significant for the middle-aged people to choose the pension mode.

In the Model Two, compared with the home-based community pension mode, the utilization degree of support from middle-aged people also influences the choice of self-support pension mode. The subjective support and object support are not statistically significant for the effect on the self-support pension mode; In addition, in the controlled variables, only the monthly income and the number of children affect the choice behavior of middle-aged self-support pension mode, and other variables don't have the significant influence.

In the Model Three, relative to the home-based community pension mode, objective support and utilization degree of support influence the choice behavior of middle-aged institutional pension mode while subjective support has no obvious effect on the choice of institutional pension mode; in the aspect of professions, the middle-aged people who works in the company or in the administrative organizations and institutions more tend to choose institutional pension mode comparing with people without a profession. Moreover, the education levels influence the choice behavior of institutional pension mode for the middle-aged people; other controlled variables have no significant effect on the choice behavior of institutional pension mode.

From the variables which have a significant effect on the choice behavior of pension modes, it can be concluded that the objective support and utilization degree of support influence the choice behavior of middle-aged pension mode while the subjective support has no obvious effect on the choice behavior of middle-aged pension mode; Education, occupation, number of children, healthy condition and monthly income impact the choice behavior of pension mode, while gender, marital status, whether or not to live with their children, and the relationship with their children, and the situations to own the house property, whether to participate in pension insurance do not affect the choice behavior of pension mode for middle-aged people.

5 Conclusion and suggestions

This study collects the research data through questionnaires, and makes the hypothesis to test with the method of multiple logistic regression analysis. Through analyzing, the conclusion is as follows: The objective support from middle-aged people and their utilization of support affect their choice behavior of pension mode, and the subjective support has no significant influence on the choice behavior of pension modes. Based on this conclusion, the author of this paper puts forward some relative suggestions to improve this situation.

Firstly, the pension modes in our country present a trend of replacing the old modes with the new modes. As a new type of pension mode, the home-based community pension mode effectively integrates family and community resources and becomes more and more popular. Therefore, our country should optimize the allocation of pension resources, put more pension resources on the home-based community pension mode, and improve community's facilities to support the pension mode so as to essentially relieve the pension pressure brought about by aging population.

Secondly, with the development of economic society, people become more and more open and the independence of parents and children becomes stronger. Therefore, self-support pension mode becomes another new trend. The empirical results show that the utilization of social support from middle-aged people influences the choice behavior of their pension mode. Besides, monthly income and the number of children in one family also make great impact on the choice behavior of middle-aged pension mode. Hence, the related departments of Social Security Department should select out the groups who can enjoy the late years by themselves, makes the corresponding social pension policies according to their particularity, and integrates the self-support pension and social pension so as to promote the long-term development of public' self-support mode.

Thirdly, as one of the pension modes which ease the pension pressure in our country, institutional pension mode always plays a dispensable role. From the perspective of empirical results, both

objective support and the utilization degree of support affect the choice of middle-aged pension mode. At the same time, profession and educational level also make an influence on the institutional pension of middle-aged people. However, due to chaotic market, high cost and other reasons, the development of institutional pension mode presents a lagging trend. Therefore, our government should carry out the relative policies to regulate the development of institutional pension market, and give them the policy support and preferential policies to promote a healthy and sustainable development of institutional pension mode from the aspect of suppliers and demanders.

Fourthly, family pension mode is the traditional mode in our country, which bears the inherited notion of Confucian doctrine of filial piety. However, with the change of family structure and higher speed of population migration and flow, the status of family pension mode becomes weaker. In the view of empirical results, subjective support, objective support and utilization degree of support have no obvious significance on the choice of family pension mode while profession and healthy condition has a significant impact on the choice of family pension mode. Therefore, when encouraging the social pension mode, the government also should positively publicize the family responsibility of children and the concept of providing support for the elderly. Besides, there is a need to carry out some policies to encourage the development of family pension mode, and appropriately relieve the pension problems.

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Research on Government Service in the Transformation of Scientific and Technological Achievements in China

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Abstract With the implementation of the strategy of innovation-oriented countries, the government attaches more and more importance continuously on promoting the transformation of scientific and technological achievements in China. However, some problems in the specific area of services restrict the efficiency of the transformation of scientific and technological achievements. Furthermore, the process of Industry-university-research institute collaborative innovation has been affected seriously. First of all, the service responsibilities of the government in the transformation of scientific and technological achievements have been analyzed in detail in this thesis. Secondly, the current situation and problems of government service in the transformation of scientific and technological achievements have been introduced. Then, the restrictive factors of the government in the transformation of scientific and technological achievements have been analyzed. Finally, some suggestions on the government services have been put forward to promote the transformation of scientific and technological achievements: perfect the legislation, improve related system construction, increase policy support, lead the further development of Industry-university-research cooperation based on the demand, build effective communication channels with research institutions and improve the platform construction.

Key words Government services, Government responsibilities, Industry-University-Research Institute, Transformation of scientific and technological achievements

1 Introduction

In today's world, a new round of scientific and technological revolution has shown a breakthrough in many fields, penetrating all areas of economic and social development. Promoting the transformation of scientific and technological achievements and give full play to its practical value has become a new trend in science and technology policy all over the world. China began to pay attention to science and technology legislation early in the 1990s and passed and implemented "Law of the PRC on Promoting the Transformation of Scientific and Technological Achievements" and a series of concrete implementation regulations at that time. General Secretary Xi Jin-ping in the conference of science and technology "three" has conveyed the idea that the majority of scientific and technological workers should write paper on the land of the motherland, and apply the scientific and technological achievements to realization of the great cause of modernization. (Xi Jin-ping, 2016^[1]) With the rapid development of the times, the government plays the main role in the process of transformation of scientific and technological achievements, for it is the creator of the policy environment, the provider of public services. Obviously, whether the government is able to advance with times to discover market demand promptly and play the role of "visible hand" is an essential step to promote the transformation of scientific and technological achievements into practical productivity, which is also the hot spot that the majority of scholars have been concerned and researched. Ge Zhang-zhi and his companions analyzed the new policy of 2012-2015 transforming scientific and technological achievements from the aspects of policy-making background, policy tools and policy focus, and constructed a new policy content system. (Ge Zhang-zhi, 2015^[2]) Li Lv-cheng and companions analyzed the main reasons of the low rate of transformation of scientific and technological achievements in China from the respect of Chinese government financial investment on scientific and technological innovation and put forward a series of feasible recommendations, which regard the government as the core, market as orientation, university as fulcrum. (Li Lv-cheng, 2016^[3]) Lei Yi-fei elaborated the important role of Chinese intellectual property legal system and analyzed the negative impact of the existing problems and shortcomings of them on the technological innovation and the transformation of scientific and technological achievements, and put forward the ways that improve the legal system, scientific research evaluation mechanism to accelerate the path of scientific and

technological achievements transformation. (Lei Yi-fei , 2017^[4])

It is obvious that the transformation of scientific and technological achievements has been paid much attention. The current research has focused on unilateral financial incentives, the improvement of national laws or the analysis of policy texts, but few on the basic services of government in the transformation of scientific and technological achievements. Through the analysis and review of the existing research results, this thesis analyzes the current situation and problems of the transformation of scientific and technological achievements from the perspective of government service, summarizes and analyzes the influencing factors of the unsuccessful transformation of scientific and technological achievements in recent years, and analyzes the main constraints in the transformation, and put forward the improvement countermeasures on government service to promote conversion rate in the era of knowledge economy.

2 Government service responsibility in the transformation of scientific and technological achievements

“How to implement law”, which is a major issue in relation to the life of a law. In response to this problem, the legislators of technology law have chosen to cut from the point of the government’s duties, that is, to set up a large number of government duties in the norms of science and technology, and to create a favorable external environment for scientific and technological innovation through the exercise of government duties. (Zhou Hai-yuan, 2016^[5]) At present, most of the transformation of scientific and technological achievements is a process of high investment, slow return. Few private enterprises are able to afford such high costs. As the manager, guide and coordinator of scientific and technological achievements, whether the government can provide high-quality service is an important support for the transformation. This paper divides the main service functions in the transformation of scientific and technological achievements assumed by the government into three parts: legislative protection, policy environment and platform construction.

2.1 Legislative protection

The society today is a legal society and the perfect legislation is conducive to the standardization of scientific and technological achievements. Furthermore, it can not only guarantee the basic rights and interests of scientific research personnel and protect the achievements of science and technology, but also can make the government staff realize the importance of their work. The government as an administrative body, enjoys part of legislative power and should bear responsibilities including formulation and improvement of laws and regulations in the process of transformation of scientific and technological achievements: intellectual property rights, ownership, disposition, income rights and other laws and regulations.

2.2 Policy environment

Policy is an important part of government service. The government as the main body of policy formulation, implementation and supervision, has the responsibility to create a favorable policy environment for the transformation of scientific and technological achievements. The promotion policy system of the Chinese government in the transformation of scientific and technological achievements is shown in Figure 1. (Han Shu-wen and Jin Hai-he, 2013^[6])

In the respect of science and technology policy, the government should not only deal with the relationship in the field of science and technology, but also the relationship between science and technology and economy and society. Therefore, the government should do well in the work in the transformation of scientific and technological achievements, including formulating, implementing and supervising the policy about scientific and technological system reform, science and technology programs, science and technology awards and other aspects. In addition, Article 21 of the “ Law of the PRC on Promoting the Transformation of Scientific and Technological Achievements” clearly stipulates that the part of funding for science and technology should be used for transformation of the scientific and technological achievements, mainly for guide funds, loan discount, Capital, venture capital of the transformation of scientific and technological achievements. Therefore, in terms of finance, the government should formulate and improve the policies of science and technology investment and financing, tax concessions, procurement support, and transformation of scientific and

technological achievements. People are the main body of innovation, but personnel training depends on the support of government policies, including formulation and implementation of policies about scientific and technological personnel innovation and entrepreneurship, two-way flow of talent and part-time, talent introduction and training and other aspects. The transformation of scientific and technological achievements in the final analysis is an activity with high investment, long cycle. Therefore, the government's policy about risk aversion and compensation is an important measure to promote the transformation of scientific and technological achievements.

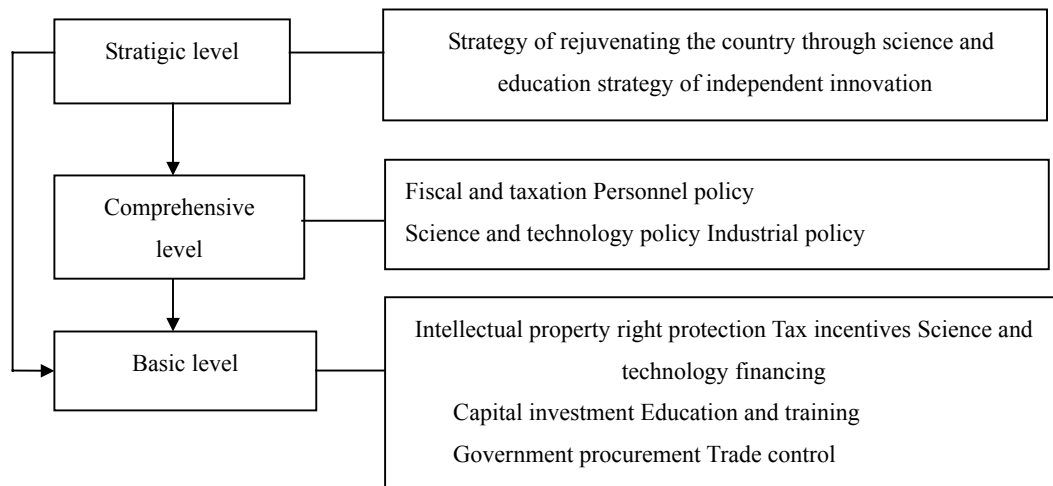


Figure 1 The promotion policy system of scientific and technological achievements transfer in China

2.3 Platform construction

Today, the Internet is ubiquitous in people's life. The premise of effective transformation of scientific and technological achievements is information symmetry on both side of supply and demand. The government as a provider of public service, shouldering the responsibility to smooth the channels of communication of itself and between the supply and demand, and the responsibility to establish a basic database platform, transformation of scientific and technological achievements trading platform, information exchange platform, technology management platform, science and technology cooperation platform, technology investment and financing platform, and so on, each of which is a non-ignorable government service responsibility.

3 The current situation and problems of government service in the transformation of scientific and technological achievements

China, the United States, Japan and European countries, in order to promote science and technological innovation capacity and high technology development, as well as the economic development and social progress. Each country has issued a series of policies to promote IUR cooperation, and to ensure occupying a favorable position in international competition. Countries have laid a solid foundation, created a good environment for cooperative innovation of enterprise, university and research institute.

3.1 The allocation and protection of rights and interests of scientific and technological achievements

Any subjects in science and technology innovation are difficult to monopolize the value of innovation, because the basic characteristics of scientific and technological innovation is to rely on the continuous cooperation between the various entities continue to promote the process of innovation, the main interests of the individual must be based on their contribution to innovation, from the commercial value of the corresponding share of their own rights and interests, guaranteed researchers and to enable them to have the enthusiasm of the transformation is the primary conditions. (Li Tian-zhu and Hou Xi-lin, 2017^[7])

The primary condition that enables researchers to have the incentive to transform the achievements

is that their own rights and interests are guaranteed. Establishing a fair and reasonable distribution system of benefits is a direct way to make sure the process of scientific and technological achievements is in a harmonious and orderly manner, and everyone gains the benefits that he or she deserves and feels fair and balance. At present, China has “Law of the PRC on Scientific and Technological Progress”, “Law of the PRC on Promoting the Transformation of Scientific and Technological Achievements”, “Law of Scientific and Technological Popularization of PRC” and other laws, including the allocation and protection of rights. What’s more, in Shanghai, main bodies who complete the scientific and technological achievements have the autonomy of transformation and the right to draw up reward and remuneration scheme based on regulations or former agreements, to put up higher requirement for the quality of government services. Comprehensively, however, the government service of equity allocation and rights protection in the process of the transformation of scientific and technological achievements is still weak. In the respect of benefits distribution, it lacks of the scientific means of distribution, the concrete operational processes and restraint mechanisms in China. In the respect of rights protection, the intellectual property law is not implemented well in China, and the system of intellectual property is need to be improved. In addition, all levels of government still exist lax enforcement, absence, offside and other problems in the specific process of implementation.

3.2 The internal motivation of the government to serve the transformation of scientific and technological achievements

The internal motivation is the root of the government to improve service quality and efficiency. In recent years, the central government attaches great importance to the transformation of scientific and technological achievements. Therefore, the phenomenon of government inaction has been significantly reduced. In addition, it carries out more detailed and higher requirements on the specific work of the Ministry of Science and Technology, Ministry of Education and other departments. However, the government current awareness of the importance to provide services are often concentrated on the upper, ignoring the higher authorities’ publicity and promotion to subordinate departments about the importance of the transformation of scientific and technological achievements, and neglecting the communication and feedback of specific work between upstream and downstream. There is a disconnect in the government work. More importantly, the policy system needs to be improved. it is because the lack of internal motivation and management mechanisms that the government is negative and neglectful or even just marks time when it provides service to the transformation of scientific and technological achievements.

3.3 Information asymmetry between government, market and scientific research institutions

It is an age where Internet technology is popular and all kinds of data and resources are gathered. The government has mastered a great deal of resources, which can be flexibly made use of by using existing technology to realize full communication between the government and the scientific research institutions, which is the key to improving and innovating the government service. In addition, the strategic alliance is an important form of the strategic development of the organization today, which can effectively realize the sharing of resources, expand the industrial value chain, and produce the synergistic effect of “1 + 1 > 2”. (Qian Fu-liang, 2017^[8])

In order to accelerate our steps of implementing national innovation-driven strategy and increase the transformation rate of scientific and technological achievements, the government has paid more and more attention to the coordination and propaganda work with scientific research institutions in recent years. For example, the Ministry of Science and Technology cooperates with other departments to summarize and release scientific and technological achievements information produced by national finance plans. But there is still serious communication problem, due to which information can not be symmetrical. The development of strategic alliance of production and research should also be further deepened. It is embodied in respects of the government’s collection of existing information, the promotion of existing information and the promotion of information coupling between supply and demand sides.

4 Analysis of the restrictive factors of the government in the transformation of scientific and technological achievements

Table 1 The results of the study did not achieve the distribution of causes

	Number of affected subjects(one)				The proportion(%)
	2012	2013	2014	sum	
Number of topics that have not yet been converted	6079	5416	4906	16401	100
Accounting for the proportion of the total number of subjects surveyed	56.0	50.5	52.7	-	-
The results are not yet available for conversion	3494	3187	3181	9862	60.1
The funding required for conversion, the relevant personnel and technology, and the funding for cooperation	2905	2662	2113	7680	46.8
The desire or ability to transform their own scientific and technological achievements	1548	1417	1159	4124	25.1
The environment and media to promote the achievements transformation	408	388	317	1113	6.8
Other	475	399	501	1375	8.4

Table 2 The specific reasons for distribution of their own desire or ability to transformation of the results

	Number of affected subjects(one)				The proportion (%)
	2012	2013	2014	sum	
Number of the desire or ability to transform their own scientific and technological achievements	1548	1417	1159	4124	100
Accounting for the proportion of the total number of subjects surveyed	25.5	26.2	23.6	-	-
Willing but difficult to convert	848	794	671	2313	56.0
Difficulties in transforming relevant work and markets	523	470	355	1348	32.6
Results propaganda is insufficient	355	314	257	926	22.4
Researchers do not have the energy or interest in carrying out the work	260	224	196	680	16.4

4.1 Government's outdated service and management to scientific research institutions

Factors that scientific and technological achievements are untransformed have been surveyed in 2012-2014 as the statistical analysis of Table 1. According to the table, 61% of the untransformed achievements are affected by the factor of insufficient application condition, which comes to the first. 46.8% are because of the workers and technology that are needed. Achievements that are affected by environmental and media impact that promote application account to 6.8%. The statistic shows that the main constraint that scientific and technological achievements can not be applied is inadequate conditions, which from a deeper level reflects the lack of government services. The most important thing in the conditions that decide whether scientific and technological achievements can be transformed into the application is perfecting legal system and advancing with the means of service, for the loopholes in the management system are easy to be taken the advantage of by the outlaws, and the lack of profit distribution standards is unable to protect the benefits that the workers deserve and they are unwilling to transform scientific and technological achievements because of the risk.

Table 2 presents the statistical analysis of willingness or ability of researchers who try to apply the scientific and technological achievements but not succeed yet. According to the table, 56.0% of the researchers are willing to apply their achievements but have difficulty to do it by themselves, which reflects that the policy of government is not in place and hinder the process of transformation of

scientific and technological achievements. For example, researchers are willing to apply the achievements but have to give up because of financial difficulties caused by insufficient fiscal policy support. Besides, the researchers who are not energetic or interested in carrying out the relevant work account for 16.4%. Although the number is relatively low, it reflects that the government neglects the great effort researchers have to make on the policy procedure. The researchers need to consume too much time and energy in the complex forms and useless procedures, which they are too busy to operate in practice.

4.2 The lack of specialized service management departments and operation system for transformation of scientific and technological achievements

There are work arrangements for the transformation of scientific and technological achievements in the government, but the arrangements and requirements are fragmented, lacking integrity and coherence. Due to the lack of specialized management departments, government workers have not realized the importance of the transformation of scientific and technological achievements, let alone intellectual property protection work. Therefore scientific and technological achievements evaluation and transformation work are in chaotic. The lack of motivation makes them negative and neglectful to their arranged work or they even skimp their work, coupled with the lack of relevant systems, leading to the ignorance of the government on the service for transformation of scientific and technological achievements, and the imperfect punishment mechanism. Specifically, the organization of government service is rigid, the actual service of the government is disconnected from the real demand, many problems still exist in the process of law enforcement and so on.

4.3 The lack of effective communication channels and platforms between government and scientific research institutions

In the era of massive and complicated information, the poor communication channels as well as the incomplete platform between the government and the scientific research institutions have led to the obstruction in the process of transformation of scientific and technological achievements. First, in the government scientific research information collection work, the existing information can not be fully acquired and used effectively due to poor communication channels, lead to information asymmetry between government and scientific research institutions in the scientific and technological achievements in market prospects, technology, transaction costs and other aspects, further triggering information asymmetry between supply and demand sides, which hinder the transformation of scientific and technological achievements from the source. At present, Chinese existing platforms include the National Science and Technology Program Project Online Declaration Center, Budget Management System of Scientific Research Institution, Online Registration System of National Technology Market and so on, the service range of which is extremely limited. The lack of network platform makes the procedure more complex, and the workload burdensome in the process of providing services, which cause the lag to solve problems, leading to more serious consequences. If the intellectual property problems are not solved timely, the researchers are faced with the risk that their achievements might be stolen or illegally used. Therefore, the lack of effective communication channels and platforms between the government and scientific research institutions is a constraint in government providing effective service for transformation of scientific and technological achievements.

5 Conclusions

In the background of economic globalization and information age, government service innovation is the key to promote the transformation of scientific and technological achievements and to improve the national innovation-driven level. In this thesis, the government in the service of transformation of scientific and technological achievements has been studied in depth. According to Chinese specific circumstances, the author put forward the following four suggestions:

5.1 Perfect legislation and enforce effectively

The lag of the law directly affects the specific formulation of system and policy, and the legal rights and interests of scientific research personnel are difficult to be guaranteed. Therefore, the government should first promote the revision of the Patent Law, implement the Intellectual Property

Protection Law to provide scientific research personnel with worry-free protection in the process of transformation of scientific and technological achievements; secondly, legalize the interests distribution rules, standards and process in the transformation of scientific and technological achievements; thirdly, promote the formulation of the evaluation method about transformation of scientific and technological achievement to make the assessment scientific and standardized.

5.2 Improve system construction, increase policy support, stimulate the internal driving force

The improvement of the system is conducive to the development of specific work, the increasing policy support can effectively mobilize scientific research personnel to transform the scientific and technological achievements. For the promotion of the transformation of scientific and technological achievements, first of all, the government should speed up the formation of intellectual property ownership system that is conducive to encourage innovation; reform the pay distribution system, explore the annual salary system and the salary agreement system, try equity and option dividends, increase the proportion of income of the achievements transformation of scientific researchers; improve scientific research planning, evaluation, project system, and standardize the process of scientific and technological achievements transformation; decentralize the right to scientific research personnel and try to establish scientific research funding assistant system to make sure researchers have the necessary energy, autonomy and the space of self-independence. Second, in the respect of policy, the government should increase financial investment, establish financial guide fund for transformation of science and technology achievements, mobilize the majority of scientific research personnel or units to transform the scientific and technological achievements, direct service to guide the industry transforming and upgrading.

For the government's own improvement, government services first should be combined with decentralization and management, try to form a new service organization, set up a special department for transformation of scientific and technological achievements within the service sector and implement staff classification management, clear the main body, standardize the work process and make the staff have the active to promote the operation of each system. Secondly, the government can investigate or participate in specific activities of scientific research institutions, universities and enterprises in order to understand their needs in time and provide accurate services; thirdly, the government should combine with practice to make the specific implementation program, clear the time and progress of the work that is going to be carried out, refine and decompose tasks to different levels, improve its own service efficiency, and promote the effectiveness of transformation of scientific and technological achievements; Finally, promote the comprehensive administrative law enforcement reform in the field of market regulation, make efforts to solve the problem of duplicate law enforcement or non-strict law enforcement and so on, be transparent in the usual work and make sure it is supervised by the outside world.

5.3 The lack of effective communication channels and platforms between government and scientific research institutions

The real purpose of scientific and technological innovation is to promote productivity, in the final analysis is the satisfaction of demand. Therefore government should be based on the demand of economic and social development, fully mobilize the enthusiasm of scientific research institutions, universities and enterprises to promote production and research cooperation to a deeper level, build cooperation bridge between itself and the production and research organizations and social organizations, explore the new service model in the light of the demand of main bodies. In addition, integrate all resources to release human resource, financial resource and information resource and focus on building a cooperation mechanism which is interdisciplinary and has strong combination and deep integration of each part.

5.4 Broaden the communication channels with scientific research institutions and improve the platform construction

The smooth of communication channel with scientific research institutions is the necessary prerequisite for the government to collect related information of scientific and technological achievements and provide quality services. The construction and perfection of all kinds of platform are cornerstone to promote smooth development of related work. Therefore, in order to guide transfor

mation of scientific and technological achievements in key areas, the government first should strengthen the convergence of scientific and technological achievements information, establish and promote the online communication system, and smooth the channels to collect information about scientific and technological achievements. What's more, government should encourage scientific research institutes and universities open resources for the community. On the one hand, it is helpful to for government to understand and communicate with scientific research institutions. On the other hand, it helps the community to understand and share the existing information. Second, for the platform construction, government should improve the technical property right transaction market and functions of intellectual property transactions and so on, build a one-stop integrated service platform that including patent application, rights assistance, mediation law enforcement. In addition, the government should play a leading role in the establishment of the service network platform for scientific and technological achievements transformation, and explore the entire process of declaration, closing, transformation of scientific and technological projects, and let the market play a full role, promoting the diversification of supply and manners of scientific and technological achievements, forming a new transformation of scientific and technological achievements pattern that lead by government and involved by a variety of scientific research bodies.

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Governance for a Better Life: A Study of Work-life Balance from the Perspective of Social Policy^{*}

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Abstract As work-life conflict has become a new social risk that influencing people's welfare and happiness, how to help them to maintain a balance between "work" (the source of income) and "life" (including caring, house works and leisure) has turn into a welfare demand which need public concerns. While there are few empirical study, this paper based upon the questionnaire survey and interview to laborers in a city of Guangdong Province, conducted a multi-factor ordered logit model to analyze the effects of age, gender, level in the labor market, organizational arrangement and domestic labor division on work-life balance. The results show that there are significant gender differences in work-life balance, and the supportive policies of employers are helpful to help employees to coordinate their work life relationship. There are various approaches to respond to this new kind of welfare demand from the perspective of governance. The government should get involved into people's work-life relationship, to promote a coordinate system of multiple subjects by institutional supply, policy incentives and external constraints, provide an institutional guarantee for a "better life".

Key words Better life, Public governance, Social policy, Work-life balance

1 The problem

In the course of life of modern people, work and life¹ provide different benefits: work, that is, workers involved in the labor market for market-oriented labor supply, to ensure that people get income to maintain a certain level of material life; life, that is non-marketed labor supply (such as taking care of children or elders, doing housework) in family or enjoying leisure and recreational activities can provide basic protection for population and family reproduction and people's enjoyment of life. There is a complementary relationship between the two, and may also conflict with each other, leading to welfare losses.

Since 1960s, increasing difficulty of coordinating the relationship between work life (work-life conflict to be specific) has caused widespread concern in the developed capitalist countries which gradually transformed from industrial society to post-industrial society. After decades of development, the western society has been recognized and paid attention to maintaining the balance between work and life from both the government level and the individual level. In the OECD's Better Life Index², work-life balance has also been listed as an important indicator. As work-life balance has been more and more important in the policy agenda of the western developed countries, the GDP centered economic development mode has been gradually replaced by a more wholistic development concept which put more emphasis on the quality of life. This concept has deepened the understanding of the purpose of human society's development, and is a manifestation of the continuous progress of society.

* Funded by "the Fundamental Research Funds for the Central Universities" of Southwest Jiaotong University: "Social Policy Transformation under New Social Risks: Western Theories and China's Practices" (Project No: 2682017WBR06); by "the Fundamental Research Funds for the Central Universities" of UESTC: A Study on Second—Child Fertility Desire of Population and Its Social Policy Response in China (Project No: ZYGX 2016J226).

1 Many of the literature with "work-family" expression mainly focus on the relationship between work and family care. In recent years, more scholars use the "work-life" expression, where "life" mainly includes "work" relative to the other side, that is, leisure (hobbies, friends, social and film and television activities) and take care of family (sleep, diet, housework, child care, etc.).

2 The better life index, which contains multidimensional indicators, can be used to replace GDP, and measure the overall standard of living and quality of life of modern people from a more comprehensive perspective.

After about 40 years of rapid economic development and dramatic social transformation, work-life conflict is becoming increasingly common to China's workers, some survey of workplace pressure or working hours of Chinese workers have proved that Chinese Workers are facing greater pressure to balance their work-life relations (Regus, 2012). In recent years, there has been a gradual increase in the literature on the work-life balance of laborers in our country. However, empirical studies on the status quo of work-life balance and their strategy to cope with work-life relations of labors in China are relatively lacking. Obviously, the work life relationship will inevitably present different characteristics in different social, cultural and political economic situations. Therefore, the main question of this paper is, under current economic, social and cultural circumstances, how's the work-life balance situation of workers in China's? What are the specific factors that affect people's work life balance?

2 Literature review

The Work Foundation holds the view that "Work-life balance is about people having a measure of control over when, where and how they work. It is achieved when an individual's right to a fulfilled life inside and outside paid work is accepted and respected as the norm, to the mutual benefit of the individual, business and society." (Arulappan, 2003; Byrne, 2005) And work-life conflict refers to "a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible in some respect. That is, participation in the work (family) role is made more difficult by virtue of participation in the family (work) role." (Greenhaus & Beutell, 1985: 77)

It is an important research issue in the work-life research to study the factors that lead to work-life conflict, or what factors help people achieve work-life balance. Byron (2005) summed up three antecedent variables that led to work-life conflict: work-related variables, non-work domain variables, and personal and demographic variables. First, from the aspect of personal and demographic variables, the impacts of gender, income level and personality on work-life balance have been investigated by many researches. The results show that men are relatively more likely to encounter work to life conflict, while women are more likely to be affected by family life. (Duxbury & Higgins, 1991; Crompton & Lyonette, 2006) Employees with higher income are more likely to experience work-family conflict (Byron, 2005), and people with optimism are more likely to gain support from society and are able to cope with stress and thus can do better on balancing work and Family life needs (Aryee, 2005) Second, in terms of work-related factors, whether part-time work is more conducive than full-time work for workers to balance the work and family life has not reached a conclusion yet. (Fast & Frederich, 1996; Barker, 1993) However, scholars have reached a consensus on the positive relationship between the length of work and work-life conflict (Aryee, 1992; Frone et al., 1997; Hochschild, 1997), but there is no consensus on whether the work flexibility can promote the work-life balance (Christensen & Staine, 1990; Hill et al., 1996) Supports from organization and superior can help employees reduce work-life conflict to a certain extent. (Thompson et al., 1999; Allen, 2001) Moreover, some factors related to family have also been discussed widely. In terms of family structure, single-parent families may face more work-life conflicts (Belle, 1990; Norton & Glick, 1986) In terms of family demands and stress, the number of dependent family members (disabled children, spouses, old people, etc.), children's age, etc. are highly associated with work-life conflicts (Grandey & Cropanzano, 1999) And emotional and instrumental support from the family are good for the workers to balance their work and life. (King et al., 1995)

However, with the gradual expansion of research scopes, many scholars start to make cross-country comparative studies (such as Crompton & Lyonette, 2006), they also tried to bring welfare systems, culture and other macro factors into the scope of the study. This study will try to use empirical research to explore the factors that influencing work-life balance of laborers in Chinese social and cultural contexts and explore the strategies of workers to coordinate work and life needs at both the individual and family levels, and then come up with feasible strategies to intervene in people's work - life relationship by carrying out public policy from the perspective of social policy.

3 Research methods and dependent variable measurement

To take the financial imitation and realistic conditions into account, it is very difficult to sample, investigate and visit all the laborers from the whole country. Therefore, we take J city as an example and use non-probability sampling method to select the sample and carry on the investigation through self-edited questionnaire, and then we carry out interview to collect qualitative data in this study. We mainly divide the workers' groups and grades from the aspects of population structure and industry structure, and choose samples according to the actual population structure and industry structure of J city: the proportion of gender, the proportion of age, the proportion of laborers in different industries, organizational hierarchy and so on. In this survey, 400 questionnaires were distributed by quota sampling and 381 questionnaires were collected. The recovery rate was 95.3%. Due to the relatively long process of structured interview and some content involving privacy of interviewees, many people could not complete the questionnaire because of the time problem. Meanwhile, some of the questionnaires were deleted due to the missing value, so there were 356 valid questionnaires after deleting the unqualified questionnaires.

One way to measure the work-life balance of workers is to ask interviewees directly to evaluate their work-life balance, and the other is to make work-life balance structured according to theories. By using the second way, we usually measure the work-life balance with different questions and assess the work and life with different aspects of the conflict or balance respectively. In this study, we asked interviewees to evaluate their "work-life balance" based on their own life experiences. According to the frequency of occurrence, we set up five options that are "basically cannot", "hardly can", "sometimes can", "usually can" and "fully can". In terms of interviewees' responses, six of the 356 interviewees did not respond contributing to 350 valid samples left. The result shows that the number of people who chose "fully can" is 47, accounting for 13.4%; the number of chosen "usually can" is 177, accounting for 50.6%; the answer "sometimes can" accounts for 28% with a total number of 98. Meanwhile, the number of "hardly can" and "basically cannot" are 16 and 12 respectively with the corresponding proportion of 4.6% and 3.4%. On the whole, most interviewees are usually able to maintain the balance between their work and life, and there is less conflict between work and life. However, nearly 40% of the interviewees claimed that they had encountered different degrees of difficulty when trying to balance work and life. Hence, the work-life conflict still cannot be ignored. For some workers, it is basically impossible to balance different needs of work and life.

4 The impact of work - life balance factors: an analysis based on the ordinal logit model

The hypothesis of this study are as follow:

1. Worker's work-life balance is influenced by many factors, the main influencing factors should include four aspects: the individual factors of workers, the stratification effect in the labor market, the employer's support for workers and the impact of family burden.

2. Among the individual factors, women are more likely to experience work life conflict than men, and with the increase of age, the possibility of workers' work life conflict will gradually increase.

3. Among the labor market stratification factors, the income level of the lower social level may be more likely to encounter work life conflict, there was a negative correlation between the level of education and work life conflict frequency, and rural household residents compared to city residents more difficult to coordinate the work and life needs. The more workers stay away from household registration work, the more likely they are to encounter work life conflict, and the more difficult it is for workers at lower levels in the organization to coordinate their work life relationship.

4. As to the arrangement of organization system, the flexibility of the work is beneficial to the workers to balance the work and life. The more incentive the wage calculation method is, the more likely it is to lead the employee to work—the conflict of life, the organization's paid holidays, benefits and allowances, employee satisfaction with their income level is associated with work life balance a positive relationship.

5. Among the family factors, the sharing of houseworks and care responsibilities is conducive to the promotion of work-life balance, the elderly and the number of dependent family members

increased the burden of care, is not conducive to work-life balance; daily leisure time and work-life balance should have positive correlation.

In this study, a multiple factor analysis of work-life balance was conducted by using the ordinal Logit model to test the hypothesis. The basic measurement model is as follows:

$$Y_j = \alpha_j - \beta_k X_k$$

Based on the above analysis, we distinguish the four kinds of independent variables and establish the sub-models respectively. Model 1 measures the gender-life cycle independent variables, Model 2 measures the structural independent variables of the labor market, Model 3-1 measures the independent variables of organizational arrangement, Model 4 measures the family liability and leisure variables. Among them, the Model 3-2 was also measured separately for women, and female maternity leave was added. Finally, Model 5-1 is a general model that integrates all previous factors, and Model 4-2 is a separate measurement for women, and also a female paternity variable. The detailed analysis of the model is shown in Table 1.

Table 1 Results of Work-life Balance Ordered Logit Model

	Modle 1	Modle 2	Modle 3-1	Modle 3-2	Modle 4	Modle 5-1	Modle 5-2
Gender	0.4015793 (1.96)					0.2522452 (0.67)	
Age group	0.2075749 (1.94)					-0.0780218 (-0.31)	-0.2258901 (-0.62)
Monthly average income		0.0560209 (0.51)				-0.1654206 (-0.77)	-0.3024984 (-0.98)
Education		-0.0716754 (-0.60)				-0.0820062 (-0.33)	0.2344236 (0.72)
Hukou		-0.1317704 (-0.55)				-0.4711956 (-1.07)	-0.463599 (-0.78)
Hometown		-0.2730059 (-1.33)				-0.2884528 (-0.73)	-1.067403 (-1.59)
Level in organization		0.1513824 (1.40)				0.1117894 (0.62)	0.2496211 (0.96)
Work flexibility			-0.1190923 (-0.73)	-0.2900653 (-1.30)		-0.6080302 (-2.50)	-0.8314933 (-2.46)
Payment type			0.3748379 (3.7)	0.2383422 (1.69)*		0.1950539 (1.22)	-0.0346668 (-0.16)
Paid annual leave			-0.0042249 (-0.62)	0.0022418 (0.24)		-0.0005207 (-0.05)	0.0175836 (1.30)
Benefits and allowances			0.4813111 (1.76)	0.4444719 (1.19)		0.495684 (1.19)	0.5157607 (0.93)
Income satisfaction			0.2442005 (1.81)	0.2523587 (1.24)		0.1191206 (0.55)	-0.1067901 (-0.29)
Female maternity leave				-0.0796904 (-0.21)			0.003064 (0.01)
Sharing care responsibility					0.3833999 (1.22)	0.2733796 (0.62)	-0.5902953 (-1.07)
Share the housework					0.3794974 (1.25)	0.4153193 (1.00)	0.728625 (1.40)
The number of elders at home					-0.1414412 (-1.03)	-0.2215446 (-1.15)	-0.4842033 (-1.81)
Independent members					0.4296299 (1.51)	0.5945829 (1.52)	0.9010783 (1.67)
Daily average sleep time					0.0033307 (1.51)	0.0014806 (0.51)	-0.0044776 (-0.98)
Daily average leisure time					0.0018772 (1.30)	-0.0001016 (-0.05)	0.0014281 (0.54)
Frequency of watching TV					-0.1000394 (-1.38)	-0.1278018 (-1.37)	-0.3415074 (-1.79)

	Modle 1	Modle 2	Modle 3-1	Modle 3-2	Modle 4	Modle 5-1	Modle 5-2
leisure time on housework					-0.0803173 (-1.08)	-.0122875 (-0.12)	0.0773424 (0.46)
Obs	346	325	220	120	201	135	80
Cut1	-2.224597	-3.646919	-1.88915	-2.955622	-1.748096	-4.784516	-10.81587
Cut2	-1.324275	-2.779969	-0.6980856	-1.913251	-0.7258338	-3.650441	-9.338958
Cut3	0.55036	-0.884766	1.146259	0.2169456	1.02309	-1.982991	-7.165395
Cut4	3.00557	1.630803	4.061659	2.989939	3.609945	1.175824	-4.051831

In Model 1, we examined the relationship of work-life balance and gender and age. By means of ordered Logit model analysis, it can be seen that there is a significant positive correlation between work-life balance and both gender and age. In contrast to men, the possibility that women report a higher level of work-life balance increases 0.4 logarithm of accumulate incidence, which is, at every age, women are more likely to maintain a work-life balance than men. Similarly, for each age group (i.e., from the lower age group to the higher age group), the logarithm of accumulate incidence of the respondents' work-life balance to more balance increases by 0.21 units, which is, with the increase of age, work-life balance is more likely to fall on the larger end of the dependent variable classification, when it is easier for respondents to balance their work and life needs.

In Model 2, we examined the relationship between work-life balance and hierarchical factors in the labor market, including monthly average income, education, hukou, hometown (J city; other places of Guangdong Province; Other provinces except Guangdong) and the level of the respondents in the organization. By means of ordered Logit model analysis, it can be seen that although there isn't a significant correlation between work-life balance and the variables above, it is still possible for us to figure out the directionality of the relationship between the dependent variable and the independent variable. There is a positive relationship between work-life balance and monthly average income, that is, if income reported by the respondents increases, the logarithm of accumulate incidence of work-life balance increases by 0.06 to a more balanced direction. The result shows a negative relationship between the work-life balance and the level of education, that is, the logarithm of accumulate incidence of the likelihood that the laborer feels the odds of work-life is to increase by 0.07 with their education ranking a higher level, which means they are more likely to encounter a work-life conflict. Hukou and Hometown also has a negative impact on work-life balance, which means when other factors are controlled, workers from rural areas are more likely to encounter a work-life conflict than those from the urban areas. In addition, people whose hometown are not in J city (i.e., migrant workers) are more likely to experience work-life conflict than native population. The level of the workers in the organization has a positive impact on the work-life balance, which means people in a higher level in the organization, the logarithm of accumulate incidence of work-life balance reported higher will increase 0.15.

Model 3-1 and Model 3-2 examines the interrelationship between work-life balance and organizational arrangements. In Model 3-1, the independent variables include work flexibility, payment type, paid annual leave days. From the results of Logit analysis, there is a significant positive correlation between work-life balance and "payment type". The stimulation reduced from a higher level of payment type, the logarithm of the accumulate incidence of work-life balance people will increase by 0.37. In other words, the more incentive the way that people are paid, the more likely for laborers to increase the labor supply time, leading to a higher work-life conflict. Second, if the organization can provide staff with some meals or medical benefits or allowances, it also significantly helps to improve the work-life balance. As shown in Table 1, in contrast with those organizations without relevant benefits and allowance, those workers with specific benefits and allowances provided by their employers reported a higher logarithm of accumulate incidence of work-life balance increased by 0.48. In addition, income satisfaction has a more significant positive impact on work-life balance. In terms of every promotion of income satisfaction, the logarithm of accumulate incidence of the work-life balance in the more balanced direction increases by 0.24, i.e., the more satisfied with the income, the more likely that the work-life will be balanced. In this model, the effect of work flexibility and paid annual leave on work-life balance are not significant.

Model 3-2 adds female maternity leave as an independent variable to Model 3-1, which is a question of whether or not women can enjoy maternity leave provided by their employers, so that only women answer this question and the observed value reduced to 120. After adding this variable, the impact of “income satisfaction” and “welfare and allowances” on work-life balance becomes insignificant, and payment type still has a significant impact. This shows that for women, the satisfaction of income and the welfare and allowances provided by the organization have a positive but not significant impact on its work-life balance. While the incentive for payment type is reduced by a level for each drop, the logarithm of accumulate incidence of work-life balance that women report is increased by 0.24.

Model 4 examines the relationship between work-life balance and family life variables. The independent variables in this model include: “taking care of children”, “sharing the housework”, “the number of elders at home”, “independent members”, “daily sleep time”, “daily leisure time”, “Frequency of watching TV” and “Frequency of leisure time to do housework”. From the results of ordered logit regression, the variables above have no significant effect on work-life balance. The “share of caring responsibility” and “shared housework” have a positive impact on “work-life balance”, that is, when family members can share family responsibilities, there is a positive benefit for family members to balance their work needs and family life needs. “The number of elders in the family” and “independent family members” indicate the severity of a family’s care responsibilities, where “number of elders in the family” is a continuous variable, negatively related to work-life balance; “independent members” is a dichotomous variable, which means respondents positively answer as “1” and the negative one that there are dependent members in the family are recorded as “0”, positively related to work-life balance. This suggests that the greater the responsibility of caring a family is, the more difficult it is for its members to balance their work and life, and the more likely they are going to encounter work-life conflict. The four independent variables, which refers to “daily sleep time”, “daily leisure time”, “frequency of watch TV”, and “frequency of leisure time for homework”, indicate the dominant situation of respondents’ leisure time and personal life time, among which “daily sleep Time” and “daily leisure time” are continuous variables, and the longer time indicates that the respondents spend more time on rest and leisure activities, both of which have a positive relationship with work-life balance, indicating that the people can get more enough rest and are more able to balance work and life needs well; “frequency of watching TV” and “frequency of leisure time for housework” are ordered variables, respectively represented with 1-7 from high frequency to lower one, among which “1” indicates that respondents nearly watch TV or do housework every day, and “7” means that respondents hardly watch TV or do housework. From the results of the ordered Logit analysis, both independent factors are negatively related to work-life balance, that is, the higher the frequency of watching TV or doing housework is the higher work-life balance the respondents get.

Models 5-1 and 5-2 are a comprehensive model of the above four variables, in which Model 5-2 focuses on the comprehensive work-life balance of women who can enjoy maternity leave. The result of the ordered Logit model shows that, when we put the four type of independent variables into the model for overall study, the impact of “gender”, “age group”, “wage calculation”, “welfare and allowance”, “income satisfaction” on work-life balance becomes insignificant. Interestingly, the impact of the age group on work-life conflict becomes negative, that is, after controlling more factors, the older the age is, the less possibility of the labor get work-life balanced. The “work flexibility” that has no significant effect on work-life balance in Model 3 shows a significantly negative correlation in Model 5-1 and Model 5-2. Here, “work flexibility” is also a ordered variable, a degree of difficulty that labors deal with family affairs in working hours, which is measured by the Rickett five-part scale, in which “1” means that it is very easy, that is, the work flexibility is very large, when “5” indicates very difficult and the work has small flexibility. In Model 5-1, the coefficient of work flexibility versus work-life balance is -0.61, which means that when the respondents’ flexibility of work is decreased by one level, the logarithm of accumulate incidence that the evaluation of the respondents themselves’ work-life balance falls on the more balanced end will be reduced by 0.61. That is, the possibility of work-life conflict will be higher. In Model 5-2, this coefficient is -0.83, indicating that women’s work-life balance is more responsive to work flexibility.

Based on the above analysis, when control different factors, the factors that have significant correlation with the working-life balance of the workers have undergone great changes. Among them, gender, age and wage intensity, supportive policies (benefits and allowances, work flexibility) provided by the organization to employees are worthy of attention, but this does not mean that other variables are ignorable to work-life balance. Finally, the unequal distribution of working hours, care, household burden and leisure time among different labors and different family member dose consists a new type of social inequality that needs social attentions and public intervention.

5 Conclusions

China is now experiencing rapid economic and social development, but despite its impressive achievement, China is still a developing country in the true sense of the world. There is large gap of per capita income between developed countries and China, which means it is impossible for the government adopt the Scandinavia approach to increase public spending in a large scale in short term to support the labors. Based on the shrinking of family size and weakening of family function, to indulge work-life conflict influencing workers in the labor market and their family will led to sever social risks, thus it is unpractical to deal with work-life relationship through market approach. In addition, according to the traditional cultural value of collectivism, non-market labor supply of women and older people may be considered as a policy instrument, it also indicates the acting point and key point of public support on balancing work-life relationship. A reasonable strategy is to combine strength of government, market, employers, community and family, and build up a work-life support system consists of multiple subjects, to provide the workers with a decent level of welfare support and strengthen the families' ability.

Faced with the current social context in our country, the work-life balance of workers can be promoted through the following three ways by using the tool of social policy: First, create a supportive social environment. On the one hand, we need to strengthen the supervision of the government in working time and vocation system and prevent market competition or other factors that lead to the deprivation of rest. On the other hand, there is a need to strengthen "family" and "gender" considerations in public policy to promote family-friendly and women-friendly public policies. Second, promote the institutional support of employers. Both for-profit and non-profit employers are largely lacking the impetus of providing employees with work-life balance support policy, because in the short term this cannot bring direct benefits to the organization and even increase its operating costs. The primary task of social policy is to promote the change of employers' value orientation and make them aware of the positive effects of work-life balance on the organization by strengthening research and advocacy. Then, it should also be through policy guidance to encourage employers to provide staff with flexible work arrangements, parental leave and paternity leave and other work-life balance in favor of institutional arrangements to promote corporate social responsibility. Last, empower families under the market condition. The core of family empowerment is to fill the lack of non-market labor as a result of women entering the labor market. There are two main solutions to this problem: first, to bring women back to the family, and second, to support women in the labor market. In contrast to encouraging women to return to the family, expanding support for the family, improving family capacity and providing more choices for the family is a more viable option. There are some specific measures can be carried out like increasing public investment in child care and care for the elderly, encouraging men to share houseworks and care responsibilities through policy guidance and promoting the orderly development of domestic service market norms.

In short, the social transformation is still going on and the work and life of people is still undergoing dramatic changes in the moment, so the need of balancing work and life will be increase. The public will not only need a certain level of economic life, but with a certain quality of "good life". This is not only a challenge of individuals and their family's ability and resources, but also a challenge to our social management ability. Hence, how to improve external conditions for a better life of the public will be the subject of continuous study and improvement in the public sector of our government.

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Analysis of the Causes of Crisis of Grass-roots Government Trust and Constructing Cooperation Mechanism between Government and Public *

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Abstract This paper is based on the analysis of willingness and behavior of farmers' construction land consolidation and selects farmers from four typical villages in Jizhou District, Tianjin to conduct interviews and collect data from questionnaire survey. Using the Probit model, the paper explores the factors influencing the Grass-roots government trust and analyzes the causes of the crisis of trust. The research shows that the individual characteristics, external environment factors and policy cognition affect the government's trust. Among them, the compensation method, the condition of the house, the way of obtaining the construction land, the number of the family population and the quantity of the agricultural land have a significant negative influence on the peasants' trust in the grass-roots government, which is the main cause of the trust crisis of the grass-roots government. Finally, this essay structures the cooperation mechanism from three aspects including uniting the interests of the grass-roots government and farmers, improving the interactive consultations and legal norms and emotional guidance.

Key words Grass-roots government trust, Construction land consolidation, Probit model, Cooperation mechanism

1 Introduction

The development of new urbanization has deepened the land reform and expanded the space of urban, meanwhile accelerated the process of the withdrawal of rural collective construction land (Han Geng, 2008^[1]). The degree of the peasants' trust in the grass-roots government reflects the relationship between the peasants and the grass-roots government, and It is an important indicator of the recognition and evaluation of the local government and its administrative staff (Yin Li-min, Lin Zhi and Zhong Wen-jia, 2015^[2]).

The strength of this trust has a direct influence on the behavior of the local government and the peasants in the specific public affairs, and relates to the steady development of rural society. However, the construction land reform process is not smooth sailing. Peasants' trust in government are weakened by their personal quality, external environment, policy awareness and other factors, and most farmers are reluctant to quit construction land in response to the government's call. The conflict between the government and the people has created a series of negative impacts, which have exacerbated regional instability to some extent (Xie Shun and Zhang Yun, 2016^[3]). How to improve the trust of the peasants to the grass-roots government has become the bottleneck of the government's public management, and has attracted wide attention from all walks of life (Lv Shu-peng, 2015^[4]). Therefore, based on the analysis of willingness and behavior of farmers' construction land consolidation, this paper analyzes the causes of trust crisis in grass-roots government, and constructs the cooperation mechanism between government and people.

2 Literature review

The causes of grass-roots government trust can be referred to other studies on trust. Trust is not only a common concern in public management circles, but also an important concept in psychology, sociology, politics and economics (Mishler, William and Richard Rose, 2001^[5]). Psychology's understanding of trust is mainly from individual cognition, emotion and behavior, and attribute the

* Financed by "National Social Science Foundation of China, Research on the Generating Mechanism, Evaluation Method and Governance Model of the Political Cost of Environmental Pollution Problem, Project No.: 16BGL138."

degree of trust to the external environment. It is believed in sociology that trust is mainly influenced by laws, institutions and culture, and Economics believes that the degree of trust has a direct impact on the individual's economic behavior, and reflects the important influence of the "hypothesis of economic man" on trust (Nye and JR., 1997^[6]). From the political trust and the relationship between the government and the farmers in China, the research and discussion mainly focus on the following aspects: the trust relationship between government and citizens, the trust relationship between government cadres and peasant masses, and the trust relationship between the government and the villagers' autonomous organizations (Lu Li-qin, Zhang Dan-ya and Jiang Yan, 2015^[7]; Ning Ke-zhen, 2010^[8]; Ju Sheng-liang, 2011^[9]; Lu Feng-xia, 2016^[10]). The academic circles in China have little research on the peasants' trust in the grass-roots government, especially for the peasants' trust in the grass-roots government in the process of the construction land consolidation.

3 Data sources and research methods

3.1 Data sources

Data were drawn from questionnaires from four villages in Jizhou district. Based on the influence factors of government trust, the data mainly involve individual factors, external influence factors and peasants' policy acceptance. This paper uses the "response policy" and the "non response policy" to express the trust of the grass-roots government, and shows "willing to quit from construction land" and "unwilling to quit from construction land". The object of information collection is the head of every household, and a total of 750 questionnaires were issued, of these, 659 were effective, with an effective rate of 87.87%.

3.2 Research method

The peasants' trust of the government (dependent variable) has two directions: trust and distrust. meanwhile, the different attributes of farmers are discrete variables based on categorical data. Establish a binary dependent variable estimation model and Probit model is chosen as the estimation method. Since the variable Y is a 0-1 variable, it is not suitable to adopt the linear model estimate directly. Therefore, the latent variable Y^* is introduced, and the expression is:

$$Y^* = \beta_i X_i + \varepsilon_i \quad (1)$$

Formula: β is the parameter to be estimated; X_i is the observable independent variable; ε is a random disturbance subject to the normal distribution. The relation between Y and latent variable Y^* can be expressed as:

$$Y = \begin{cases} 0, Y^* \leq 0 \\ 1, Y^* > 0 \end{cases} \quad (2)$$

X_i and Y have probabilities of 0 and 1, respectively:

$$\text{prob}(Y = 0 | X_i) = \text{prob}(Y^* \leq 0 | X_i) = \text{prob}(\beta_i X_i + \varepsilon_i \leq 0 | X_i) = F(-\beta_i X_i) \quad (3)$$

$$\text{prob}(Y = 1 | X_i) = \text{prob}(Y^* > 0 | X_i) = 1 - F(-\beta_i X_i) \quad (4)$$

Formula: $F(X)$ is a standard normal distribution function. The parameters can be measured using the Maximum Likelihood Estimation (MLE) method.

Referring to the existing results, the government trust is influenced by individual factors, external factors and policy acceptance. Based on the above considerations, the individual characteristics of the respondents, the external environment characteristics, and the policy of construction land consolidation are taken as variables. Assign the variables and do statistical analysis, as follows:

Table 1 Variable settings and descriptions

Variable name	Variable definition and assignment	Mean	Std dev
1 Individual characteristics (Ic)			
Age (Age)	$\leq 30=1, 30-45=2, 45-60=3, \geq 60=4$	3.20	0.75
Degree (Deg)	Primary school and below=1, Middle school=2, Secondary school=3, Bachelor degree or above=4	1.80	0.54

Variable name	Variable definition and assignment	Mean	Std dev
2 External environment (Ee)			
Number of the family population (Nfp)	1=1, 2=2, 3=3, ≥4=4	3.11	1.01
Family income (Fi)	≤10 thousand yuan =1, 10-30 thousand yuan=2, 30-50 thousand yuan=3, ≥50 thousand yuan=4	3.31	0.92
Quantity of the agricultural land (Qal)	No agricultural land=1, <5mu=2, ≥5mu=3	2.38	0.53
Quantity of construction land (Qcl)	1=1, 2=2, ≥3=3	1.14	0.37
Way of obtaining the construction land (Wocl)	Approved in accordance with law=1, Purchased=2, Inherited=3	1.08	0.31
Construction land acquisition time (Clat)	≤10years=1, 10-20years=2, 20-30years=3, 30-40years=4, ≥40years=5	4.04	0.80
Condition of the house (Ch)	Not reconstructed=0, Reconstructed=1	0.29	0.45
3 Policy (Po)			
Compensation method (Cm)	Currency=1, Town house=2, Two ways are available=3	1.14	0.46
Housing arrangement mode (Ham)	Bungalow=1, Building=2	1.45	0.50
Rationality of measurement standards (Rms)	Disagree=0, Agree=1	0.95	0.24
4 Dependent variable (Dv)			
Government trust (Gt)	Distrust=0, Trust=1	0.38	0.49

4 Analysis of influencing factors of grass-roots government trust

4.1 Theoretical analysis of grass-roots government trust

Economics believes that the degree of trust has a direct impact on the individual's economic behavior, and reflects the important influence of the "Hypothesis of Economic Man" on trust. The trust of farmers to the grass-roots government is affected by their own cognitive level, and the cognitive level will be affected by individual characteristics, external environment characteristics, policy information and so on. It is a dynamic process of mental change from cognition to trust, which influences the behavior difference of decision maker. In the process of construction land consolidation, the theoretical model of farmers' trust evolution in the grass-roots level is as follows:

$$D_t = F(C_t), C_t(Pe, Oe, Po) = aPe_t + bOe_t + cPo_t + \varepsilon \quad (5)$$

Formula: D is a trust function; C is the cognition level of farmers; Pe stands for individual characteristics of farmers, including age, education and other factors; Oe refers to external environmental factors, including number of the family population, family income, quantity of the agricultural land, quantity of construction land, way of obtaining the construction land, construction land acquisition time, condition of the house and so on; refers to the uncertain factors; a , b and c are influence coefficients; t is a time variable.

As can be seen from the theoretical model, farmers' trust in grass-roots government is influenced by many factors. It is influenced by the age of the farmers and the level of education, on the other hand, it is also influenced by external environment, policy and so on. In the case of multiple factors, there is a difference in government trust.

4.2 Analysis of influencing factors of trust in government

Stata 14 analysis software was used to estimate the data by Probit model. On the basis of the autocorrelation test of the independent variables, the influencing factors of the trust of all samples are measured. The model LR statistic is significant at 1% confidence level, and the model fitting degree is better.

From the sample estimation results, in the process of construction land consolidation, housing arrangement mode, compensation method, condition of the house, way of obtaining the construction land, family income, number of the family population, and quantity of the agricultural land, have significant effect on government trust. Among them, compensation method, condition of the house,

way of obtaining the construction land, number of the family population, and quantity of the agricultural land significant negative impact on farmers' trust in grass-roots government. Age, education level, construction land acquisition time and rationality of measurement standards also have negative influence on the government trust.

Table 2 Variable autocorrelation test

	Age	Deg	Nfp	Fi	Qal	Qcl	Woel	Clat	Ch	Cm	Ham	Rms
Age	1.000											
Deg	-0.326	1.000										
Nfp	-0.177	0.003	1.000									
Fi	-0.164	0.139	0.431	1.000								
Qal	0.083	0.043	-0.007	-0.112	1.000							
Qcl	0.083	0.009	0.204	0.131	0.024	1.000						
Woel	-0.073	-0.005	-0.074	-0.072	-0.122	0.027	1.000					
Clat	0.191	-0.043	-0.059	-0.154	0.199	0.087	-0.135	1.000				
Ch	-0.097	-0.084	0.063	-0.140	-0.096	0.148	0.113	-0.01	1.000			
Cm	-0.084	0.002	0.061	0.024	0.024	-0.042	0.070	0.061	-0.02	1.000		
Ham	-0.044	0.012	0.018	0.050	0.003	-0.011	-0.099	0.001	0.085	-0.10	1.000	
Rms	-0.001	0.023	0.053	0.057	0.048	0.060	-0.068	-0.01	0.051	-0.11	0.056	1.000

Table 3 Model estimation results

Independent variable	Estimation coefficient
	Sample
Number of ods	659
LR chi² (12)	83.90
Prob > chi²	0.00
Pseudo R²	0.10
1 Individual characteristics (Ic)	
Age (Age)	-0.02
Degree (Deg)	0.03
2 External environment (Ee)	
Number of the family population (Nfp)	-0.13**
Family income (Fi)	0.20***
Quantity of the agricultural land (Qal)	-0.20*
Quantity of construction land (Qcl)	0.01
Way of obtaining the construction land (Woel)	-0.42**
Construction land acquisition time (Clat)	-0.07
Condition of the house (Ch)	-0.42***
3 Policy (Po)	
Compensation method (Cm)	-0.44***
Housing arrangement mode (Ham)	0.56***
Rationality of measurement standards (Rms)	-0.27

Note: 1. ***<1%; **<5%; *<10%. 2. Data came from household surveys in 2016.

4.3 Analysis of the causes of government trust crisis

Among the individual factors of farmers, age negatively influences farmers' trust in government. The older peasants have relatively large proportion of agricultural production, and their educational level is relatively low. The ability of this group to accept new things is obviously lower than that of young groups, and the ability to understand and interpret policies is limited. This part of the group is vulnerable to the impact of outside information. The attention of the negative news in the process of construction land consolidation is easy to form anchor psychology, and further weaken the trust degree of the grass-roots government. According to statistics, people over the age of 45 make up about 85.43% of the total sample, of which 62.17% of the farmers show a lower level of trust in the

government.

Among the external environmental factors, the number of family population, the number of agricultural land, the way of obtaining the construction land, construction land acquisition time and the condition of the house negatively influence the peasant's trust in the government. Among them, the number of family population, the number of agricultural land, the way of obtaining the construction land and the condition of the house influence significantly, indicating that family structure and living capital condition have a great influence on the trust of grass-roots government. The expenditure of children's education and the support of the elderly accounts for the proportion of household economic expenditure is too large, and the psychological response to the economic burden shows a reduction in the degree of trust in the government; The more the number of agricultural land, farmers are accustomed to the traditional agricultural production activities, and do not care about the release and implementation of the policy. To a certain extent, the trust of the government has a herd mentality, and the formation of cognition is greatly influenced by the environment, so the low trust level of the government is easily diffused among the groups; In the way of obtaining the construction land, the people who inherit the construction land have shown low confidence in the process of construction land consolidation, which is caused by the traditional concept and culture. For this part of the population, land is not only the physical symbol, it is the accumulation of intergenerational emotional and spiritual support, coupled with the existence of the endowment effect, making the construction land consolidation advocated by government is the emotion of plunder, which is an important factor in reducing the degree of trust; The newer the house, the farmers shows a lower degree of government trust in the process of construction land consolidation because of cost loss. According to statistics, in the whole sample, 27.66% of the farmers are willing to quit the construction land who have renovated the house, but the proportion of non refurbishment increased by 42.68%. Through interviews with farmers, it is understood that the cost of housing renovation in general around 100 thousand yuan, if the housing reconstruction, the cost will be between 150,000-250,000 yuan. Housing renovation or reconstruction requires a certain amount of capital investment, and farmers will analysis cost and income, quitting renovated houses and living in the town will produce the psychological recognition: "do not pay more than" that will reduce the government trust.

In the policy of construction land consolidation, the rationality of compensation method and rationality of measurement standards negatively affect the degree of farmers' trust in government, and the compensation method is more significant. This shows the trust showed a downward trend in the process of construction land consolidation, and the diversification of compensation methods can not increase the peasants' trust in the government; The farmers for the compensation of construction land consolidation want to get higher than the policy level, at the same time , the psychological of unwilling to quitting construction land will increase farmers' cognition of the measurement standards that is not reasonable, thereby increasing the level of distrust.

5 Cooperation mechanism construction

5.1 Unifying the interests relationship between the grass-roots government and the farmers

The establishment of trust is based on the existence of common interests to a great extent. The common interest between the grass-roots government and the peasants lies in the guarantee of the interests of the peasants by the grass-roots government. The farmer's rights and interests are decided by the subjective judgment of the grass-roots government, and through thorough investigation and study of the local conditions, the local government can widely listen to the opinions and opinions of the masses of farmers and improve the enthusiasm of the masses in the process of decision-making. Only by establishing a stable and unified relationship of interests between the grass-roots government and the landless peasants can the peasants' trust in the grass-roots government be promoted continuously. By resolving conflicts and conflicts of interest, the grass-roots government can win the trust of farmers in specific administrative practices.

5.2 Improve the way of interactive negotiation

The grass-roots government should gradually establish the system of government affairs information openness according to the characteristics of farmers. In the actual work of government

information publicity, the grass-roots government should strengthen the organization and leadership of the government information publicity, and make clear the responsibility of the government officials of the township government for public information disclosure. In addition, the organization should establish a government information disclosure work of specialized agencies, to ensure that all departments actively carry out e-government information disclosure work and fully protect farmers' influence on government decision-making. Through the extensive participation of farmers, the scientific nature of policy making will be promoted and the actual effect of policy implementation will be promoted. Through negotiation the government should safeguard farmers' right to know, right to participate and the right to supervise. The government should give full consideration to the peasants' demands in the design of compensation methods and measurement standard design of construction land consolidation. In specific transaction, the relations between the township government and the peasants are gradually straightened out.

5.3 Legal norms and emotional guidance

The extreme actions taken by farmers in order to safeguard their rights and interests are a huge threat to this trust relationship, so the grass-roots government should punish illegal acts according to law, and take effective measures to restore the emotional trust of farmers. The grass-roots government should guide farmers to participate in the construction of rural grass-roots culture, strengthen the peasants' recognition of the concept of democracy and legality in the construction, and on this basis to establish a positive interaction. Under the guidance of democratic political culture, farmers can continuously enhance their sense of identity to the administrative concept of the grass-roots government, and consciously choose behavior that conforms to the standards of democracy and the rule of law. Through guiding the farmers' emotion cognition the grass-roots government can improve the accuracy of the peasants' understanding of their administrative behavior, and avoid the resistance caused by the deviation of cognition of landless peasants.

6 Conclusions

The paper explores the factors influencing the Grass-roots government trust and analyzes the causes of the crisis of trust. The research shows that the individual characteristics, external environment factors and policy cognition affect the government's trust. Among them, the compensation method, the condition of the house, the way of obtaining the construction land, the number of the family population and the quantity of the agricultural land have a significant negative influence on the peasants' trust in the grass-roots government, which is the main cause of the trust crisis of the grass-roots government. Finally, this essay structures the cooperation mechanism from three aspects including uniting the interests of the grass-roots government and farmers, improving the interactive consultations, and legal norms and emotional guidance to expect to play a positive role in improving government trust.

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Analysis of Influence Factors of China-Mongolia-Russia Economic Corridor's Cross-border Public Management *

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Abstract The significance of China-Mongolia-Russia Economic Corridor's cross-border public management is increased under the background of "the Belt and Road" initiative. This paper take the influence factors of the economic corridor's cross-border public management as the research object, after summarized and analyzed the influence factors through the existing research achievements, and classified the main influence factors into four kinds: economic and trade factors, political factors, regional factors, and cultural factors. Then, using the structural equation model, choose measurement indicators of influence factors, put forward hypothesizes, collect and compute the data, evaluate and revise the model, and analyze the evaluation results. Finally, come to the conclusion that political factors, economic and trade factors and regional factors have palpable influence on China-Mongolia-Russia Economic Corridor's public management, and the significance rank is: political factors > economic and trade factors > regional factors, and the cultural factors are also major influencing factors even they were not verified by Amos.

Key words China-Mongolia-Russia Economic Corridor, Cross-border public management, Influence factors, Structural equation model, Amos

1 Introduction

In September 12, 2014, Chinese president Xi Jin-ping put forward the initiative to construct China-Mongolia-Russia Economic Corridor in the three leaders' summit; in June 23, 2016, the three leaders signed the *Construction Planning Outline of China-Mongolia-Russia Economic Corridor*, depicted new blueprint for the construction. After two years development, China, Mongolia, Russia and many other concerned countries have made marvelous remarkable achievements in the fields like infrastructure industry chain, transportation industry and logistics, energy and finance, and so on^[1], which made significant contribution to the steady development of "The Belt and Road" initiative. However, there are many urgent problems during the construction process, such as the unbalanced development, unreasonable trade structure, the lagging behind infrastructure construction^[1-3], which lead to the cooperation scope and level is narrow and low, the coordination ability is weak, the coordination mechanism is immature, and make the public administrative departments lack of overall situation consciousness, gradually become the constraints of sustained and healthy development of "The Belt and Road". In addition, the sparse population and vast territory in the three countries' boundary area also increase the difficulty of infrastructure construction, frontier trade, local governance, intergovernmental coordination, and increase the costs of public products. And the diversification of management subjects, cultures and customs, ruling ideas, and benefit demands, put forward higher requirements for the consistency of policy goal, communication and cooperation between the government, and the intentional political trust. Public management serve the economic development to a certain extent, China-Mongolia-Russia economic corridor as an opening regional economic organization, management of cross-border public is the foundation and guarantee of multilateral international cooperation. So, to enhance the quality of public services, to make the public management department adopt scientific thinking ways and decision-making methods in public management, to make public management department from different countries and levels communicate and cooperate effectively, and to take all countries' interests into account, making the influence factors of China-Mongolia-Russia economic corridor's cross-border public management is of great significance.

* Financed by the International Exchange Program of Harbin Engineering University for Innovation-oriented Talents Cultivation, titled Study of the Strategy of Promoting Humanity Cooperation to Russia under the back ground of "the Belt and Road".

2 Literature analysis

Analyze the Chinese literature relate to China-Mongolia-Russia Economic Corridor, we can know that “China-Mongolia-Russia Economic Corridor”, “the Belt and Road”, “Eurasian Continental Bridge”, “Economic belt construction”, “Interconnection”, “Development strategy” are the high frequency keywords, so the research focuses are mainly on the aspects of the keywords and the main fields are concentrate on “National strategy”, “Economic and trade cooperation”, “Financial service”, “Innovation think-tank”, and “Cooperative route”. And “Economic and trade cooperation” is a relatively independent field, while the other four fields are of better correlation.

Through further literature search and study we know that the main research achievement of China-Mongolia-Russia Economic Corridor are the cooperation conditions and status, key cooperation areas, development pattern, cooperative targets and coordination mechanisms of northeast Asia economic and trade^[1, 4-7], the three trade dependence among the three country^[2,8,9], and the opportunities and challenges of China-Mongolia-Russia Economic Corridor^[2,4,5] and other issues; while the main research achievements of cross-border public management are the influences of population, culture, natural characteristics and the historical factors in the cross-border public management^[10,11], and some other scholars studied the specific issues like anti-corruption, trade, higher education, environment protection of cross-border areas.

Although the related research achievements are mature, but there are still some deficiencies. In research angle aspects, focuses more on the practice, the overall angle is divergent and few scholars systematically analyzed the influence factors of China-Mongolia-Russia Economic Corridor’s cross-border public management; in research manner aspects, most of them adopt qualitative study manners such as instruction-deduction while short of necessary empirical research, which caused some of them lack of authority and objectivity. In addition, no scholar define cross-border public definitely. So, refer to the relevant definitions, we define the cross-border public as a kind of affairs which involve the common interests of many countries and even the world as a whole, concerning the administration of the international order and the common development of all countries under the statutory order of the world^[10, 12-15]. On this basis, this paper discuss China-Mongolia-Russia Economic Corridor’s cross-border public management from the aspects of infrastructure construction, political activity, policy and law, and enterprise responsibility. Among them, infrastructure construction refers to the traffic facilities, oil and gas pipelines and other facilities in the cross-border areas; political activity refers to the related political alliances and all kinds of activities organized by them, such as political propaganda and some grassroots organization activities; policy and law mainly refers to the relevant international policies and regulations of China-Mongolia-Russia Economic Corridor; enterprise responsibility refers to the social responsibility to participate in the activities of the economic corridor, like the volunteer activities and charity activities.

3 Influence factors of combing and analysis

3.1 The influence factors analysis

According to the CiteSpace analysis results, using the “snowball” method to review literature concerned in CNKI, come to the main influence factors as shown in Table 1:

3.2 Influence factor analysis

According to the literature review, economic and trade cooperation contains the four aspects of cooperation field, trade structure, cooperative relationship, foundations and obstacles of cooperation. The *Three Participators Cooperation Middle Plan of China-Russia-Mongolia Development* indicates the goal of China-Mongolia-Russia Economic Corridor as: engage the cooperation of economy and trade, investment and cultural, and expand the political dialogue of the three country. So economic and trade cooperation of China-Mongolia-Russia Economic Corridor is of great importance, and the management of cross-border public should have the function to resolve conflicts and disputes, handle emergencies calmly and properly, and create a harmonious and stable atmosphere. While at the same time, the sustainable development of economic and trade cooperation will inevitably affect the cross-border public management. First, each country has its comparative advantage, economic and

trade structure are highly complemented, there are huge cooperative potential in energy and mineral development and infrastructure construction. The cooperation expansion will expand the cross-border public management. Secondly, the three country have long history of border trade with each other, the booming border trade under the new situation would lay a good foundation for the cooperation of cross-border public management. Finally, the new international cooperative relations and benefit distribution principle of the idea of opening, cooperation and win-win of “the Belt and Road” will also have effects on the decision makers.

Table 1 Influence factors and sources

Classification of influence factors	Key points and sources
economic and trade cooperation	Economic and trade cooperation, Trade Structure, Infrastructure construction, industry and energy cooperation, competition in cooperation (Chen Yan, 2015) ^[1, 16] ; Mutual restriction of the trilateral relations (Zhang Xiu-jie, 2015) ^[16] ; Economic relationship(bilateral and trilateral cooperation), Economic benefit(Sun Yu-hua, 2015) ^[3] ; Supporting services for economic and trade cooperation, Mutual integration of infrastructure (Jiang Zheng-jun, 2015) ^[9] ; Challenges and opportunities in economic and trade cooperation(Yu Hong-yang, 2015) ^[2] ; Economic and trade exchange and communication (Zheng Wei, 2016) ^[17]
Political environment	Political credibility, Develop strategy, Influence of the third forces (Chen Yan, 2015) ^[1] ; Political cooperation(bilateral and trilateral cooperation),National benefit, National safety (Sun Yu-hua, 2015) ^[3] ; Political and historical foundations (Zhang Xiu-jie, 2015) ^[16] ; Policy environment stability of Mongolia (Yu Hong-yang, 2015) ^[2] ; Political and economic cooperation, joint of the three countries' development strategy (Wang Hai-yan, 2016) ^[7] ; Political relationship (Zheng Wei, 2016) ^[17]
cultural factors	Nationalism of Russia and Mongolia (Chen Yan, 2015) ^[1] ; Safety and cultural cooperation, Culture cooperation and communication (Sun Yu-hua, 2015) ^[3] ; Cultural estrangement (Zhang Xiu-jie, 2015) ^[16] ; “Chinese Threaten” and “Russia and Mongolia harmed”, Economic nationalism of Russia and Mongolia (Yu Hong-yang, 2015) ^[2]
regional factors	Location advantage (Zhang Xiu-jie, 2015) ^[16] ; Geographical advantages of the three countries (Zheng Wei, 2016) ^[17] ; The guarantee mechanism of regional and sub-regional cooperation (Wang Hai-yan, 2016) ^[7]

4 Political environment

The political environment contains the three aspects of domestic political environment, related national strategies of the three country and international political environment. The domestic and international political environment of China-Mongolia-Russia Economic Corridor are stable, and the three country participate the forums and summits actively. China’s “Silk Road Economic Belt” is highly coped with Mongolia’s “Grassland Road” and Russia’s “Trans Eurasian Railway” and “Eurasian Economic Union”. In addition, there are many other related strategies in China, such as “Revitalize Northeast Old Industrial Base”, “Western Development” and “Development and Opening of the Border areas of Heilongjiang and Northeast Inner Mongolia”. The stability of domestic and international political environment and the interdependency of national strategy is the premise and guarantee of the cooperative management of cross-border public. But there are some uncertain factors, for instance, Mongolia’s multiparty system, there must be differences between the various parties, and the replacement of the ruling party may lead to a major change in the ruling concept and national strategy; Mongolia’s strategy of “third country diplomacy” in strengthening the US Japan partnership makes the economic corridor is susceptible to interference from foreign political forces.

5 Cultural factors

The cultural factors contain the three aspects of the cultural communication among the three countries, the cultural estrangement and the nationalism. The strategic partnership between China and Russia has been continuously developed and deepened after they signed the *China-Russia*

Good-neighborly Treaty of Friendship and Cooperation in 2001. Through the interaction of “country year”, “culture year”, “communication year”, “language year”, “youth friendly communication year”, the two countries have got unprecedented achievements in the fields of culture, sports, information, education, law and tourism. Cultural communications between China and Mongolia have also developed rapidly in recent years through cultural week, Chinese calligraphy competition, national sports competition and song singing competition. However, the custom and cultural differences or even barriers between China, Mongolia and Russia cannot be neglected. Take the Heihe city and Blagoveshchensk as example, although the two border town use common slogan of “different country, same city”, the public does not become more intimate, a lot of succeeded Chinese entrepreneurs in Blagoveshchensk caused local people’s resentment. Chinese enterprises in Mongolia have also clashed with local people because of the differences in environmental protection concepts, product quality, patent protection consciousness and some other historical reasons. In addition, the spread of “Economic Nationalism”, “Chinese Threaten” and “Russia and Mongolia harmed” in Russia and Mongolia also makes the intensification of the contradiction and the possibility of triggering mass incidents greatly increased.

6 Regional factors

The regional factors contain the four aspects of location advantage, regional competition, regional cooperation guarantee mechanism and influence of extraterritorial forces. Mongolia and Russia has a vast territory, are important neighbors of a narrow strip of water. The China-Mongolia-Russia Economic Corridor across East Asia, Northeast Asia, North Asia and Eastern Europe, and the three countries are both developing countries, the geographical advantages are obvious. Russia and Mongolia play an important role in China’s diplomatic strategy pays great attention to the great powers, surrounding countries, developing countries and multilateral cooperation. The Top-level design of the trilateral summit mechanism and the bilateral summit mechanism of China-Mongolia-Russia Economic Corridor, plus the coordination and promotion of Shanghai cooperation organization, as well as the sub regional cooperation mechanism formed over the years, are promoting regional and sub-regional security mechanisms of cross-border cooperation between the three countries continue to improve. In addition, the border trade ports is increasing, freedom of cross-border trade is increase gradually, border trade cooperation is expand from the fields of traditional line operation and resource development to the modern fields of technical exchanges and financial services, the active sub-regional cooperation zone in Northeast Asia is taking shape. However, the strategy of the three countries are different from one another, which makes the international political background of China-Mongolia-Russia Economic Corridor more complex; whether the North Passage or Northeast Passage is the indispensable economic link between East Asia and Central Asia, as a part of the Silk Road Economic Belt, geopolitics will influence the cooperation parties to some extent in the management of cross-border public.

Based the analysis above, we put forward the following hypothesizes:

Hypothesis 1: The economic and trade cooperation situation between China, Mongolia and Russia is conducive to promoting the development of China-Mongolia-Russia Economic Corridor’s cross-border public management.

Hypothesis 2: The current domestic and international political environment is conducive to the joint of China-Mongolia-Russia Economic Corridor’s cross-border public management.

Hypothesis 3: The communication and cooperation in cultural fields between China, Mongolia and Russia are conducive to the management of China-Mongolia-Russia Economic Corridor’s cross-border public.

Hypothesis 4: The regional factors between China, Mongolia and Russia have positive impact on the management of China-Mongolia-Russia Economic Corridor’s cross-border public.

7 Empirical analysis

Based on the characteristics and existing research achievements of China-Mongolia-Russia Economic Corridor, this paper construct the influence factor index system by using structural equation

model, which including 5 latent variables (influence factor) and 18 observation variables (measurement index), as shown in Table 2. The Likert seven scale is used to evaluate the measurement indicators, and the higher the influence of the indicators on the cross-border public management of China-Mongolia-Russia Economic Corridor, the higher the evaluation score. The data is from the questionnaire, which is divided into two parts, the first part is the basic information of respondents, such as academic qualifications, subjects, role in scientific research team, etc.; the second part is the main part, including 14 items corresponding to the indicators, to explain the hypothesizes above. The respondents is the university scientific workers whose field related to “China-Mongolia-Russia Economic Corridor”, “the Belt and Road”, “Silk Road Economic Belt”, “Revitalize Northeast Old Industrial Base”, “Eurasian Continental Bridge”, and the like. Considering the political, economic, cultural and other issues involved in this research is complicate, the respondents would reluctant to give answers consistent with their real ideas because of the misunderstand of questionnaire or some other subjective reasons, so in the process of questionnaire design we consulted many academic experts and revised the statement and emphasized the academic nature of this research to eliminate the concerns of the respondents and reduce the subjectivity as much as possible. The questionnaire includes two forms: paper questionnaire and electronic questionnaire, the paper questionnaire diffused mainly by the tutor’s research team, while the electronic questionnaire is collected by the “questionnaire network” for the target group. The sum of paper questionnaire is 300, and the electronic questionnaire is 200, 273 paper questionnaires and all the electronic questionnaires were retrieved. 363 invalid questionnaires were excluded, and the effective rate was 72.6%. The sample is large enough to guarantee the scientific of SEM analysis results. According to statistics, academic qualification survey of respondents is doctor or above is 61.9%, master is 25.9%, bachelor is 12.2%; percentage of research assistant is 22.0%, general researcher is 50.1%, backbone researcher is 20.9%, leader researcher is 6.9%. We can see that the respondents is high level researchers, and the constitution approximately inverted Pyramid structure, can guarantee the authority of the data. Performed the reliability and validity test of the data using SPSS19.0, as shown in Table 2.

Table 2 Influence factor index system of China-Mongolia-Russia Economic Corridor’s cross-border public management

Latent variable	Observation variable	KMO	Total KMO	Cronbach’s α value	Total α value
Economic and trade cooperation	X1: Cooperation field	0.821 ***	0.960	0.868	0.946
	X2: Trade structure				
	X3: Cooperative relationship				
	X4: Foundations and obstacles				
Political environment	X5: Domestic politic	0.754 ***			
	X6: International politic				
	X7: National strategies				
Cultural factors	X8: Cultural communication	0.755 ***			
	X9: Cultural estrangement				
	X10: Nationalism				
Regional factors	X11: Location advantage	0.781 ***			
	X12: Regional competition				
	X13: Guarantee mechanism				
	X14: Extraterritorial forces				
Cross-border public management	X15: Infrastructure construction	0.803 ***			
	X16: Political activity				
	X17: Policy and law				
	X18: Enterprise responsibility				

Note: *** means $p < 0.01$

From Table 2 we can know that the α value of each observation variable are above 0.7, the total α

value is 0.946; the KMO value and the total KMO value are above 0.73, passed the significance test and have nice reliability, suit for factor analysis. So, we use Amos21.0 to draw the path graph according to the influence mechanism and hypothesizes, and compute the results by introducing the sample data. Judge the fitting degree between the SEM model and the sample data according to the compute results, and come to the mechanism model of China-Mongolia-Russia Economic Corridor's cross-border public management as shown in Figure 1:

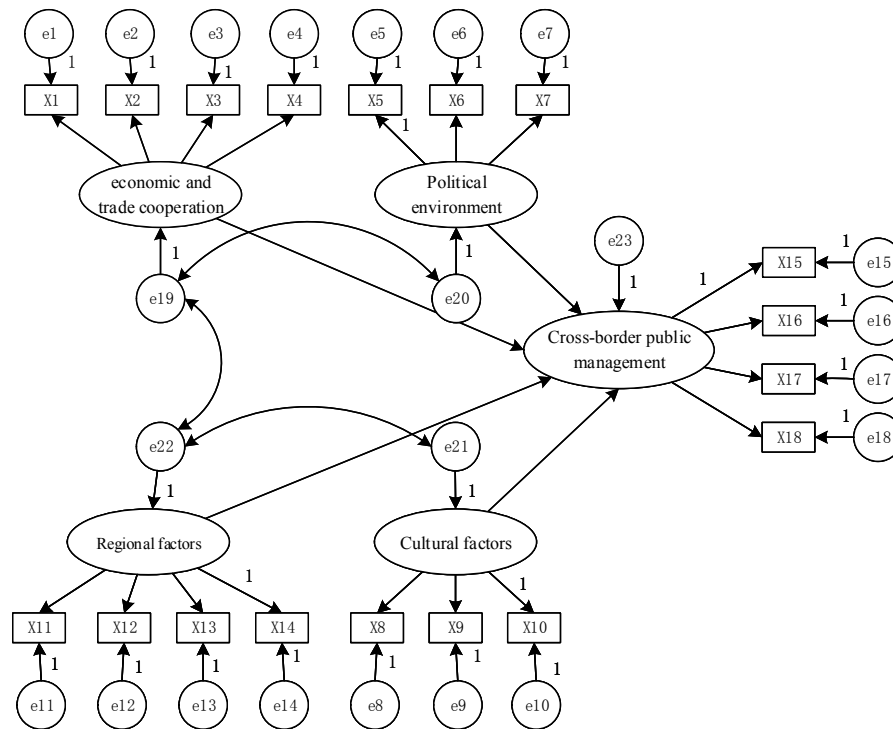


Figure 1 Mechanism model of China-Mongolia-Russia Economic Corridor's cross-border public management

The key adaptation index of the SEM model computed by Amos is shown in Table 3: Chi-square is 307.326 (p=0.000), CMIN/DF is 2.346, IFI, TLI and CFI are all above 0.900, indicates that the SEM model has a perfect fitting degree.

Table 3 Key adaptation index of the SEM model

Model	CMIN	DF	p	CMIN/DF	IFI	TLI	CFI
Default model	307.326	131	0.000	2.346	0.917	0.909	0.917
Saturated model	0.000	0	-	-	1.000	-	1.000
Independence model	2282.148	153	0.000	14.916	0.000	0.000	0.000

After test and revise the SEM model, come to the evaluation of the standardized path coefficients between the latent variables as Table 4:

From Table 4 we can know that the Composite Reliability (C.R.) of political environment, regional factors, economic and trade cooperation, and cultural factors are all above 2. The influence of political environment, regional factors, and economic and trade cooperation reached a significant level, namely: Hypothesis 1, hypothesis 2 and Hypothesis 4 were verified; although hypothesis 3 was not verified, but (p=0.042<0.05) still indicated that cultural factors is of high significance to China-Mongolia-Russia Economic Corridor's cross-border public management. So, the significance rank is:

political environment > economic and trade cooperation > regional factors > cultural factors. In addition, after model modifying, it can be known that there is covariant relationship between economic and trade cooperation, political environment, regional factors and cultural factors.

Table 4 Evaluation of the standardized path coefficients between the latent variables

Causal relationship			Estimate	S.E.	C.R.	p
Cross-border public management	←	Political environment	0.568	0.126	4.506	***
Cross-border public management	←	Regional factors	0.439	0.071	6.149	***
Cross-border public management	←	Economic and trade cooperation	0.254	0.068	3.745	***
Cross-border public management	←	Cultural factors	0.137	0.067	2.036	0.042

Note: *** means $p < 0.01$

8 Conclusions

According to the Amos results, we draw the following conclusions:

1. The Estimate of public factors is 0.568, indicate that the more stable domestic and international politics are, the more conducive the cross-border public management is; also confirm the decisive role of political factors for the construction of the Economic Corridor. With transformation of developing countries and international cooperation become the main theme, political trust is the basic premise of “the Belt and Road” initiative. As a part of the “Silk Road Economic Belt”, to keep high-level political communication on the basis of political mutual trust, and reach consensus on major issues and strategic issues in the process of public management is of great significance.

2. The Estimate of regional factors is 0.439, indicate that the current situation has a positive impact on the public management considering the location advantage, regional competition, regional cooperation guarantee mechanism and influence of extraterritorial forces. The guarantee mechanisms accelerate commodity circulation and promote pragmatic cooperation effectively between the three countries. In addition, the border area of China-Mongolia-Russia Economic Corridor is rich in resources, and the cross-border areas no longer confront each other. The complementary resource structure in cross-border area provide broad space for economic and trade cooperation, also create opportunities for international cooperation of cross-border public management.

3. The Estimate of the economic and trade cooperation factors is 0.254, indicate that the current situation of economic and trade cooperation has a positive impact on China-Mongolia-Russia Economic Corridor’s cross-border public management. Globalization and regional economic integration trend of the world economy brings more opportunities for the development of world economy. The international investment environment improvement, transparency in international market competition, regional economic group trade liberalization, to enable developing countries to have more development opportunities.

4. The Estimate of cultural factors is 0.137, so hypothesis 3 was not verified, but the cultural factors also have significant influence on China-Mongolia-Russia Economic Corridor’s cross-border public management according to the analysis result. China, Mongolia, and Russia all had their strong period in history, and all with great dream of national revival, easy to come to cultural resonance; the fit of the develop strategies of the three country also create harmony atmosphere for China-Mongolia-Russia Economic Corridor’s cross-border public management.

9 Ending words

As an important part of “The Belt and Road”, the development of China-Mongolia-Russia Economic Corridor will make the public management become more complicated, and thus affect the public products provision. The current situation of political environment, economic and trade cooperation, regional and geopolitical environment, and cultural environment were conducive to

China-Mongolia-Russia Economic Corridor's cross-border public management. Considering the complex macro and micro environment, public management departments should weigh all factors comprehensively in the process of public goods supply and decision-making, and improve the quality of public products, reduce management costs, and enhance the citizen's satisfaction and confidence by using scientific management methods and decision-making technology. In the cooperation of cross-border public management, it's vital to focus on regional cooperation, introduce more opening cooperation mechanism and increase the cooperation efforts with the third sector. In the process of cooperation, the public management department not only need work together to resolve disputes and handle emergencies properly, to keep harmony and stable atmosphere for international relations, but also need to clear decision boundaries. For the complexity and diversity of the management subject, the three countries' public management departments should combine the principle rigid with the strategy flexibility, and focus on cooperation at the same time, including the cooperation between same and different level public management departments in same country and different country, and the cooperation between public management departments and social organizations, to ensure the consistency of the decision goals. Not only improve the management efficiency of cross-border public, but also avoid public service functions fragmentation.

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Research on Citizen Participation in Public Governance in China

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Abstract Citizen participation in government management has made significant progress in China since 21st century. This paper is limited to analyze governance of public affairs by government. In practice, through the administrative system reform in China, citizen participation in the governments' public administration has already covered many kinds of fields. In these areas of practice, some typical cases are selected as samples for analysis. It turns out that the practice of these citizens' participation in public governance has made some progress, but there are some problems that cannot be ignored. To solve the actual problems and to achieve the transition for public governance, the paper puts forward targeted proposals and countermeasures to promote the participation of citizens and stakeholders in public governance reform. In conclusion, citizen participation in public governance is in line with the trend of governance reform in the world. To promote the participation of citizens and stakeholders is to realize effectiveness governance.

Key words Citizen participation, Public governance, Local governments, Cases analysis

1 Introduction

Citizen participation is not only the impetus of government reform, but also one of an important aim of government reform. How to strengthen citizen participation and administrative democracy has become a development trend of the global public management reform in the new era.

The Third Plenum of the 18th Communist Party of China Central Committee approved "Decision of the CPC Central Committee on Major Issues Concerning Comprehensively Deepening Reform", which has become action programme of comprehensive deepening reform of China. In this important programme, it put forward the overall goal of comprehensive deepening reform, "improve and develop socialism with Chinese characteristics, and promote the modernization of national governance system and governance capacity." One of a specific aim is to achieve effective governance.

For public governance of government, citizen participation is a key tool and approach. This paper will expound the meanings and importance of citizen participation. Then we select some typical cases of citizen participation mainly from the People's Internet or People's Daily, analyze these cases from different dimensions, and summarize the common features and problems. At last, the paper brings forward some suggestions for further promote citizen participation in public governance in the future.

2 Realistic value of citizen participation in government's public governance

In present era of change, when we judge the modernization of the government, we need observe the degree of citizen participation in the administrative process or public governance. Whether the government public governance gain success or not, the key is that government focuses on the fundamental interests of the majority of the people, and expand citizens' participation. The realistic value of citizen's participation in government public governance mainly include four aspects.

2.1 Citizen participation is an important social foundation for modernization of national governance

Citizen participation is an essential requirement of modern democratic politics. The development level and degree of democratic politics in a state, to a great extent, depends on the level and degree of citizen participation. Huntington thought that citizen participation is an important function of effecting political development. He once discussed, "The degree and scale of citizen participation is a valuable indicator for measuring political modernization."^[1] To a certain extent, the difference between modern regime and traditional regime lies in the level of political participation.

In Chineses political system, citizen participation is intrinsic element of people sovereignty. In this view, it is essential for developing socialist democratic political system to take citizen participation as social foundation.

2.2 Citizen participation is for effectiveness of public governance and public policy

Citizen participation will promote government reform. Citizen as social subject has knowledge

and judgement about economic and social issues, so they could provide resource for reform.

Citizen participation helps to make effective public policy. "People can participate in public policy-making effecting their life, and this is a key to raise living standard and promote effective development."^[2] The viewpoints and suggestions from citizens may help government receive various information for public policy-making. In some conditions, government decision faults or irrelevancy resulted in social cost, and turned into one of the causes for social instability. With the democracy of participating policy-making, "it is most likely to shape a wise policy in the long run."^[3] It is saying that citizen participation in the public policy can in part transform the top-down policy model, reduce policy-making mistakes, and gain more public support.

2.3 Citizen participation is actual demand to achieve effective governance of government

In the programme of "Decision of the CPC Central Committee on Major Issues Concerning Comprehensively Deepening Reform"(2013), it put forward the overall goal of comprehensive deepening reform, "improve and develop socialism with Chinese characteristics, and promote the modernization of national governance system and governance capacity."^[4] Among the whole objective, effective governance includes citizens participation of public governance of government.

The ultimate goal of public governance is for the people, therefore government must let citizen take part to raise effective governance during the reform and innovation. In 1992, the General Assembly of United Nations Environment and Development adopted the "Agenda 21st century", in which it said that to achieve sustainable development, one of the basic prerequisites is a broad public participation in decision-making.^[5] Then "Chinese Agenda 21st century" pointed out that to enhance the transparency of the administrative and decision-making, establish non-governmental advisory bodies and the public information network, so as to let social organizations and public effectively participate in the decision-making process.^[6]

2.4 Citizen participation will help to supervise the government

In a healthy development society, citizen participation can never be ignored in order to effective governance. Only people supervise the government, the government will not slack off. Citizen may put forward opinions and suggestions about defects in the governance according to government information. Citizen participation will favor reasonable exercisement of administrative power.

It can be seen that citizen participation contains the value of transparency and accountability. "The growing citizen participation promote new communication channels between citizens and the government, and ensure the supervision for government, in the end to enhance the accountability of the government and public managers."^[7]

3 Continuous development practice of citizen participation in government public governance

From the existing research results, there is more theory and countermeasure research, less empirical research. Therefore, take the People's Daily as the main source to collect participation cases. We select 40 cases about citizen participation in government public governance from 2008 to 2010.

Through the evaluation and analysis of these cases, this paper summarizes the common features and existing problems in the practice, and puts forward the policy recommendations in the last part.

3.1 General overview of these cases about citizen government

In this part, we mainly measure participation development and analyze participation features from the dimension of contents, forms and effectiveness of participation.

3.1.1 Breadth of participation: the content and fields of citizen participation

At the level of public affairs management, the fields and scopes of citizen participation are more and more wide. The governments actively invite citizen to take part in the public affairs including: attending executive meetings of the government, putting forward suggestions on urban development planning, participation in the management of public utilities and price adjustment, participation in administrative legislation, environmental protection, demolition project, and participation of government performance and the evaluation of cadres.

3.1.2 Depth of participation: forms and process of citizen participation

The means of citizen participation in government management is becoming more diversified.

These main ways are as follows: collecting public opinion or comments through the network, The mayor’s hotline or the government public hotline, hearings, seminars, resident representative assembly, the sample questionnaire survey, citizen evaluation, network supervision, and so on.

In the specific participation, the participative forms used in different areas are different, so the process and time spent in the participation are not the same. For example, some participation only continued for half a day, some participation continued for a month at most.

3.1.3 Effectiveness of participation: from outcome of citizen participation

Through analyzing the actual effect of participation in these cases, we found that some cases have made substantial progress, and some cases only had meaning or progress in forms.

Some cases in which governments invited citizen to participate have not made the final results known to the public. Based on the cases with opening results, it is evident that citizen participation has made substantial improvements. For example, in the process of evaluating government performance and cadres’ appraisal, citizens are involvement and the weight of the citizens’ opinions is set. Local governments pay more attention to the evaluation from citizens and the public.

On the whole, the results of citizen participation respectively indicating the progress or development in the forms or in the contents(essences).

3.2 Major problems in the participation of public governance

When we confirm the advancement of citizen participation in public governance, we should also pay attention to some problems in the practice. These cases indicated that there is gap between the actual result and the desired aim. The major problems are as follows on macro-level and micro-level.

The development of citizen participation is unbalanced. In a certain sense, the digital gap caused by network technology lead to unbalanced participation. “The Digital Gap divides the whole community into the rich and the poor of information, information owners and non-owners of information, as well as the First and the Third World.”^[8] At the same time, the unbalance is also shown in the different fields. In some public affairs there is more participation, but in some other public affairs there is less or little participation.

The various ways of citizen participation have some problems. Viewing the 40 cases, there are many new ways and forms for citizen participation. The form of hearings is the most used by local governments, and it is nearly 25%. The second way is using multiple channels to ask citizens to give suggestions or advice for administrative regulations, public policies, city plans. This form is about 20%. The last and least way is telephone interview or public survey. The number of citizen participants in the hearings is from 18 to 25, and among these ordinary citizens is about from 33% to 52%. But the problem is how and by what procedure the residents are chosen.

Another form, among the cases of gathering citizens’ suggestions, 80% is through internet. We don’t deny the benefit of internet technology, but we should make clear whether the online advice can represent the views of the general residents. We have such a related data from CNNIC, in 2013, the age structure and the education structure of Chinese Internet users is shown in the Figure 1 and Figure 2.^[9]

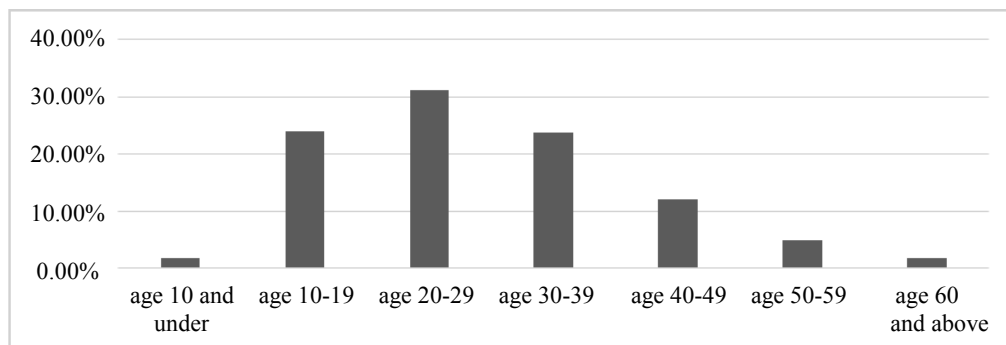


Figure 1 Age structure of Chinese Internet users in 2013

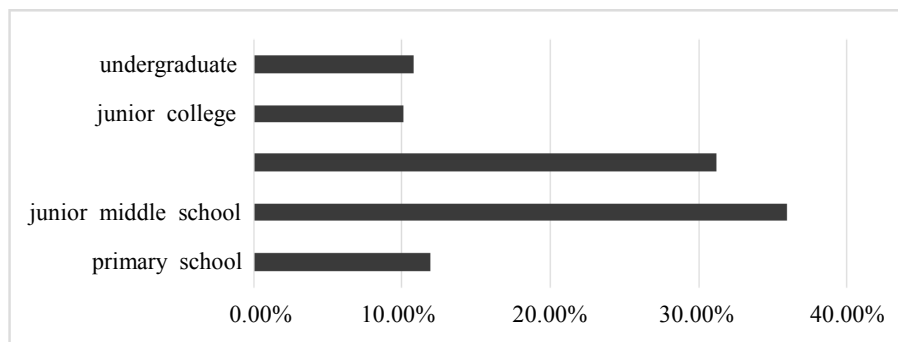


Figure 2 Education structure of Chinese Internet users in 2013

The institutions and laws for citizen participation are not perfect. The fundamental political system of China provides the basic guarantee for citizen participation. But the concrete institutions and procedures need further development. When we analyze these cases, we found that the laws and regulations for citizen participation were not perfect. There is no complete and specific laws and regulations for citizen participation, and that cause local governments to have some more discretion and subjective randomness in the end. This explains that when local governments use internet to collect citizens' advice and suggestions, they should objectively and rationally treat and distinguish internet public opinion and the realistic public opinion.

4 Suggestions on promoting citizen participation in public governance

4.1 Change management ideas to push citizen participation

Citizen involvement in public affairs is basic social source for realizing public governance. It is required that public manager must change management ideas, from control and management to governance, from traditional administrative-order-thinking to consultative dialogue with citizen.

Implementing the governance ideas, one of the key is the attitude of local governments and its manager to citizens. The public manager must change and eliminate the attitude of being above the citizen. The other idea, administrative staff and public manager should abandon the outdated idea that citizen participation is unfavorable to social stability.

The governments should adhere to balancing participation, especially giving chance to vulnerable groups for expression. "In the study of citizen rights and participation...the key is not the vulnerable groups' indifference to politics, but others can't tolerate wisdom of vulnerable groups, and can't believe this group has capability to propose solutions to some problems."^[10] From this kind of attitude, we think that government staff and public manager should transform their ideas.

4.2 Promote citizen participation following the path from low to high level

It is a gradual process for citizen participation in public governance to develop. Pay attention to the gradual levels. Earlier theory about the progressive of citizen participation was summarized as ladder theory. One of the representative works was "A Ladder of Citizen Participation" by Arnstein, in which he brought out from low to high participation model, and had a tremendous impact on participation form and mode. The eight ladders from low to high are as follows: "manipulation, therapy, informing, consultation, placation, partnership, delegated power and citizen control."^[11] This ladder theory is worth learning and reference for public governance.

Put emphasis on phases or stages. On the basis of the degree or depth of citizen involvement in public affairs, there are three stages. The first stage or primary stage, the most important step is open related information about governments and public affairs, so as to ensure citizens' right to know. The second stage or advisory stage, allowing citizens to express opinions and give advice. The third stage, or consultation and cooperation stage at high-level, citizens transform from passive obedience to active participation. "Simple information disclosure is a unidirectional relationship of governments providing information to citizens. While active participation is a two-way relationship based on the cooperation

between government and citizens.”^[12]

In local governments in China, in line with the theory of ladder and stages, it is concluded from the 40 cases that the task of present citizen participation is advancing it from primary stage and advisory stage to consultation and cooperation stage.

4.3 Achieving legalization and improve institutional system of citizen participation

Promoting citizen participation by normalization and order, is consistent with the Chinese strategy of “governing the county by rule of law”. On the one hand, strictly enforcing legal provision on citizen participation in existing laws and regulations. On the other hand, the main task is to specify people’s rights stated in Constitution. We suggest that the State Council or the Standing Committee of NPC legislate uniform law about “Citizen Participation in Public Management”.

Improving institutional system for citizen participation. Firstly, implement open government information system. Next, establish program regulation for participation. From the choice of representatives, forms, fields and issues to open results of participation, it is essential to set down a series of regulations. Thirdly, lay down specific institutions for participation. When governments decide major issues about people’s livelihood and decision-making matters closely related with the interests of the people, they have formal standards.

5 Conclusions

From the perspective of promoting the development of democratic politics, citizen participation in contemporary time not only is historically reasonable, but also has practical feasibility. Citizen participation in public governance of governments, is a significant channel to collect public opinions and advices, also is a way of citizen supervision of government. The rapid development of Internet, on the certain degree, has raised active participation of citizens.

In short, local governments should rationally weigh the advantages and disadvantages of citizen participation. Then governments make good use of various tools and approaches of participation, comprehensively promote practical progress of citizen participating in public affairs and governance.

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Citizen Participation in Ecological Environment Treatment —Based on the Modernization of National Governance System *

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Abstract From the perspective that the core of the modernization of national governance lies in the diversification of governing subjects, as a form of the diversification of governing subjects, public participation plays an important role in ecological environment treatment. Based on empirical research, the paper firstly analyzes the existing problems of the citizen participation in ecological environment treatment by using alpha reliability coefficient, those problems including the lack of political and economical essentials, the lack of civil society essentials, and the social organization itself insufficient construction, etc; then puts forward some concrete strategies which are conducive to encourage citizens to participate ecological environment treatment so as to promote national ecological civilization building and to realize the modernization of national governance system in the end.

Key words Modernization of national governance system, Ecological environment treatment, Citizen participation, Diversification of governance subjects

1 Introduction

The third Plenary Session of the 18th CPC Central Committee of the Party proposed : “the overall goal of comprehensively deepening reform is to perfect and develop socialism with Chinese characteristics, and promote the modernization of national governance system and governance ability.” One of the connotation of the modernization of national governance system is the diversity of governance bodies, i.e, the government, market, society and citizen, all as governance bodies, give full play to each competence and jointly govern society. Ecological environment treatment is an important part of national governance. Public participation mechanism in ecological environment treatment not only can improve the scientific and democratic decision-making level, but fundamentally guarantee the sustainable development of ecological environment. Therefore, from the perspective of the modernization of national governance systems, the paper firstly analyzes flaws of public participation in the ecological environment treatment, and then puts forward some creative path selection to it, hoping to provide some useful reference to it.

2 The necessity of citizen participation in ecological environment treatment

The Thirteenth Five-Year Plan for National Economic and Social Development of the People’s Republic of China puts forward that the most stringent environmental protection system must be carried out and the environmental treatment system of government, enterprises and the public all involved must be formed in the process of improving environmental quality this core, which has a great significance to the preceding and role of citizen participation in ecological environment treatment.

Conversely, public participation in ecological environment treatment helps to innovate the way to govern ecological environment and promotes the modernization of national governance system.

2.1 The necessity to realize national governance system modernization

National governance system modernization is a process from traditional state management to modern state governance by a profound change in the whole society, ideas, organizations, and behaviors based on concepts like system rationality, diverse jointly governance, justice and fairness, deliberative democracy penetrating into economy, politics, culture, society and ecology (Liu Jian-wei, 2014^[1]). The core of national governance system lies in the diversity of governance bodies, which requires to change single government-led pattern in management. The new pattern of governance has broken

* Financed by Key Project of Philosophy and Social Science of Hubei for 2014 (Project No.: 14zd014)

governments' monopoly position on national governance, but demands a joint action between governments and other bodies, and a joint participation combined with social forces in social governance. Moreover, a reasonable and ordered way of citizen involved in ecological environment treatment helps to strengthen all parties' coordination and further to realize the modernization of national governance system.

2.2 The necessity to innovate the way of ecological environment treatment

Ecological environment treatment, an important part of national governance system, is an embodiment of application of the theory of governance into the ecological environment. Specifically, ecological environment treatment is a series of ecological environmental cooperation relationship between the government, company and society, though adopting a formal or informal system and methods to realize the purpose of resources protection, pollution precaution and environmental disputes solution so as to the development of ecological sustainability. Citizen participation in ecological environment treatment is the development and innovation of ecological environment treatment, mainly in main bodies, mechanism and function.

In terms of governance bodies, the patten of a shared responsibility between the government and society with joint participation has been formed; all groups and individuals, including people involved in system building, policy implementation and supervision, are the main bodies in ecological governance. In terms of governance system mechanism, based on deliberative democracy, a interaction situation in the government, social organizations and individual citizens has been formed, from confrontation to cooperation, and from control to coordination. In terms of function of governance, the whole protection of ecosystem and its service function has been formed, and the effective supply in public goods and service of ecological environment has been guaranteed.

2.3 The necessity to reduce regulated cost

Ostrom said that a self-organizing governance mode could be adapted to settle natural environment the common wealthy when the approaches of governments and markets can not work (Elinor Ostrom, 1990^[2]). Nowadays, the comprehensiveness and complexity of ecological environmental problems lead to the gradually increase of environment cost (see Figure1). As a legal power in environmental regulation, governments face huge pressure in the case of prominent environmental problems and sharp contradiction in environmental regulated cost. Under the circumstance, governments' limited competence in environmental supervision can not bear severe environmental regulated cost, which is prone to problems of governments' governance.

However, social forces in this case shows great value. For example, social organization and the public, both of stakeholders in environmental issues, are potential forces in environmental protection and spread everywhere; besides, huge social forces helps to successfully share tremendous environmental regulated cost and make up market failure and government failure.

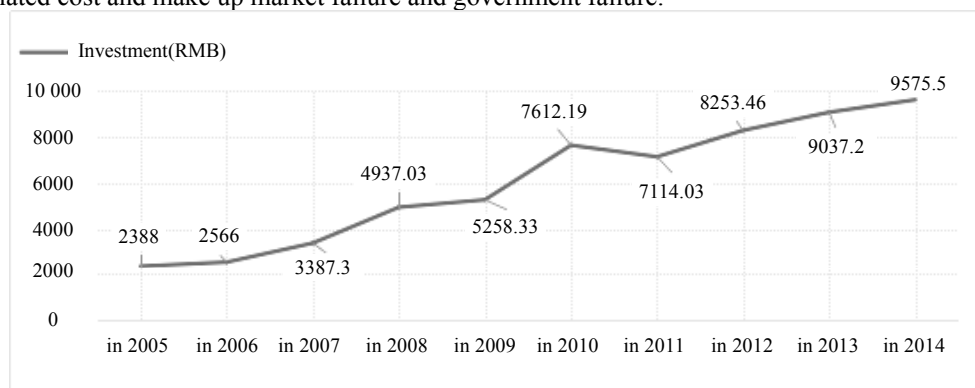


Figure 1 Total investment in national environmental pollution control from 2005 to 2014

Data from the National Bureau of Statistics

3 Citizen participation in environmental satisfaction survey

Ecological environment treatment with public participation as a core plays an important role in the active participation of the public and sustainable development of ecological environment. To better reflect present situation of the citizen participation in ecological treatment so as to analyze the problem, the paper takes W city as an example to conduct an empirical investigation and conducts environmental satisfaction survey for citizens participation in W city. In this survey, a total of 680 questionnaires are issued, including 638 valid ones and 93.8% effective ones. Those questionnaires cover three parts, namely, basic information investigation for individual, basic living environment investigation, and consciousness of the ecological environment investigation. The detailed sampling characteristics are shown in Table 1.

Table 1 Sample distribution

Index	Category	Frequency	Percentage
Gentle	Man	305	47.81%
	Women	333	52.19%
Age	Under 20	63	9.87%
	From 20 to 40	296	46.39%
	From 40 to 60	183	28.68%
	Over 60	96	15.05%
Degree of education	Graduated from secondary school or below	106	16.61%
	Graduated from high school or technical secondary school	152	23.82%
	Junior College	179	28.06%
	Bachelor degree or above	201	31.50%
Monthly income/per person	Under RMB 1000	68	10.66%
	RMB from 1001 to 3000	125	19.59%
	RMB from 3001 to 5000	213	33.39%
	RMB from 5001 to 8000	134	21%
	Over RMB 8000	98	15.36%
Hometown	Eastern seaboard	175	27.43%
	Central China	197	30.88%
	Western China	135	21.16%
	Other area	131	20.53%

3.1 Investigation of citizen's ecological environment consciousness

As shown in Figure 2, we can find that in the 638 respondents surveyed, the public's attention on ecological environment is significantly higher than that of participation; meanwhile, a large part of citizens have not paid attention to the protection of ecological environment; in the degree of understanding on environmental protection organization, only 26% of respondents expressed high attention on environmental protection organization, while nearly 45% said they paid lower even no concern to it. This shows citizens not only have a low participation in ecological environment treatment but have little knowledge of ecological environmental protection organizations.

Alpha reliability coefficient method is used to analyze the data. The result shows that the value of Cronbach's α is 0.926 and the average value of the project is 0.929, both all above 0.9, which indicates the stability and reliability of the questionnaire are very strong. The paper analyzes the original data by SPSS software, and uses the mean value and range those two indicators output in the above table (Table 2) to conduct a interval normalization of raw data. That is to say, the original value minus the average value; then it is divided by range; finally the weights of 9 indicators given in Table 3 are obtained through the use of standardized treatment and the variation of proportion method.

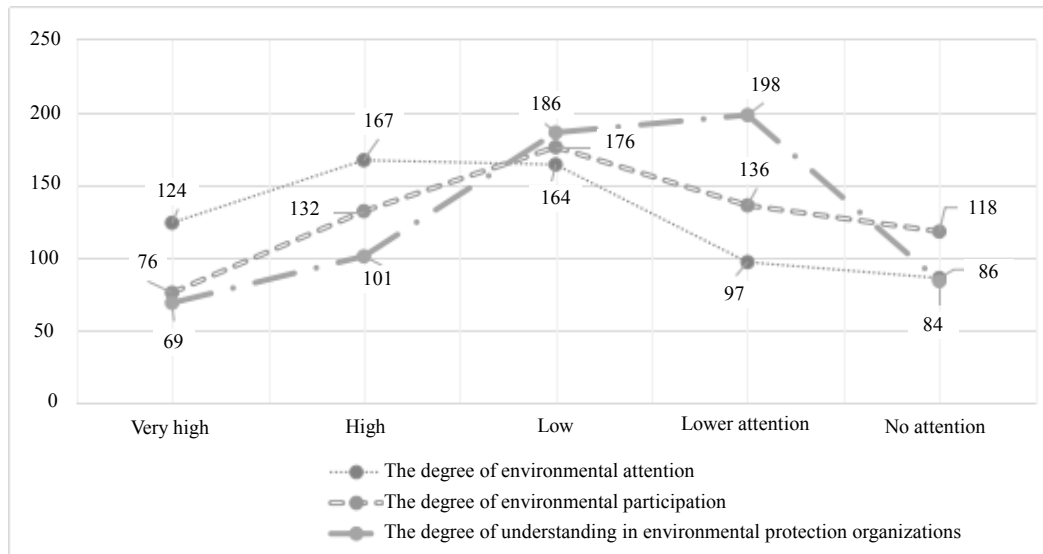


Figure 2 Citizen's ecological environment consciousness

Table 2 Descriptive output of raw data

Factors		Maximum value	Minimum value	Range	Mean value	Standard deviation
Civil society essentials	x_1 Personnel composition	5	1	4	2.963	0.808
	x_2 The degree of capital adequacy	5	1	4	2.630	0.967
	x_3 Organizational activity capacity and its influence	5	2	3	2.852	0.770
Political and economical essentials	x_4 Governments' information publicity	5	1	4	2.630	0.884
	x_5 Smoothness degree of participation	5	1	4	2.778	0.892
	x_6 Sound degree of participation system	5	1	4	2.963	0.854
	x_7 Support degree by governments	5	1	4	2.741	0.903
Self-development	x_8 Internal management	5	2	3	2.852	0.770
	x_9 Office environment	5	1	4	2.875	0.818

Table 3 Weight index

w_1	w_2	w_3	w_4	w_5	w_6	w_7	w_8	w_9
0.109	0.117	0.124	0.107	0.108	0.106	0.109	0.124	0.097

After the establishment of the weight of each index, the weight is used to calculate the overall satisfaction degree of each respondent. The formula is as following:

$$M_j = \sum_{i=1}^9 w_i x_{ij}$$

M_j represents the No. j respondent' total satisfaction degree, questionnaire $j=1, 2, \dots, 277$

w_i represents weight of the No. i , $w_i = \frac{\sigma_{x_i}}{\sum_{i=1}^9 \sigma_{x_i}}$, $i=1, 2, \dots, 9$ (specific values shown in Table 3)

x_{ij} represents the No. j respondent's rating to the No. i factor

So far, the model of public satisfaction measurement is established.

Using the SPSS software and the above satisfaction measurement model, the average degree of public satisfaction is as following:

$$\frac{\sum_{j=1}^{277} M_j}{277} = 2.809$$

The result shows that the average satisfaction of the public is 2.809 (out of 5). The factor value which influences respondents' satisfaction varies in the interval (2,3). The study shows citizen participation in ecological environment treatment is relatively low along with few knowledge of the ecological environmental protection organization. Among the factors that affect public satisfaction, factors, such as political and economic essentials, civil social essentials and the problem of organizational self construction, seriously influence the development of participatory governance in ecological environment in China.

4 The dilemma of participatory treatment in ecological environment

4.1 Lack of civil society essentials

Along with the continuous development and reform of China's market, the relationship between state and society is changing. The idea of civil society that advocates high independence and high autonomy draws many scholars' attention, becoming the theory of governance mode, like polycentric governance, and participatory governance. The civil society refers to spontaneous social organizations and the public who spontaneously assemble in public places, both beyond political and economical sphere; people in the society initiatively discuss social problems, join social activities, and service themselves as well as the public. Especially in remedying the deficiency of the government, it can give full play to the advantage of "third eyes" (Wang Zhen, 2017^[3]). However, at present, China's citizens participation in ecological environment treatment faces the problem of insufficient civil society essentials, mainly in the following two aspects:

First, the intellectual resources of the public is insufficient. According to national bureau of statistics, compared with a 2.64% reduce a decade ago, illiteracy rate in sixth census in China still reaches to 4.08%. And based on a large population in our country, it is a long way to improve residents' education level. Correspondingly, the large proportion of illiterates and low-grade education people seriously affect the processes of ecological environment participatory treatment in China. Due to lack of necessary knowledge reserves and education quality to understand and participate in the local ecological environment treatment, those people have been excluded from public management process for a long time, only to be told the results of ecological environment treatment is the only way to participate in. Even with those intelligentsia and social organizations who have corresponding education background, when cooperating with governments, they are easy to be bribed because they just care for local and short-period interests; the phenomenon will lead short-period interests of local governments replaces public' opinion on ecological environment protection and cause the short-termism of environmental policy. Besides, because of weakness, the public and organizations will try to obtain funds from investor by catering to their intention, which makes the policy-making lose independence and finally damages the effectiveness of the ecological environment treatment.

The second is insufficient financial resource of the public. In recent years, non-governmental environmental protection organizations, as an important way and carrier, play a significant role in public participation in ecological environment. Since the first non-governmental environmental protection organization—Environmental Sciences Association—in China founded in 1978, environmental protection gradually becomes the most active field of the development of non-governmental organizations. In the last few years, a number of environmental groups have been formed and it is an explosive growth trend. According to Annual Sustainable Development Conference of China Non-governmental Environmental Protection Organization in 2013, there are about 8000 non-governmental environmental protection organizations, equal to a 40% increase in five years (Shen Tao, 2013^[4]). Although the non-

governmental organization has a rapid growth and plays a greater role in improving ecological building, it faces a severe problem in finance. In the survey 34.64% of the 683 respondents believe that fund shortage is the main factor restricting their participation in the ecological environment. At present, less than 30% non-governmental organizations have a fixed funding source; the most neither are stable in raising funding channels but nor adequate formal accounting system; besides, staff mobility is frequent, which greatly influences the public participation in ecological environment treatment.

4.2 Lack of political and economical essentials

Civil society advocates dichotomy between state and society. Strictly speaking, it emphasizes an opposition between state and society, claiming society exists alone. Different from that of western countries, under the special economy and politic system, environmental protection cause in our country mainly lies in governmental promotion and lead, and non-governmental environmental protection organization set up by governments accounts for a considerable proportion. Therefore, citizen participatory management, as the carrier of non-governmental environmental protection organization, exists a sense of “congenitally deficient”, resulting in insufficient politic and economy essentials in citizen participatory management and mainly in the following terms:

The first is lack of operable legal system universally existing in the process of the public participation, bringing about an unsound mechanism and an impassable channel of public participation in the ecological environment treatment. As shown in Figure 3 and Figure 4, environmental protection activities initiated either by governments or the folk are the main participation modes for those 683 respondents and the participators account for 44.67% of the total number of respondents. In addition, the widespread college community is also a way for citizen especially adults to participate in ecological environment treatment and the proportion is 27.88%; 32.45% of respondents attend spontaneously without organizational behavior; 57.68 % citizen said the mainly limited factor is how to participate in ecological environment. It shows that it is the block of participatory channels and participatory system that seriously influences citizens and organizations in participating in ecological environment treatment. And this is ascribed to two sides.

The one is because the right to information is premise for citizens participation in ecological environment (Yu Shui and Li Bo, 2016^[5]). In 2007 the release of Regulations on Government Information Publicity requires all relevant government departments and companies to public information like environmental quality, environmental management and environmental accidents, etc. But a survey shows the public satisfaction with the degree of government information disclosure is only to 2.633, a medium state. At present, the incompleteness, delay and inaccuracy of environmental information disclosure still exist in our country, the most prominent problem belonging to incomplete publicity. Most departments in our country just provide relatively abundant information on policy document, basic environmental quality, environmental news and announcements but lack some core information on environmental standards, environmental emissions and monitoring data, environmental fees and fines, etc. All the time the action that governments or relevant environmental protection departments tend to public relaxed and the insensitive information but rather than those complex and sensitive information severely influences citizen’s environmental right to know. The lack of right to know makes the public participation in environmental governance in a passive, spontaneous mode and terminal involvement, which decreases the depth and length of participation.

On the other hand, environmental organizations, an important way of public participation in the ecological environment treatment, is lack of communication with the public. Due to it, those environmental organizations have a lower awareness degree and poor mass basis; without attracting and holding the public to participate in the ecological environment treatment, citizen devoted to it are in a state of “guerrilla warfare”. Besides, a system of dual license on registration, a system of dual responsibility on management, a system of annual inspection and a system instruct report and so on in non-governmental environmental protection organization in China is the source of multiple difficulties in registration, orientation, talent and trust of environmental protection organization, although it has played an important role in the development of environmental protection organization.

Secondly, co-governance is the key to the public participation in ecological environment treatment, but the local governments and officials are unwilling to share the public policy process with

the public. At present, although part of the local environmental protection departments have a certain knowledge of the citizen participation in ecological environment, they define the role of the public in level of involvement; because they have a little knowledge of the ability of the public and social organization in spontaneous environment protection, public participation becomes a accessory of governmental governance (Shen Yan, 2015^[6]). This partly attributes to local environmental protection departments' excessive worries on negative effect caused by participatory governance. Meanwhile, the lack of explicit incentive system is also the reason why local government officials are reluctant to share ecological environment governance rights with citizens. The way of only according to GDP size in local government assessment is a determining factor for participatory governance implementation in local government. Assuredly, some official will unilaterally focus on government construction and economic income but neglect the duty of citizen participation in environmental treatment.

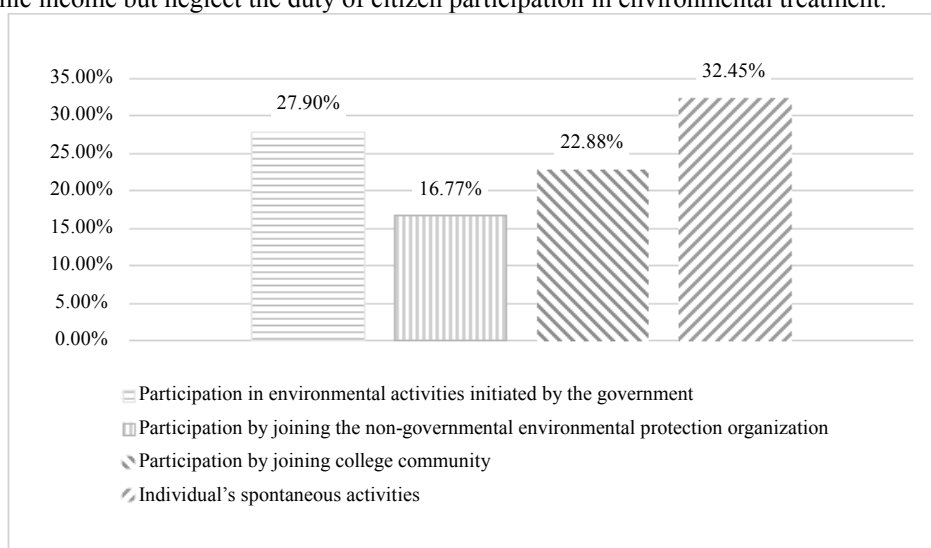


Figure 3 Forms of citizen participation in ecological environment treatment and protection

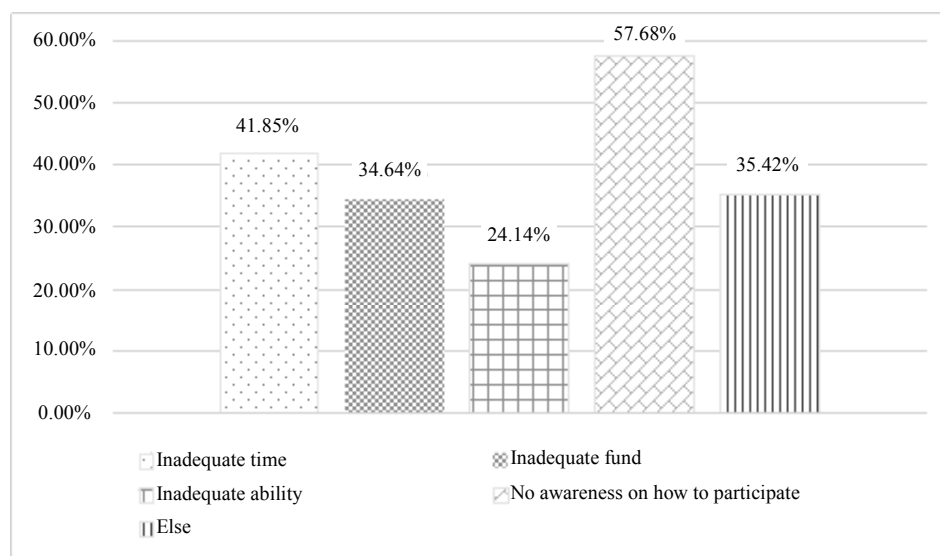


Figure 4 Factors of restricting citizen participation in ecological environment treatment

4.3 Insufficient construction in non-governmental environmental protection organization

Except that the lack of civil society essentials and the lack of political and economical essentials

seriously affect citizen participation in environmental governance, problems in self construction of non-governmental environmental protection organizations also have bad influence.

Firstly, the non-governmental environmental protection organizations in our country are unevenly distributed, mainly in Shanghai, Beijing, and Sichuan. The centralized distribution is hard to attract widespread citizen participation. Besides, from the angle of personnel composition, there are lack of specialized persons and elitists because few participators major in environmental professional. This results in insufficient innovation in activities on one hand, and brings about the insufficiency of professional theory and authoritative data support in related measures and solutions due to a single perspective, which further leads to serious formalism in participation results and inadequate supervision effect in government and enterprises on the other hand.

Secondly, from the view of self construction, China has confused internal state, frequent mobility and limited cohesion. More important is the problem of social cognition and self localization because many non-governmental environmental protection organizations have not been officially registered, and thus leads to the lack of environmental public interest litigation in practice. Environmental public interest litigation is an important way for non-governmental environmental organizations participation in environmental treatment. Since the promulgation of Civil Procedure Law, China has set up nearly 180 courts or trial court. While in court at all levels of all the 53 cases of environmental public interest litigation, compared with being accepted and its success ratio by inspection organ and administrative organs, environmental public interest litigation prosecuted by social organization and citizens is few and in a low success ratio. The source dates back to the vague body of environmental public interest litigation when it comes to citizen' participation right and litigation rights in Civil Procedure Law, which seriously limits the development of environmental public interest litigation in China.

5 The way to promote participatory governance in ecological environment

The third Plenary Session of the 18th CPC Central Committee of the Party pointed out that it is necessary to active vitality of social organizations by correctly handling the relationship between government and society, speeding up the separation between government and society in function and promoting social organizations to clear responsibility, legal autonomy, play a role so as to promote the modernization of national governance system and governance ability and promote social reform and innovation (Xinhua News Agency, 2013^[7]).

The objective requirement of national governance modernization is that the starting point and its purpose aims at the promotion of fairness and justice, and the improvement of the well-being of the people. Therefore, to meet the needs of the people is always the starting point of the improvement and perfection of the national governance system, and the promotion of national governance capacity, which is great significance to promote public participation and play the role of environmental protection organizations (Yuan Hui-guang and Fan Si-kai, 2014^[8]).

5.1 The active response and effective absorption of government

Public participation in ecological environment treatment is a supplement and development of the existing environmental treatment mode. It can not deny the government's role, especially under the mode of special environment system in China, which can not exist separately without the government. So, it not only needs government's vigorous support but also active response and effective absorption. First of all, the government should strengthen the political trust in public participation, which is an important factor that affects the public and social organizations' acquisition in ability of activity participation and in amount of social resources. Our governments should further break traditional concepts, build a positive interaction with social organizations and share the governance with them; should classify and guide the social organization by dividing them to several categories, and awarding selectively; realize the empowerment of environmental protection organizations by vigorous support and enhancement of incentive policies. Second, it is necessary for governments to reform a series of regulations and institutional arrangements which are not conducive to the public participation in the ecological environment and enhance social organizations' governance ability in ecological environment participation by institutionalized participation. Specifically, the government should give the environmental organizations' the right to know, the right to participate and the right to supervise on

the feasibility of environmental impact assessment; constantly perfect the system of the fund management; perfect principal part of legal system of public interest litigation; perfect tax exemption system; perfect supervision system of environmental organizations while promotes them effective participation. Finally, the government should actively promote the innovation of the government management system so as to provide the conditions for the social organizations and the public participation in the ecological environment governance. Finally, the government should actively promote the innovation of the government management system so as to provide the conditions for the social organizations and the public participation in the ecological environment treatment.

As mentioned in the third Plenary Session of the 18th CPC Central Committee of the Party “public services and problems which suit for the provider of social organizations should be undertaken by social organizations and voluntary services organizations.” Therefore, the government should not only accelerate the implementation of the regulation, but actively explore more effective environmental governance mode, such as the coordination of governance mode, public-private partnerships, the public services purchase from non-governmental environmental protection and so on, and finally to realize the new management system, namely, “small government and big society” in the end by promoting the growth of civil society and exploring diversified participatory governance mode through a variety of ways.

5.2 The effective participation of civil society organization

The effective participation of civil society organization is the premise of public participation in ecological environment treatment and the key to participatory governance of ecological environment governance. At present, there are problems of single form, large contingency and high effectiveness in civil society organization in our country, which indicates social organizations in our country is enough but few competent ones. The self ability of civil society organization relates to the government identification and public trust, so civil society organizations should strengthen their own capacity building and enhance their own management ability. On the one hand, the social organization should clear its property, tenet and business scope, etc. ; closely connect with practice; find the value orientation with its national conditions; establish a positive relationship with the government; establish a dynamic social organizations supported by the government. On the other hand, social organizations should bring in the talent, attract and mobilize the participation of environmental professionals and the influentials to enhance the organization’ professionalism and improve social influence. In addition, under the background of the emerging of “officials questioned on TV” “officials questioned on the internet” those participation mode, the role in active plan, deep participation and broad supervision of social organizations will fully play by introducing information technology talent, opening “the channel of participation on Internet” (Xu Lin and Gu Shi-fei, 2014^[9]), strengthening the network promotion and cooperation, and affecting related department policy.

5.3 Mechanism for consultation and cooperation in the perfection of ecological environment governance

There are many successful experiences in the solution of social problem. Meanwhile, in ecological environment the way “community round table dialogue project” could be adopted because its form and process could attract the participation of environmental stakeholders, including government departments, enterprises, representatives of local residents, environmental experts, non-governmental environment protection organization and the media, etc. Though by means of a equal-and-free dialogue and a seek of win-win strategy, environmental protection is the purpose of those participators. The building of mechanism for consultation and cooperation in ecological environment treatment could effectively prevent and settle the grass-roots environmental contradiction in our country; enhance a mutual understanding and trust between stakeholders; promote the implementation of environmental regulation and policy; encourage the public participation in the ecological environment treatment.

6 Conclusions

Citizen participation in the ecological environment treatment has gradually become the social consensus. Faced with the change of new environment and the challenges of the new reality, the public

and social organizations not only should take part in it but become a basic force to promote ecological civilization construction and ecological sustainable development so as to ultimately realize the modernization of the national governance system.

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A Study on Model Innovation of Urban Grassroots Governance Based on Polycentric Cooperative Governance—A Case Study of the 365 Community Governance Model in Xigang District of Dalian, China *

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Abstract Urban grassroots governance is the basis of state governance, the model transformation of which concerns the realization of state governance system and the modernization of governance ability. In the process of stepping into the post-industrial society, scholars at home and abroad generally emphasize the role of multiple subjects in community governance and advocate the community participation, collaboration and cooperation governance. Therefore, based on the theory of polycentric-cooperative governance, urban grassroots polycentric cooperative governance model framework can be constructed, which can highlight the role of multiple subjects in community and promote the adoption of a mutually-beneficial and win-win action strategy. By learning and growing together, cooperative governance can be realized and improved continuously. The practice of the 365 community governance model in Xigang District of Dalian has proved that the polycentric cooperative governance model can improve the community governance ability and service level. This model can fully mobilize multiple subjects such as social organizations, enterprises and residents to participate in community affairs with the government as its booster. Hence, the problems like perfecting the top-level design, maintaining a long-term and dynamic mechanism as well as strengthening the ability of social organization and public participation need to be solved. And more efforts should be made to push forward the separation of politics and society, to cultivate the civism and community organizations and to inspire social energy, in order to forcefully promote the model innovation of Chinese urban grassroots governance.

Key words Polycentric-cooperative governance, Urban grassroots, Community governance, Model innovation

1 Introduction

Since “urban and rural community governance” was first written into the report of the 18th National Congress of the Communist Party of China (CPC), community governance has become an important component of the innovation of grassroots governance system. As the famous British scholar Giddens said: “The community is the root of emerging politics^[1]”. However, influenced by traditional administrative thinking, Chinese urban grassroots have stayed in the vertical management-based level for a long time whether in the community theory research or practice exploration. Currently, as China has entered into a new normal period of economic and social development, the game between power and rights between the government and the residents is intensifying, and the traditional community management model with government as a single subject and the controller is increasingly difficult to sustain in the global governance. In order to deal with the crisis of grassroots governance in the progress of social change, this study will summarize the experience of grassroots governance and build a new governance model based on the theory of polycentric-cooperative governance. It will also deal with the constant sinking of contradictions between public affairs and social management as well as the

*Financed by National Philosophy and Social Science Planning Foundation Project: On Innovation of Interest Conflict Governance System in Public Resources Trading (Project No.: 12BZZ051); the Project of Basic Research Fund of Central Universities: A Study on the Interest Conflict Governance of Civil Servants from the Perspective of Informal institution (Project No.: DUT17RC(3)011); and Party Construction Task of Dalian University of Technology: A Study on a Normalized Mechanism Innovation of Style Construction of University Leaders.

problem of multiple subjects of urban grassroots collision. The study aims to promote a smooth transition of Chinese urban grassroots from the single management to cooperative governance, enhancing the level of grassroots social governance services.

2 Literature review

The study searched some key words as “community governance”, “community management” and “community development” from database of CNKI and Web of Science, and then nearly 3000 related literatures from 2001 to 2016 were collected and made a “cluster analysis”. Then, based on the knowledge graph visualization software Citespace, a research hotspot visualization graphical analysis was conducted, which found that the research on urban grassroots community governance at home and abroad focused on the following aspects:

First one is the research related to the power structure of urban grassroots community. Scholars like Floyd Hunter and Wright Milis who advocated the elite governance believed that the community political power is basically in the hands of a small number of social celebrities, who play a decisive role in making major decisions of the community. And scholars as David Dahl who prefer the pluralism argued that community power is scattered among various groups or a group of individuals. Local officials have an independent status and are responsible for their own voters respectively, who are controlled by voters through voting rights^[2]. Second one is the study of community governance and construction. Rothman held that community governance mainly involves the role of practitioners, the concept of service objects, role system, the goal of community action and group interest hypothesis; Popper thought that community governance mainly involves the role of community workers, representative figures, community work strategy, etc^[3]. Third one is the study of community governance theory perspective. Gerry Stoker and other scholars believed that new localism is a new governance principle, which requires not to simply delegate the authority to the formal local government, but to actively bring local residents under the community governance. Parsons and other scholars put forward a comprehensive theory. It held that the institutions, individuals and groups in a community are the components of a community which interact with each other and become an inseparable complex^[4]. American scholars like Richard C. Boxes firstly proposed the citizen-governed community governance model clearly from the perspective of citizen governance^[5]. Fourth one is related to the study of social governance practice patterns. According to the main body of the community governance activities, it can be grouped into four models: local governance pattern, individualistic community governance pattern, social mobilized community governance pattern and centralized community governance pattern^[6].

In the visual graph of urban grassroots community governance research hotspots, the analyses of urban grassroots community governance by various scholars have their own merits. However, with the development of the times and in the process of stepping into the post-industrial society, most scholars have gradually emphasized the role of multiple subjects in community governance, and advocated community participation, collaborative governance and cooperative governance. The overall development trend is to build a community governance network system, and actively cultivate multiple subjects of community governance, and encourage these subjects to participate in community building.

3 The theory of polycentric-cooperative governance and construction of theoretical framework

3.1 Theoretical connotation of polycentric-cooperative governance

With the change of government functions and the downward shift of power in China, the government is transferred from management to governance and service to support the theory of polycentric-cooperative governance characterized by “the decentralization of power, the overlap of management and polycentric-cooperative governance” as a way of thinking and a theoretical framework of social governance and as an ideal model to respond to the challenges of the times, meet the needs of the public, improve the quality and efficiency of public services. The theory of polycentric-cooperative governance is created by Vincent A. Ostrom and Elinor Ostrom and other scholars. The main connotations of this theory include the following levels: Firstly, polycentric governance means that

there are multiple subjects in public goods production, public service supply, and public affairs management. Secondly, polycentric governance means that the participation of government, market and community as well as the application of various governance means. Thirdly, in the theoretical framework of polycentric governance, government is no longer the single subject but one of the multiple subjects. In terms of management function, government plays the roles more of a mediator, a rule maker and a dispute referee in the interactive process. It is also emphasized that the way of management should be transformed from direct management to indirect management, and management means should be transformed from the partial administrative means to the comprehensive use of economic, legal, public policy, administrative and other means^[7]. At present, with the constant progress of society, public expectations for the government are increasing, public demands are also diversified, and public calls and demands for polycentric cooperation governance are also growing.

3.2 The theoretical framework of community polycentric-cooperative governance model

Based on the above-mentioned connotations of the theory of polycentric-cooperative governance and according to the practice of grassroots governance in China, this research put forward a framework of community polycentric-cooperative governance model which integrates administration, coordination and autonomy and is characterized by a core (community autonomy), dual power (government promotion and social promotion) and three governing subjects (district government, subdistrict, community) (see Figure 1). Community residents committee, being at the center, is the administrative office of the community residents' congress. It undertakes the management of daily community affairs, exercises the functions of community management, service, education and restraint, leads the community to provide various types of public service resources. It can provide community public service and public utilities by direct production or by outsourcing. Community Party organization plays a major role of macro-control, and actively carries out the ideological and political work, education, training and supervision work in the community to strengthen the construction of community spiritual civilization. It also supports and ensures that each subject performs the duties according to law and regulations and work independently. As the for-profit enterprises of the community property management work, property management companies provide professional public services relying on their own management technology, mature operational norms and cost advantages. The local government transfers some functions of community public services and public utilities to social organizations by delegating the agents decentralizing the power and partnering with social organizations. The local government also supervises and controls them at the same time^[8].

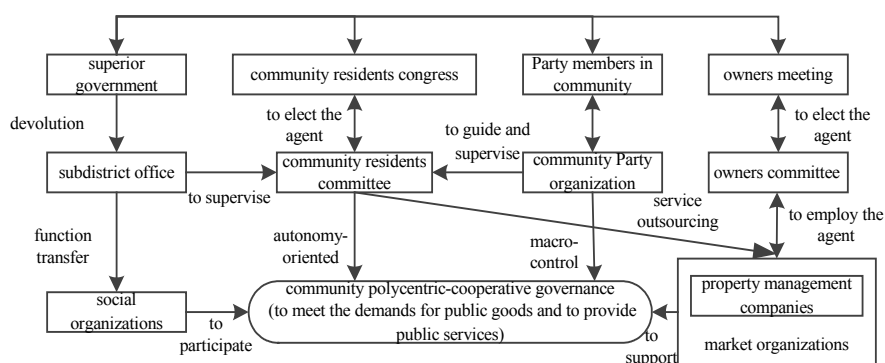


Figure 1 The theoretical framework of Chinese community polycentric-cooperative governance model

3.3 The characteristic of community polycentric-cooperative governance model

The above-mentioned community polycentric cooperative governance model has the several characteristics as follows: Firstly, it is a polycentric and multi-level network system. The government in the network and other levels of government, enterprises and community public and other subjects form a “multilateral relations”, which is of mutual interdependence on many levels as human, finance, materials and system etc. A common goal of governance will be achieved by a series of collective actions like exchanging information, sharing resources and communicating experiences. Consequently,

a polycentric, multi-level and crisscrossed network system is established to deal with public problems together. Secondly, it is an action strategy of mutual benefit. Community polycentric cooperative governance abandons the “win-lose” zero-sum game mode, but chooses to pursue “all-win” opportunities in cooperation. When the game parties tend to be in favor of the strategy of common profit, there will be a collaborative balance state, that is, a balance point of interest. Under this form of structure, the governance networks between each other will show a pattern with its core advantages diffused and then form a systematic and overall advantage. Thirdly, it is a growth process of common learning. The polycentric cooperative governance provides a relatively open and equal environment for those community governing subjects in the governance network to exchange and integrate the knowledge. It also provides a best platform for multiple participants to learn together and conduct collective actions, so that they can learn and grow in such an environment. Fourthly, it is the continuous improvement of cooperative governance. The former subdistrict office and community residents committee are replaced by the residents committee, which streamlines the institutional staff and improves the administrative efficiency. By re-organizing the functions, the internal and external relationships between the residents committee and the grassroots government are clarified. The grassroots government exercises the functions of social affairs management and services, while the residents committee exercises the functions of community councils and autonomy. The residents committee and the grassroots government interact positively and attracting multiple subjects to participate in community cooperative governance^[9].

4 Case analysis of “365 Community Governance Model in Xigang District of Dalian”

4.1 Case review of “365 Community Polycentric Governance Model in Xigang District of Dalian”

In 2011, Central Communist Party proposed to strengthen social management innovation for the first time. In March 2012, Xigang District of Dalian has already set up the first open and comprehensive social governance service model in China—“365 Community Polycentric Governance Model in Xigang District of Dalian”. It is designed to break the incompatibility between the traditional structure and mode of social management in the city, taking “Do what the citizens require, and making the citizens satisfied” as the core concept. The mode sets 365 days, 24 hours, all-weather, all-round, full coverage servicing management society as the foothold; taking reception, distribution, coordination, supervision as the main functions, forming a grid interaction among district, street and community.

365 Citizen Centers were established the in all 7 subdistrict and 365 Citizen Service stations in all 45 communities in Xigang District of Dalian, which brought all subdistrict and community works into the 365 mechanism. 365 Citizen Center in subdistrict is a critical transitional juncture in the 365 mechanism, while 365 Citizen Service Station is the terminal of the 365 mechanism. The 365 mechanism fully integrated the human resources. It integrated the NPC deputies, CPPCC members, party representatives, non-Communist personages, government departments, public utilities, joining enterprises, social organizations, and citizen service teams into the 365 mechanism, thus forming the resultant force for serving the people and constructing an open and comprehensive system of social governance and coordination service, see Figure 2.

According to above figure, the polycentric cooperative organization system of 365 Community in Xigang District of Dalian has formed a running system with three levels of management and four levels of linkage among subdistrict, community and grid.

(1) Serving the people for 365 days, 24 hours with the citizens’ satisfaction as the goal. This concept runs through every detail of the model. It fully grasps the two links of the citizens’ needs and the citizens’ satisfaction, taking dual orientations of demand and evaluation into consideration which has strengthened the effective combination between public service and citizens’ demands.

(2) Making the channels of public opinion expression unimpeded and integrating the public opinions and responses in multiple dimensions. There are 9 channels in total for the citizens to feedback their opinions in the 365 community, including: Hotline 83658365, Party representative studio, NPC deputy committee studio, CPPCC member liaison office, Non-Communist personage

studio, Network system, Grid system, Citizen livelihood window, and Resident Council. The gradual establishment and expansion of these channels have basically realized the all-round feedback of public will in community.

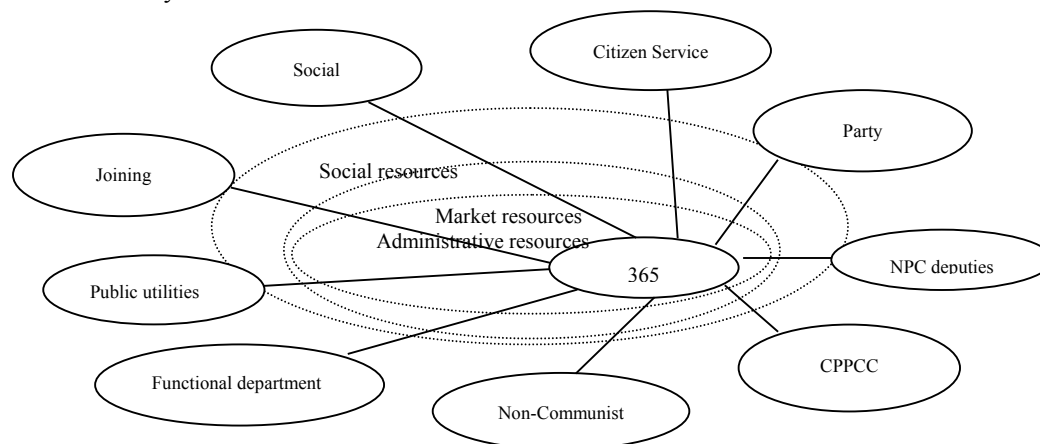


Figure 2 Polycentric cooperative organization system of 365 community in Xigang District of Dalian

(3) Discovering and solving problems actively and achieving fine management of the grid. The district is divided into 120 first level grids, and each subdistrict is divided into 532 secondary grids according to the needs of residents. To establish an information grid platform based on the five basic databases: citizens, location, event, things, and organization. The college graduates in the grid member team are equipped with a specialized mobile phone. They patrol at least two times a day, and they will take notes, record and upload the video once they find a problem.

(4) Establishing a joint coordination mechanism to fill the gap in social governance. 365 Community Governance Model has established a collaborative operational mechanism of “joint meeting, linkage mediation and joint coordination” with 44 functional departments such as Dalian Public Security Department, Human Resources and Social Security Department, Municipal Construction Department as well as 71 grass-roots stations such as water supply, power supply, heating and other municipal public enterprises. A level-classified, responsibility-distributed processing method has been formed which interacting the citizens within the district and dealing with issues outside the district, realizing the cohesion of social governance from the operational level in nature.

(5) Achieving accurate community governance based on the 365 big data analysis. In the process of implementing the 365 model, it is oriented to the citizens’ appealed issues. And it utilizes the modern technology and means to introduce the concept of big data and method into the community governance field. It provides suggestions for all levels of party committees and government decision-making body by reporting the conditions of the people. The model strives to resolve contradictions and hidden dangers at the most basic level and the smallest of the inside of the grid, so that the grid has become the security tentacles in grassroots work, achieving the forward moving of gateway and resolving problems at source (see Figure 3).

4.2 The Characteristics of “365 Community Governance Model in Xigang District of Dalian”

In the practical exploration of the 365 Community in Xigang District of Dalian, a government-promoted, multi-subject community cooperative governance model was gradually formed. The model makes the government as the promoter, fully mobilizing the multi-subject force of social organizations, enterprises, residents and the citizens; letting them jointly participate in community cooperation and governance, and achieving good cohesion and mutual cooperation. The main manifestations are as followed:

(1) Making the reform of the government administration system compatible with the idea of cooperative governance. In Xigang District of Dalian, by transferring personnel from the relevant departments of the government to form 365 citizens service center, a “one-stop” mode of service of the community affairs throughout the whole year is realized. Meanwhile, the model includes enterprises,

social organizations, citizen service teams and the public by establishing a collaborative management and service system platform, forming the multi-subject community management and community service co-governance network. The organization system is transformed from traditional vertical hierarchical structure into flat network structure, achieving the organic combination of social management and integrated social service.

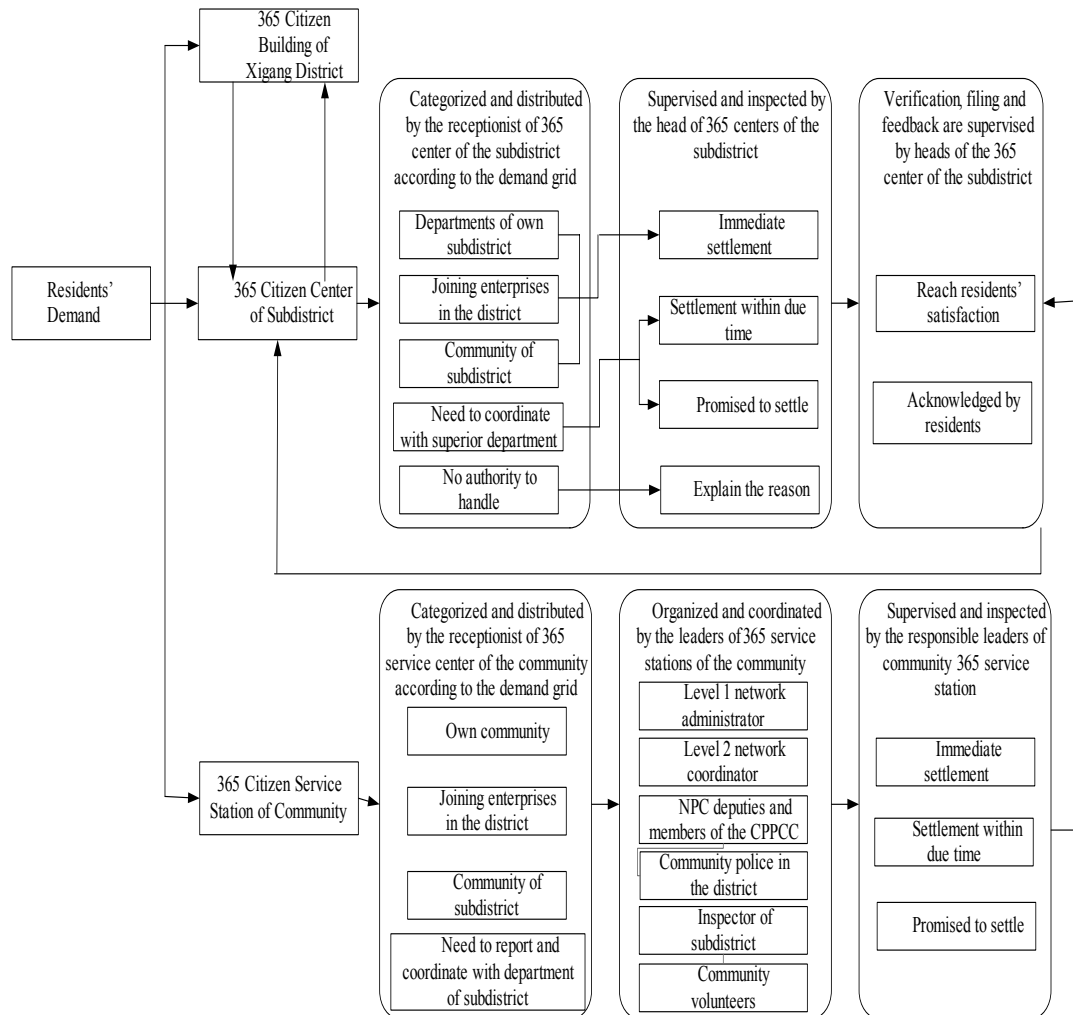


Figure 3 The Flow chart of the service and operation of 365 community governance in Xigang District of Dalian

(2) Guiding the society collaborative participation by policy. The Department of Xigang District drafted documents of *Opinions on Strengthening the Construction of the 365 Community Governance*, *Implementation Plan on Strengthening and Innovating Social Governance in Xigang District of Dalian*, and *Interim Measures on Social Organizations Participating in Community Service Projects for Supportive Management in Xigang District*. The district vigorously cultivates and develops community social organizations with features of public welfare, service and interaction by supporting funds, fields, projects, and techniques. The department also actively explores new ways for government to purchase social service products, adheres to the social project application and declaration system; and encourages and guides more enterprises and social organizations in the district to participate in the community management services.

(3) Realizing “polycentric supply” by effective integration of resources from government, market

and society. The model changes the previous method that Party committee and government took over all the works, so as to properly handle the relationship between government and market, government and society. Delegating the power and managing the affairs well. Leaving the matters to the enterprise and volunteer if these matters can be solved by market and social organization. The model effectively motivated the vitality of market players, creating a strong atmosphere of mutual help and common construction and sharing, thus forming a polycentric supply mode for citizen service.

(4) Realizing the “Three parties’ linkage” by the complement of community, social organization and social workers. Three parties’ linkage of “community, association and social workers” forms a new model of social governance at the grassroots level by taking the community as the platform, the social organization (civil society organizations) as the carrier, the social worker as the backbone, so as to meet the needs of residents. The government and the social organizations fully cooperate and divide the responsibility, leading the community residents to take full part in the grass-roots governance under the supervision of the government, and provide personalized and professionalized services according to the needs.

5 Discussion and proposal

5.1 Discussion of innovation on polycentric-cooperative governance model in grass root level

The practice of 365 Community Governance of Xigang District of Dalian established an orderly, convenient and efficient work pattern. It is a good attempt to build a universal sharing community, polycentric cooperative governance pattern, but it still needs further discussions:

(1) How to improve the top-level design? As a universal convenient service platform in the district level, the problems basically focus on the distribution of financial rights and authority currently. There is less autonomy in district level, thus the division of power and responsibility, responsibility and money are hard to realize on many issues. It is hard to make changes in the essence and is not conducive to rationalize the relationship on the level of institutional mechanisms. Therefore, such problems need strong intervention, resolution, and reasonable design from the municipal level. Additionally, there are also issues like difficulties in sharing resources and repeated construction of resources. The grassroots governance in most of the cities is confined in the self-circulation within the district. The comprehensive service platform of city-district or district-district resources integration has not been formed. Thus many resources are difficult to share, and some resources were constructed repeatedly.

(2) How to maintain a long-term motivation mechanism? The urban grassroots government pays great attention to the community governance model. However, the government puts in a lot of manpower and material resources on establishing the model only by relying on the effort of some particular leaders. Then whether the model will wind up to termination once the leaders leave the district? How to achieve long-term sustainable development of community governance and service model? These should be given in-depth consideration. An effective monitoring network, and the promotion of the implementation of accountability system may ensure that the demands of residents can be resolved.

(3) How to strengthen the participation of social organizations and the public in community governance? Under the macro background of the lagging development of social organizations in China, the expense is financed mainly from donations from various walks of life or from their own pockets when organizing social service activities, which restricts the development of social organizations to a great extent^[10]. What’s more, due to the shortage of full-time staff and the limited mobility, the way and content of enterprises and social organizations participation in social management service still remain in the lower and the single stage. The depth and breadth of participation are very limited, and the participation mainly focuses on a low level.

5.2 Proposal of promoting the innovation on urban grassroots polycentric-cooperative governance model

We still need following acts to continue to strengthen the promotion of urban grass-roots polycentric cooperative governance model innovation:

(1) Promoting the separation of politics and social organization. What needs to emphasize is that

“separation of politics and social organization” is not supposed to weaken the government’s public management ability. Instead, it is to clarify the boundaries between government functions and community construction, governance while continuing to deepen the reform of the government reform and promoting the reform of the social system. It means stripping out the issues that the government can’t handle, or can’t handle well, so that a positive interaction relationship is established, with the reasonable division of functions, each department performing its duties and connecting with each other. We should also encourage social innovation, promoting social organizations to actively participate in public services and social management and other public affairs by nurturing development, supporting incubation, purchasing services and other mechanisms^[11].

(2) Cultivating civil consciousness. This proposal is to guide the residents to form a community awareness, encourage the owners to actively participate in community governance practices, and integrate into community public life, thus forming a nostalgic love for the common life^[12]. The construction of cooperative community network will cultivate the spirit of equality and mutual benefit among residents; the construction of public network community with intimate feelings, full trust, reciprocity and mutual dependence will increase residents’ interest in participation autonomy, thus forming a collective action of Cooperative Governance.

(3) Cultivating social organizations. The government shall support and guide the construction and development of community organizations by carrying out classified cultivation and management. The relevant government departments should guide, regulate and restrict the social participation behavior of community organizations according to law by carrying out the evaluation and supervision of community organizations. Resultantly, the social organization can fulfill their rights and obligations according to law, safeguard their legal status and legitimate rights and interests in the process of participating in community construction and governance, making the society and the government form a benign interactive relation on the track of the legal system. Generally, the government should strengthen the capacity building and enhance the service efficiency of community organizations.

(4) Activating the social vitality. The government can guide and encourage residents to participate in the construction of urban communities, expand the all-around participation platform of community residents, thus enhancing the depth and breadth of community residents’ participation. It is also necessary to increase investment in infrastructures and hardware condition for residents’ public activities, places, and facilities, so as to create a good public environment for community residents to participate in community activities. Urban community volunteer service should be developed with great efforts, in that the residents are not only the beneficiary of public service, but also the providers of public services in volunteer service. It is conducive to improve the service quality and government effect by providing more diverse, personalized public services.

6 Conclusions

Based on the analysis on theoretical framework polycentric cooperative governance theory and the case study of “365 Community Governance Model” innovation in Dalian, this paper holds that to break through the unicity of governance subject of Chinese grassroots government at present time, and innovate the social governance model of the multi-subject construction and sharing at the grassroots level, it is necessary to take the following measures under the polycentric cooperative governance theory: we should first integrate the multiple governance subjects of urban community like Party organizations in community, urban grass-roots government, for-profit and non-profit organizations, and community residents, and clarify the relationship between the grassroots governance subjects on the theory level; meanwhile we also need to explore the innovative mechanism of grassroots governance in “separation of politics and social organization”, “separation of residents and community”, and cooperative governance; then we should study on the construction of grassroots governance innovation mechanism for resident autonomy, citizen participation, social coordination, social interaction, and legal protection. Based on above measures, we can deepen the transformation of government functions, expand the ideas of public service, promote the benign interaction between the government and the society, and promote the innovation of the grass-roots governance model of the city in China, hence improving the urban grass-roots social governance capacity.

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Study on Sustainable Development of Agriculture and Animal Husbandry in Qaidam Basin—A Case Study on Delingha City of China*

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Abstract Based on the entropy method, this paper makes a quantitative study on the economic development of agriculture and animal husbandry, the social development of agriculture and pastoral areas, the development of resources and environment and the sustainable development level of agriculture and animal husbandry in Delingha from 2000 to 2014 in the Qaidam Basin, and the results are analyzed. This paper studies the sustainable development of agriculture and animal husbandry in Delingha City, and puts forward the countermeasures and suggestions to promote the sustainable development of agriculture and animal husbandry in Delingha City by optimizing agricultural industrial structure, accelerating agricultural industrialization process, strengthening infrastructure construction, vigorously developing water-saving agriculture, promoting ecological circulation agriculture and so on.

Key words Agriculture and animal husbandry, Sustainable development, Entropy method, Qaidam basin

1 Introduction

Delingha is located in the North-East edge of the Qaidam Basin, with an average elevation of 2980 meters, with a total area of 27,700 square kilometers, sown area is 1,2751.9 hectares of crops, available pasture area of 982,900 hectares, Delingha is located in the northeast edge of Qaidam Basin, with an average elevation of 2980 meters, with a total area of 27,700 square kilometers, and crops sown area is 12,751.9 hectares, the available pasture area is 982,900 hectares. With the deep implementation of the western development strategy, Delingha City, with the strong support of the state, actively develop ecological agriculture and animal husbandry, increase the protection and management of ecological environment, and explore the green road of sustainable development of agriculture and animal husbandry.

The core idea of sustainable development of agriculture is that the development of agriculture should be based on the sustainable development of ecology sustainable, social sustainable and resource environment, Chinese scholars have explored a long time in the sustainable development of agriculture, Liu Ying (2012) believe sustainable development of animal husbandry is an important part of agriculture sustainable development^[1]. Zhou He-nan (2013) argue that the most important material guarantee for sustainable development of agricultural is the ecological environment, and the agro-ecological environment problem is a complex social problem that is influenced by a variety of reasons and is intertwined by various factors. These factors have a realistic level, as well as historical deposition, and the agro-ecological environment problem is affected by subjective and objective factors^[2]. Shi Ying (2010) thinks that science and technology is a key factor in the sustainable development of agriculture and animal husbandry^[3]. Li Na (2015) believes that under the new normal situation, the development of China's agriculture is facing opportunities and challenges, we should focus on the analysis of these challenges and opportunities, in order to put forward countermeasures to achieve sustainable development of agriculture in the new normal situation^[4]. In the research methods, most scholars choose to build a sustainable development evaluation index system to evaluate the sustainable development of various regions, Yuan Jiu-he et al. (2013) evaluated the sustainable development of agriculture in Hunan Province from 2001 to 2010 by entropy method^[5]. Wang

* Financed by National Social Science Fund Program (Project No.: 15BJY-003, 2015.8-2017.12); Soft Science Project of Qinghai Science and Technology Agency (Project No.: 2016ZJ-605, 2016.1-2017.12);

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Ying-chun et al. (2015) summarized the existing methods of sustainable development evaluation, such as the net primary productivity of human occupancy, ecological footprint, energy, comprehensive index system method, etc^[6].

This paper uses the entropy method to dynamically evaluate the sustainable development of agriculture and animal husbandry in Delingha by establishing the evaluation index system of sustainable development of agriculture and animal husbandry in Delingha.

2 Indicator interpretation and data sources

When building the index system, taking full account of the sustainability of economic development can ensure that Delingha City in a long time to maintain a higher level of input and output, so as to ensure food security, the sustainability of economic development is the core of sustainable development. The sustainability of social development can guarantee the healthy development of the social environment needed for agricultural development and it is the ultimate goal of sustainable agricultural development. The sustainable development of resources and environment is a necessary condition for the sustainable development of agriculture and animal husbandry and the guarantee of sustainable development of agriculture and animal husbandry. In order to accurately evaluate the dynamic changes of agricultural sustainable development level in Delingha from 2000 to 2014, we should take into account the systematic, scientific and data availability principles of index selection when setting up specific evaluation indexes, and drawing on existing research results academia (see Table 1). And related raw data mainly comes from the “Statistical Yearbook of Qinghai Province” (2001 to 2015).

3 Dynamic evaluation of sustainable development of agriculture and animal husbandry in Delingha based on entropy method

3.1 The principle and method of entropy method

In information theory, entropy is a measure of uncertainty. If the amount of information is smaller, the uncertainty and the entropy are greater; on the contrary, If the amount of information is greater, the uncertainty and the entropy are smaller. According to these characteristics of entropy, we can calculate the entropy to determine the randomness of an event and its disorder degree, you can also use the entropy to determine the degree of dispersion of an indicator, the greater the degree of discretization of the index, the greater the impact of the index on the comprehensive evaluation. The main calculation steps are:

(1) Collection and collation of raw data

Suppose we need to evaluate the development of a city for m years, and the evaluation index system includes n indicators. Then this is composed of m samples, with n indicators to do a comprehensive evaluation of the problem, which can form the system's initial data matrix:

$$X = (x_{ij})_{m \times n} \quad (0 \leq i \leq m, 0 \leq j \leq n) \quad (1)$$

x_{ij} represents the value of the evaluation item of item j of the i -th sample.

(2) Data processing

Due to the size of the indicators, the order of magnitude are different, so in order to eliminate the different dimensions due to the impact of the evaluation results, the need for standardization of the indicators.

Method one:

$$x'_{ij} = \frac{x_j - x_{\min}}{x_{\max} - x_{\min}}; x'_{ij} = \frac{x_{\max} - x_j}{x_{\max} - x_{\min}} \quad (2)$$

x_j is the j th index value, x_{\max} is the maximum value of the j -th index, and x_{\min} is the minimum value of the j -th index, and x'_{ij} is the normalized value. If the evaluation of the indicators used when the greater the better, then use the previous formula; the other hand, use the latter formula.

Method two:

$$x'_{ij} = \frac{x_{ij} - \bar{x}}{S_j} \quad (3)$$

Among them:

$$\bar{x}_j = \frac{1}{n} \sum_{i=1}^n x_i$$

$$S_j = \frac{1}{n-1} \sum_{i=1}^n (x_{ij} - \bar{x}_j)^2 \quad (4)$$

X_j is the evaluation value of the j-th index; S_j is the standard deviation of the j-th indicator. In this paper, we use the second method to do standardization. In order to eliminate the effect of the normalized index value on the logarithm calculation, the coordinate translation of x'_{ij} is required. The formula is:

$$Y_{ij} = x'_{ij} + A \quad (5)$$

In this paper, A takes 3.

Calculate the proportion p_{ij} of the index value of the i th year under item j

$$p_{ij} = \frac{y'_{ij}}{\sum_{i=1}^m y'_{ij}} \quad (0 \leq p_{ij} \leq 1) \quad (6)$$

Thus, the specific gravity matrix of the data can be established. $Y = (P_{ij})_{m \times n}$

(3) Calculate the information entropy and the information utility value of the index.

The formula for calculating the information entropy of the item j:

$$e_j = -K \sum_{i=1}^m p_{ij} \ln p_{ij}$$

$$K = \frac{1}{\ln m}$$

(K is a constant, in this paper m=15) (7)

The information utility value of an index depends on the difference between the information entropy e_j and 1 of the index, which directly affects the size of the weight, the greater the difference, the greater the importance of the indicator to the evaluation, the greater the weight.

$$d_j = 1 - e_j \quad (8)$$

(4) Calculate the weight of the evaluation index

The weight of each index is estimated by using the entropy method. The essence of the method is calculated by using the value coefficient of the indicator information, the higher the value coefficient, the greater the importance of the evaluation (also the greater the weight, the greater the contribution to the evaluation results). The weight of item j is:

$$w_j = \frac{d_j}{\sum_{i=1}^m d_j} \quad (9)$$

(5) Calculate the evaluation value of the sample

The evaluation values of the samples are calculated using the weighted summation formula.

$$U = \sum_{i=1}^n p_{ij} w_j \quad (10)$$

In the formula, U is the comprehensive evaluation value, n is the number of indicators, and w_j is the weight of the j-th index.

Obviously, the larger the U, the better the sample. And finally compare all the U values, that is, the evaluation conclusion^[7].

3.2 Evaluation index weight calculation

With the help of EXCEL software, the entropy method was used to calculate the 22 indexes selected from 2000 to 2014, and the weighting of 22 indexes was given in Table 1.

Table 1 The weight assignment of each index of sustainable development

Level 1 indicators	Level 2 indicators	Level 3 indicators	Unit	Information entropy e_i	Weight w_j	Sorting
Economic development of agriculture and animal husbandry B_1	Economic scale index C_1	Regional GDP X_1	hundred million RMB	0.9800	0.0444	12
		The added value of the primary industry X_2	ten thousand RMB	0.9815	0.0409	19
		Grain yield X_3	ton	0.9782	0.0482	6
		Meat yield X_4	ton	0.9803	0.0436	13
	Economic structure index C_2	Industrial enterprises X_5	ea	0.9828	0.0380	20
		Expenditure on agriculture, forestry and water affairs X_6	ten thousand RMB	0.9808	0.0425	15
		Primary industry share of GDP X_7	%	0.9812	0.0417	18
	Economic and technical index C_3	Number of agricultural scientific and technical personnel X_8	person	0.9797	0.0450	11
		Balance of financial institutions at the end of the year X_9	ten thousand RMB	0.9809	0.0423	16
		Agriculture - related loans X_{10}	ten thousand RMB	0.9844	0.0345	22
		Total power of agricultural machinery X_{11}	ten thousand kilowatts	0.9786	0.0475	7
Social development in agricultural and pastoral areas B_2	Population development index C_4	Regional population X_{12}	ten thousand people	0.9789	0.0467	8
		Urbanization rate X_{13}	%	0.9797	0.0451	10
		Per capita net income of rural residents X_{14}	RMB	0.9812	0.0418	17
		Number of ordinary middle school students X_{15}	person	0.9791	0.0464	9
	Infrastructure index C_5	Mileage of highways and railways X_{16}	kilometer	0.9777	0.0494	5
		Rural electricity consumption X_{17}	ten thousand kWh	0.9776	0.0496	4
		Telephone village share of total villages X_{18}	%	0.9712	0.0638	1
		Via cable TV village share of total villages X_{19}	%	0.9738	0.0580	2
		Development of resources and environment in agricultural and pastoral areas B_3	Sown area of crops X_{20}	hectare	0.9806	0.0429
Forest cover rate X_{21}	%		0.9829	0.0378	21	
Per capita afforestation area X_{22}	hectare per person		0.9774	0.0500	3	

Judging from the weight distribution of the evaluation index of sustainable development in Delingha, some indicators have an important impact on the assessment of sustainability capacity, such as the via cable TV village share of total villages, the telephone village share of total villages, rural electricity consumption and other infrastructure indicators, per capita afforestation area and other indicators reflect the development of resources and environment in the agriculture and pastoral areas, grain yield, total power of agricultural machinery and other indicators to reflect the economic development of agriculture and animal husbandry. There are 12 indicators weight is greater than 0.044, including four economic development of agriculture and animal husbandry indicators, seven social development indicators of agricultural and pastoral areas and a resources and environment development indicators in agricultural and pastoral areas. It shows that the social subsystem is the most important in the composition subsystem of the Delingha Sustainable Development System. The primary condition for achieving sustainable development of Delhi is trying to strengthen the quality of the population and infrastructure construction, which is different from most areas. As Delingha and even the whole of Haixi mainly consists of Mongolian and Tibetan, Delingha is weak in terms of infrastructure and so on. At the same time, Delingha should also develop productive forces vigorously, and strive to enhance and improve people's living standards. In this study, considering the accuracy and convenience of data acquisition, the selected indicators of resources and environment development in agricultural and pastoral areas is small. There is only one indicator weigh more than 0.044 in resources and environment development in agricultural and pastoral areas, however, if combined with the total number of resources and environmental development indicators in agricultural and pastoral areas, the proportion of these 1 indicators is still relatively large. This also shows that the impact of resources and environment for sustainable development of Delingha can not be ignored. Sustainable development means that the development of human economy and society can not exceed the carrying capacity of resources and environment, so when we study the sustainable development of agriculture and animal husbandry in Delingha, we must not ignore the development of resources and environment.

3.3 Dynamic evaluation of sustainable development of agriculture and animal husbandry in Delingha

With the help of EXCEL software, this paper uses the entropy method to calculate the evaluation value of the sample. The evaluation results are shown in Table 2.

Table 2 Index summary table of sustainable development of agriculture and animal husbandry in Delingha from 2000 to 2014

Years	Economic and development index of agriculture and animal husbandry	Social development index of agricultural and pastoral areas	Resources and environment development index of agricultural and pastoral areas	Sustainable development level index of agriculture and animal husbandry
2000	0.028114	0.014158	0.009832	0.052104
2001	0.027325	0.016010	0.009352	0.052686
2002	0.027505	0.018457	0.008772	0.054734
2003	0.023350	0.026302	0.008507	0.058160
2004	0.024426	0.024694	0.008352	0.057471
2005	0.024976	0.026011	0.007930	0.058916
2006	0.028229	0.027060	0.007678	0.062967
2007	0.026156	0.027347	0.007578	0.061081
2008	0.030877	0.028361	0.008472	0.067709
2009	0.030645	0.029094	0.005779	0.065518
2010	0.034534	0.027529	0.007984	0.070047
2011	0.039382	0.030593	0.009910	0.079885
2012	0.037349	0.031411	0.008497	0.077257
2013	0.041330	0.036137	0.011123	0.088590
2014	0.044476	0.037465	0.010933	0.092874

3.4 Analysis on evaluation results of sustainable development of agriculture and animal husbandry in Delingha

3.4.1 Dynamic analysis of each subsystem

3.4.1.1 Analysis on the economic development level of agriculture and animal husbandry

As can be seen from Table 2, the economic growth index of agriculture and animal husbandry in Delingha increased from 0.028114 in 2000 to 0.044476 in 2014, an increase of about 58.2%. It shows that the economic development of agriculture and animal husbandry in Delingha is at a moderate level in the past few years, with an average annual growth rate of 4.16%. During the evaluation period, the economic development index of agriculture and animal husbandry increased and decreased alternately. At the beginning of the evaluation, the development trend was declining, and then showed a slow rising trend.

The decrease of the proportion of the added value of the primary industry in GDP and the decrease of the instability of the number of agricultural scientific and technological personnel are the main reasons for the increase of the evaluation value of the agricultural development index.

3.4.1.2 Analysis on the social development level of agricultural and pastoral areas

The social development level index of the agricultural and pastoral areas in Delingha increased from 0.014158 in 2000 to 0.037465 in 2014, an increase of 164.6%. It shows that the social development of agricultural and pastoral areas in Delingha is very fast in recent years, and the social development index shows a steady upward trend during the evaluation period.

According to the change of the basic index, the index of population development and infrastructure in Delingha has been increased. The rapid development of population and the construction of infrastructure make the social development of agriculture and pastoral areas have made great progress.

3.4.1.3 Analysis on the resources and environment development level of agricultural and pastoral areas

The resources and environment development index of agricultural and pastoral areas increased from 0.009832 in 2000 to 0.010933 in 2014, an increase of 11.2%. It shows that Delingha needs to work hard to improve the management of resources and environment. The reduction of per capita afforestation area is the main reason to hinder the growth of the evaluation index of resources and environment development in agriculture and pastoral areas.

3.4.2 Comprehensive analysis on the sustainable development level of agriculture and animal husbandry in Delingha City

In order to reflect the dynamic changes of sustainable development level in Delingha, we make Figure 1 based on the data in Table 2 and put the Sustainable development level index sequence of agriculture and animal husbandry in Figure 1 to analyze.

From the Figure 1 we can clearly see that the sustainable development index of agriculture and animal husbandry in Delingha from 2000 to 2014 first steadily increased, and then showed a wave up and down. However, the sustainable development of agriculture and animal husbandry is in good condition and has a good momentum of development, and the level of sustainable development continues to increase. The sustainable development index of agriculture and animal husbandry in Delingha was 0.052 in 2000, after several years of development, the economy, society and the environment are all on a higher level, and in 2014 the sustainable development index of agriculture and animal husbandry reached 0.093.

4 Measures and suggestions for sustainable development of agriculture and animal husbandry in Delingha

4.1 Optimize the industrial structure of agriculture and animal husbandry, promote the healthy development of agriculture and animal husbandry

In order to improve the economic benefits of agricultural development, Delingha should actively optimize the industrial structure of the planting industry, adjust the proportion of grain crops and economic crops according to the needs of the market. At the same time, Delingha should develop feed crops, promote the structure of crops to food crops, cash crops, feed crops ternary structure change and improve the coverage of high-quality varieties, so as to further improve the crop yield and quality.

Delingha should exploit the regional resource advantages to the full on the basis of stabilizing grain production and guaranteeing food security. It should build a base for the production and processing of high quality food and livestock products firstly, and finally form a distribution of regional and scale planting production^[8]. Delingha also should accelerate the integration of the first, second and third industries, and continuously enhance the added value of agriculture. With the help of agricultural information networking, it should promote the development of “Internet + modern agriculture and animal husbandry” and broaden the trading platform of agricultural and animal husbandry products. At the same time, it is necessary to speed up the certification of pollution-free agricultural products, green food, organic agricultural products and geographical indications of agricultural products. In the livestock industry, Delingha should optimize the structure of livestock and poultry, develop high quality animal husbandry and increase the added value of the products. Meanwhile, it is necessary to strengthen the links between animal husbandry and agriculture and improve the efficiency of agricultural resources utilization^[9].

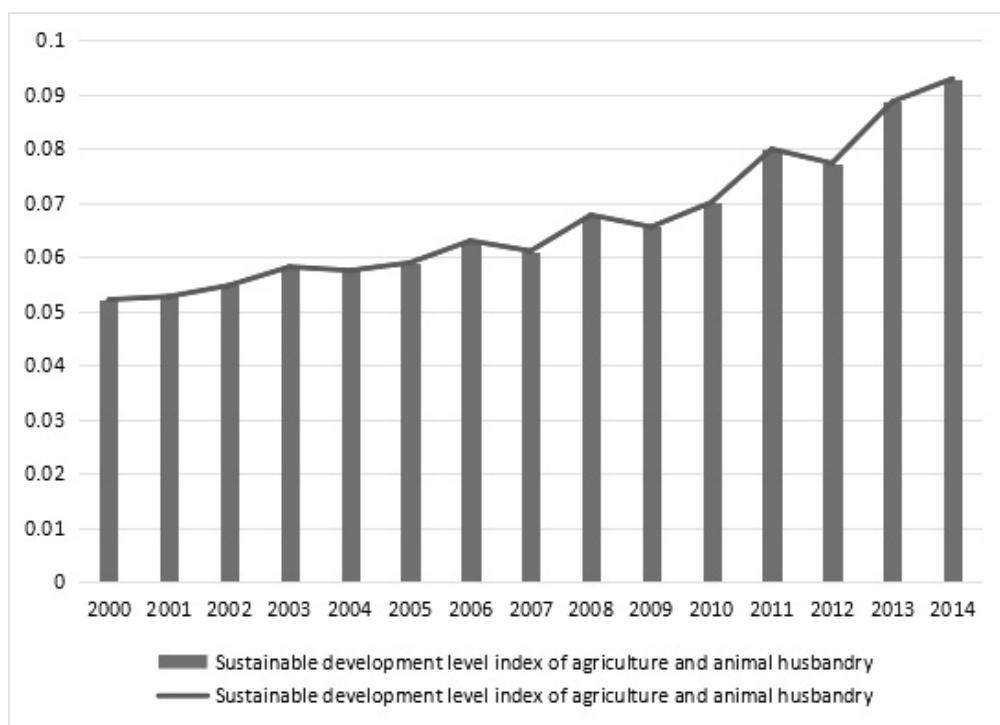


Figure 1 Trend of sustainable development of agriculture and animal husbandry in Delingha from 2000 to 2014

4.2 Accelerate the industrialization process of agriculture and animal husbandry, develop and expand the advantaged industry

The development of industrialization is an important form to promote the regional distribution of advantaged agricultural products. Delingha should develop characteristic agriculture and animal husbandry, build a base to produce characteristics agricultural products. It is focused on local leading enterprise development to play their roles in exploiting markets, guiding the base, processing value-added, science and sechnology innovation, standardized production and other aspects^[10]. The development of modern agriculture and animal husbandry as a target, comprehensively promote the integration management of planting, breeding and processing, speed up the realization of farmers’ organization, professional production, enterprise management, socialized services, large-scale operation, and strive to achieve modern agriculture and animal husbandry^[11].

4.3 Vigorously develop water - saving agriculture, protect water resources

Delingha should vigorously develop efficient water-saving agriculture, increase efforts in building

irrigation and other infrastructure, accelerate the transformation pace that large and medium - sized irrigation area continued to build supporting water-saving, vigorously promote the channel water transfer into pipeline water, ground irrigation transform into drip irrigation and sprinkler irrigation, lead the people who use much water to change the extensive Irrigation methods like flood irrigation. Delingha should adjust the agricultural machinery and agronomic measures to enhance water protecting and water saving capacity, while achieving stable and high yield , it should protect the water resources as much as possible. At the same time, Delingha should strengthen the protection of cultivated land quality, build a network system which can monitor the quality of cultivated land, Improve the investigation and monitoring and evaluation system for cultivated land quality, classify the quality of cultivated land, release long-term locating monitoring report for cultivated land quality. Delingha should transform the fields with middle-low yield, govern salinization farmland, improve infrastructure construction of farmland, promote the construction of high standard farmland vigorously.

4.4 Promote ecological circulation agriculture, improve agricultural ecology and environment

To protect the agricultural ecological resources and the environment, Delingha should establish and improve all levels of agricultural film recycling network, urge enterprises and farmers through the “trade-in” and other ways to carry out residual film recycling. And the government should gradually establish and improve the operating mechanism of waste plastic film picking, recycling, resource utilization, give priority to support enterprises which have plastic film recovery and reprocessing capacity to make plastic film, develop and test new film such as degradable film and functional film. Delingha should also adhere to the combination of agriculture and animal husbandry, planting and breeding, promote the development of ecological cycle agriculture. Relevant departments should speed up the promotion of scientific fertilization, safe medication, green prevention and control and other cleaner production technology to improve the farmland ecological environment. At the same time, Delingha must strengthen the grassland ecological protection and construction, stabilize and improve the grassland contract management system. It continue to implement the subsidy incentive policy for grassland ecological protection, implement the system for banning grazing and delaying grazing, delineate the area to graze, restore grassland vegetation, control grassland insect pests and gradually make the grassland ecosystem healthy and stable.

4.5 Strengthen the humanities and infrastructure construction, promote sustainable social

The relevant departments of Delingha should pay attention to the development of education, actively implement the nine-year compulsory education policy, improve the quality of farmers and herdsmen, develop all aspects of talent, especially agriculture and animal husbandry related personnel, agriculture and animal husbandry economy needs to inject more fresh blood, farmers and herdsmen also need talents who know technology to guide them. At the same time, Delingha should strengthen infrastructure construction, improve rural roads, remould rural dangerous building and so on. It should also speed up the construction of beautiful villages and promote social sustainable development.

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Research on the Effectiveness Evaluation of Real Estate Regulation & Control Policies of Local Governments in China

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Abstract Since September of 2016, local governments in China have successively released real estate regulation policies to control the sustained growth of housing prices and stabilize the market expectation. Real estate policy directly affects people's housing needs and housing prices. With the continuous implementation of a variety of policies, people have paid larger and larger attention to key issues including the differences among policies in different regions and the implementing effects. What kind of regulation and control policies can play a stable and positive role in the real estate market? The article focuses on the summarization of policies released by local governments in China and makes evaluations on the effectiveness of the policy instruments through the data of analysis on monthly variations.

Key words Real estate regulation & control, Policy instrument, Effectiveness, Evaluation

1 Literature review of real estate regulation & control policies

Jonathan (2002) takes the short-term price adjustment model and long-term supply & demand model as the theoretical basis and makes quantized researches on the relationship between the currency policy and the US housing price fluctuation by using these models. The findings have shown that since 1980s, the housing price has been falling to a large extent^[1]. Lawrence Murphy (2003) has made descriptions on the real estate policies in New Zealand, believing that there is an apparent market intervention of the government of New Zealand, which tends to protect the owner of the house and the housing rental department. Since 1990, the government has reduced the intervention on the market, managed the real estate market by establishing interest-oriented enterprises and stimulated the market vitality through the marketization of public sectors. In recent years, however, the real estate market has also been seeing for more interventions by the government. Zhang Hong, Li Lin-jun and Chen Tian-tian (2006) has built a model to show that the existing fiscal and taxation policies have a positive role in promoting the real estate market in Chicago^[2]. Xu Xiao-qing and Chen Tao (2012) has revealed the preferences brought by the real estate policies in Holland and the corresponding difficulties. Muler Onofrei (2012) believes that the fiscal taxes cannot stimulate the commercial investment of Romania and this taxation policy should be redesigned by other factors of the region^[3]. Michael Perlman and Julia Fritz (2012) has explored the correlation between the currency policy and real estate price in Sweden and made the conclusion that most positivist scholars believe the vibration of interest rates plays a small role in the real estate stock market while the currency policy influenced greatly the variation of housing prices. Through the establishment of a new database and autoregressive model, he has overturned the former opinion, believing that the vibration of interest rates will have a negative impact on the housing price. Christopher Yvo Oertel (2012) has generalized the basic information concerning the real estate policies of South Korea and analyzed the influences on socialization and effects of de-commodification^[4].

Zhou Hui (2015) has pointed out that we should adjust the financial monitoring plan for the real estate in China based on the game equilibrium perspective, believing that there is a gaming relation between governments at all levels^[5]. The preferences of the central government are significantly different from that of the local government. Wang Ren, Hou Jie and He Xiaobei (2017) believe that there exists a significant discretion in the regulation & control policies for the real estate in China, thus we should not regard the real estate policy as the policy to control the macro economy but ensure the consistence and coherence of the regulation on the real estate. The conclusion is that the real estate regulation policy has become an important factor affecting the housing price in China^[6]. In addition, though there are some lags for the influence of land policies and indemnificatory housing policies on the housing price, the influence is also a long-term and significant one. Meanwhile, the currency policy

and credit policy have a relatively small impact on the housing price while the adjustment of the deposit reserve ratio is the most effective instrument for the currency policy^[7]. Liang Peng (2016) believes that ideal regulation objective for the real estate is to increase the indemnificatory houses and commercial houses so as to realize the equilibrium between the supply and demand and enable the housing price to become rational again^[8]. Ni Peng-fei (2016), from Chinese Academy of Social Sciences, has pointed out that “the risk of local overheating in the real estate market is still controllable, thus the timely regulation & control policy can help to stabilize the future market expectancy.”

2 General condition of the differences among real estate regulation & control policies of local governments

In 2016, with the rapid growth of the housing price throughout the country, local governments have successively issued new policies concerning the real estate market to prevent the excessive rising trend of the housing price and promote the stable and healthy operation of the real estate market. China has entered a new round of tight control in the real estate market. From Sep 30th to Oct 7th of 2016, 22 first-tier, second-tier and third-tier cities have released real estate regulation & control policies with different intensities, including Beijing, Nanjing, Jinan, Wuxi, Tianjin, Suzhou, Chengdu, Foshan, etc. Before the National Day, cities including Beijing, Suzhou, Shenzhen, Nanjing and Xiamen had successively released policies concerning home buying restrictions and loan restrictions to cool the real estate market. In Beijing, for example, the down payment ratio for the first house has increased to 35% while the down payment ratio for non-ordinary housing has risen to 40%; the down payment ratio for the second house has declined to 50% while the minimum down payment ratio of non-ordinary second houses have increased to 70%.

In terms of the new policies concerning the real market in 2016, many local governments in China has reflected the traditional policy of “one size fits all” and solved the real estate problems specifically with the method of “making measures according to local conditions”. Therefore, the model of “zoning regulation & control” has become an important regulation method for governments in many cities, including Tianjin, Jinan, Wuxi, Fuzhou and Zhengzhou. In Tianjin, for example, the government has strengthened the adjustment unprecedentedly and forbidden families with one house but without the household register of Tianjin to buy other houses, including newly-built commercial houses and second-hand houses, in Neiliu District and Wuqing District. Furthermore, Tianjin government has also increased the down payment ratio for the first house to 40% while new policies in some of the other cities failed to involve specific home-buying restriction and loan restriction policies and started from strengthening the pre-sale system and market regulations. As is specified in the government of Shanghai, we should continue to make special punishments for and control over the illegal behaviors and irregularities of real estate developers and intermediary agencies, intensify further the punishment and control and check vigorously the illegal behaviors including keeping houses unsold to gain more profits, making false advertisements, manipulating housing prices, beguiling customers to make transactions, etc. By contrast, the government in Huizhou required the seller of commercial houses to mark prices clearly so as to improve the declaration monitoring system for the clear price marking in commercial housing sales.

According to the type of policy instruments, the regulation & control policies can be classified into home buying restriction, foreign restriction, loan restriction, housing and loan-based judging system, public reserve funds and so on, among which the home-buying restriction and loan restriction policies are applied most widely.

a) Home-buying Restriction Policy. The home-buying policy has become an important measure taken by many cities among those new real estate policies during the National Day. Except for Shenzhen where the home-buying restriction policy was upgraded, other cities have all restarted the home0buying restriction policy. Suzhou, for example, has involved the largest administrative area and included one district and two cities under its jurisdiction into its home-buying restriction scope; Nanjing and Hefei are definitely cities with the most strict home-buying restriction policies, for they have specified clearly that people with the local household register are banned from buying the third house; Shenzhen and Nanjing has started to implement the home-buying restriction policy for divorced

residents with the local household register, who can only buy one house under the policy; Meanwhile, the government in Wuhan has made it clear that residents with at least one houses but without the household register of Wuhan cannot buy other house within the main district and development zone.

b) Loan Restriction Policy. Through the summarization of the regulation & control for real estate policies in different regions, the writer found that the loan restriction policy is also one of the common regulation policies. In terms of the down payment ratio, there are 11 cities including Guangzhou, Suzhou, Jinan, Nanchang and Zhengzhou increasing the down payment ratio for the first house to 30% of the total price. By contrast, in terms of the down payment price for the second house, Suzhou and Nanjing has increased the minimum down payment ratio for home buyers with unpaid debts to 80% of the total price. Furthermore, Suzhou has even implemented the no-loan policy for the third house. As for the loan from public reserve funds, the government in Suzhou has specified clearly that the maximum sum of individual loans should be reduced from the current 450 thousand yuan to 300 thousand yuan. For working families who get the loan from public reserve funds for the first time, the maximum sum of the housing loan remains unchanged. However, for the families who get the loan from public reserve funds for the second time, the maximum sum of the loan has declined from 700 thousand yuan to 50 thousand yuan and the minimum down payment ratio has been adjusted from 30% of the total housing price to 50% of the total. Furthermore, the loan available for the latter family has reduced from ten times of the total dual account balance to six times of the total, demonstrating the great intensity of the regulation. The government of Guangzhou specifies that the minimum down payment ratio for home buyers who buy the house for the first time or who have already possessed one house should be 30% of the total housing price while those with two houses should pay at least 70% of the total housing price. Likely, the government of Shenzhen has specified that home buyers with loaning records but without any houses should pay at least 50% of the total housing price. By contrast, for buyers with one house, the minimum down payment ratio for the second house is 70% of the total. Given this, the regulation & control policy issued by Shenzhen government was recognized as the “most strict real estate regulation policy in the history”.

Table 1 General condition of the real estate regulation & control policies in local governments

	Home buying restriction	Loan restriction	Loan and housing-based judging	Foreign restriction	Public reserve funds	90/70
Beijing	1	1	1	0	0	1
Chengdu	1	1	0	0	0	0
Dongguan	1	1	1	1	0	0
Foshan	1	1	1	1	0	0
Guangzhou	1	1	1	1	0	0
Hefei	1	1	1	1	1	0
Jinan	1	1	0	1	1	0
Nanchang	1	1	1	0	0	0
Nanjing	1	1	1	1	0	0
Xiamen	1	1	1	1	0	0
Shanghai	1	1	0	0	0	1
Shenzhen	1	1	1	1	0	1
Suzhou	1	1	1	1	1	0
Tianjin	1	0	0	1	0	0
Wuxi	1	1	0	1	0	0
Wuhan	1	1	0	1	0	0
Zhengzhou	1	1	0	1	0	0
Zhuhai	1	1	1	1	0	0

Note: “1” means the regulation policy of the city involves the corresponding policy instruments; “0” means the regulation policy of the city doesn’t involve the corresponding policy instruments.

Table 1 shows the general situation of the real estate regulation & control policies of local governments in 2016. As can be seen from the table, there are 9 cities with their new policies involving home-buying restriction, foreign restriction, loan restriction and loan & housing-based judging system,

including Dongguan, Foshan, Guangzhou, Hefei, Nanjing, Xiamen, Shenzhen, Suzhou and Zhuhai. In addition, Hefei and Suzhou have also adjusted the public reserve fund to inhibit the overrising housing price and investment demands and promote the stable operation of the real estate market. Among these cities, the majorities are second-tier cities and the “Four Little Dragons” in China—Suzhou, Nanjing, Xiamen and Hefei are also included. Besides, Beijing, Shanghai and Shenzhen has restarted the 90/80 policy, proving the determination of first-tier cities to clean up the real estate market, inhibit the overrising trend of the housing price and correct the order of real estate transactions.

In the adjustment of real estate markets, the city with the lowest minimum down payment ratio for the first ordinary house is Wuxi (20%), followed by Wuhan (25%). By contrast, the city with the highest minimum down payment ratio is Beijing (35%) while other cities who have implemented new policies specify that the down payment ratio for the first ordinary housing should be 30% (Chengdu and Tianjin did not mention the down payment ratio adjustment).

Take Beijing as an example. In terms of the credit loan, the new policies of Beijing have first declined the down payment ratio for the first house to 35% of the total housing price and increased the down payment ratio for non-ordinary housings to 40% of the total. Furthermore, the down payment ratio for the second house has risen to 50% of the total, making Beijing become one of the cities with the most strict housing loan policy in China and the first city to implement the comprehensive housing investment leverage (see Table 2).

Table 2 Comparison between the second-home policy in Beijing before and after the adjustment

	Before the adjustment	After the adjustment
Second-home policy	Judging criteria: judging by house, not loan; Down payment ratio of 50% for both ordinary and non-ordinary housings	Judging criteria: judging by both house and loan; Down payment ratio of 50% for ordinary housings; Down payment ratio of 70% for non-ordinary housings;

3 Analysis on the effectiveness of real estate regulation & control policies of local governments

To analyze the effectiveness of real estate regulation & control policies of local governments, the article mainly takes the price indicators of the first-hand houses in September and October of 2016 as the effectiveness evaluation indicator of the new policies^[9]. Meanwhile, the article also uses the yearly variation of October to deduct that of September. A negative result symbolizes the drop of housing price and effect of the policy while a positive result represents an insignificant effect of the policy. Generally speaking, the criterion to judge the effectiveness of the policy is the monthly rising trend of the housing price^[10]. To ensure more detailed data and more reliable findings, the article compares the deduction values in September and October of 2016 with that of 2015 to observe the yearly increase or reduction degree. Through the comparison between the monthly (yearly) variations, the articles then judges the effectiveness of real estate regulation & control policies in 2016 (see Table 3).

Table 3 Professing results of the data of real estate in different regions

	Deduction values of the two monthly variations	New policies
Shenzhen	3.60%	1; 2; 3
Beijing	1.59%	1; 3
Guangzhou	0.79%	1; 2; 3
Tianjin	-2.14%	1; 2
Hefei	-2.80%	1; 2; 3; 4
Nanjing	-3.01%	1; 2; 3
Xiamen	-0.82%	1; 2; 3
Suzhou	0.38%	1; 2; 3; 4
Wuxi	0.72%	1; 2; 3
Jinan	-0.53%	1; 2; 3; 4
Chengdu	-0.53%	1; 3

	Deduction values of the two monthly variations	New policies
Nanchang	-0.68%	1; 2; 3
Zhengzhou	-0.82%	1; 2; 3
Wuhan	-1.08%	1; 2; 3
Foshan	-1.24%	1; 2; 3
Dongguan	-1.56%	1; 2; 3
Zhuhai	-4.66%	1; 2; 3

Note: policy: 1. Home buying restriction; 2. Foreign restriction; 3. Loan restriction; 4. Adjustment of public reserve funds

In general, because of the macro control of new housing policies issued by local governments during the National Day over the real estate industry, the transaction volume of the first-tier cities have declined compared to the last month and meanwhile the average transaction price has grown more slowly. In addition, the average transaction price for first-hand houses in Beijing has declined by 0.51% while that in Shanghai has also dropped by 3.7%. Compared to that on first-tier cities, the effect of new policies on second-tier cities is more significant, including Zhuhai, Nanjing and Hefei. The average transaction price for first-hand houses in Zhuhai has declined by 4.09% and specific effects of the regulation & control policies are as follows:

4 Influences of new real estate policies on the housing price of first-tier cities in 2016

As is shown by the official data, Shenzhen, Beijing and Guangzhou are cities where the short-time effects of the new real estate policies in 2016 were most insignificant. However, in Tianjin, a newly listed first-tier city and a prosperous later-comer, the effects are very significant. Tianjin has implemented the regional home-buying restriction policies, strengthened the differentiated housing credit loan policy and intensified the supervision of housing finances, newly-built commercial housing sales and real estate market. Meanwhile, it has also strengthened the management of newly-built housing sales and raised the admission criteria of the housing price declaration system for commercial houses.

More specifically, after the implementation of new real estate policies in Beijing, the total transaction volume in the first half of October in 2016 has reached more than 8,700, declining by 29.3% compared to that in September of 2016. In terms of the housing price, the price of newly-built commercial housings in the first half of October in 2016 rose by 1.2 percentage points compared to that of the last month while the corresponding price in September of 2016 increased by 4.9%. Since the implementation of new policies, the housing price of Beijing has declined by 3.7%. As can be seen, the new real estate policies issued by Beijing in 2016 has played an important role in adjusting the transaction order of real estate markets and stabilizing the housing price. According to the complex price indicators of 292 city housing released by National Real Estate Data Testing Center on October 21st, the housing price of Shenzhen rose by 0.04% compared to that of the last month in 2016, declining by 61 percentage points compared to the 0.65% increase in September. As is shown in the official housing price data involving 70 large and middle cities released by National Bureau of Statistics in January of 2017, there are 11 cities where the price of newly-built commercial housings has declined by 0.1~0.5 percentage points compared to that of the last month. In January of 2017, the real estate market has been cooled down, with the housing price dropping most significantly in Shenzhen, remaining relatively stable in Beijing and continuing to increase slightly in Guangzhou. The real estate market in Shanghai is still in its hibernation, with the housing price declining for two consecutive months^[11]. Furthermore, people are more likely to take a “wait-and-see” attitude towards the real estate market while the transaction volume of second-hand housings is also trapped in a stagnation period. By January of 2017, the growth of the housing price in first-tier cities has basically stopped. Generally speaking, though the effects of the new policies in 2016 on the first-hand housing price in first-tier cities is not very apparent, the transaction volume has declined significantly^[12].

5 Changes of the city housing price with a comprehensive utilization of four policy instruments

Suzhou, Jinan and Hefei are cities that have implemented all the four policy instruments. As is shown in the data statistical results, the monthly growth of the first-hand housing price in Jinan and Hefei has been slowed down. The gap between the first-hand housing price of September and October has declined by 2.8% compared to the last year, following by Zhuhai and Nanjing.

5.1 Effects of new policies on the housing price of “Four Little Dragons”

Except for Suzhou and Hefei, Nanjing and Xiamen which are also included in the “Four Little Dragons” have all implemented the policies including the home-buying restriction, loan restriction and foreign restriction and the first-hand housing price has declined compared to that of the last month. Based on the monthly increase of first-hand housing price, the effects of new policies during the National Day on Nanjing and Hefei ranked respectively 2nd and 3rd, proving the great strength of the real estate regulation policies in “Four Little Dragons”. Over the recent years, the economic development level of “Four Little Dragons” has been increasing steadily and the housing demands (especially for first-hand housings) have also been growing constantly. Therefore, the housing price in “Four Little Dragons” has also been soaring recently. According to the latest data in January of 2017, the month-on-month housing price in cities such as Nanjing, Hefei, Fuzhou and Xiamen has entered a negative growth period^[13].

5.2 Effects of new policies on the housing price of other cities

Except for the above cities, other cities which have implemented the new real estate policies all adopted the regulation & control policies including the home-buying restriction, loan restriction and foreign restriction. Except for that in Wuxi, the monthly growth of first-hand housing prices in these cities has all declined. Zhuhai, in particular, enjoyed the most significant price drop, with the gap between the first-hand housing price of September and October declining by 4.66% compared to that of the last year. However, according to the official data investigation, the commercial housing transactions in Wuxi in October of 2016 covered an area of over 0.59 million square meters, with the total transaction volume reaching over 5.600, declining by 3.11 percentage points compared to that of the last month and 46.63 percentage points compared to that of the last year. In November of 2016, the commercial housing transactions covered an area of 0.38 million square meters, with the total transaction volume dropping to 3,900, declining by 41.11 percentage points compared to that of the last month and 34.89 percentage points compared to that of the last year. As can be seen, the real estate market of Wuxi has been cooled down significantly. In addition, in December of 2016, the real market in Wuxi was still in a downturn state and the housing price in January of 2017 has declined by 5 percentage points. Therefore, the monthly growth of fist-hand housing price becomes faster, but in terms of the transaction volume, the implementation of new policies in Wuxi has inhibited the overheated real estate market to some extent. According to the analysis of National Bureau of Statistics, the housing price in second-tier and third-tier cities have been generally steady by January of 2017.

6 Conclusions

Through the summarization of new real estate policies in 2016, the writer divides the regulation & control policies into four major categories, including home buying restriction, loan restriction, foreign restriction, public reserve funds. According to the official explanation of the government, the aim for local governments who have released new real estate policies in 2016 is to adjust the supply & demand structure in the real estate market, inhibit the overrising trend of the housing price, stabilize the market expectation and then meet specific management requirements of the nation concerning the classified macro-control and local-based strategies in the real estate market. As a result, the government can satisfy the basic housing needs of the public and promote the stable and healthy development of the real estate market^[14].

The new real estate policies in 2016 are considered as the most strict real estate regulation & control policies in the history. The new policies have a significant impact on second-tier and third-tier cities while release of the new policies in first-tier cities aims to inhibit the soaring trend of the housing price. However, because of the “rigid demands” existing in the first-tier city, the policy effect is not

significant enough and it is hard for the housing price to drop rapidly in a short time. This is quite different from the situation where the housing price in second-tier and third-tier cities drops significantly in a specific time period^[15]. On the whole, the effects of new real estate policies in 2016 is relatively significant, with the housing market in those cities who have carried out new policies starting to cool down and the observing mentality of home buyers becoming more severe. Generally, the growth rate for the price of first-hand houses are declining, proving that the government has effectively controlled the overheated housing investment, stabilized the real estate market expectation, strengthened the macro-regulation on the housing price and demonstrated the determination of local governments to regulate and control the real estate market^[16]. As can be seen, the real estate regulation & control policies issued by local governments in 2016 have played a crucial role in building a long-term mechanism for the healthy and stable development of the real estate industry, slowing down the pace to enter the market and satisfying the normal home-buying needs of citizens. Under the powerful macro policy regulation and control by local governments, the long-term effects of the real estate regulation policies will be increasingly significant.

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A Meta-analysis of the UTAUT Model: Based on 10 Years of Research Literature in China

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Abstract The UTAUT model has been widely used since it was proposed in 2003. However, there is little research on the significance and applicability of the UTAUT model, they are not conclusive in terms of statistical significance and application. For verify and evaluate the model in effective influence factors, respond to the dilemma of research, chooses meta-analysis as research methods, 161 studies published on domestic quantitative 2007-2016 years. Effect size of performance expectancy, social influence is medium, effort expectancy, facilitating conditions is weak, the influence of behavioral intention on the effect size of use is medium.

Key words Information system, UTAUT, Adoption, Meta-analysis, Effect size, Pearson correlation coefficient

1 Introduction

With the rapid development of information technology, application of information technology in daily life more and more, information technology adoption has always been the focus of attention. Since the UTAUT model proposed in 2003 by Venkatesh and others, has been widely applied, through a large number of quantitative studies confirm UTAUT model can be used to predict the adoption of information technology^[1]. Alawadhi, Morris (2008) and Al-Shafi, Weerakkody (2010) noted that the UTAUT model is currently the most used and best reliability model^{[1][2]}. Academics have also pointed out that although a number of quantitative studies confirm the UTAUT model in predicting user adoption of information technologies has a good reliability, but different results in statistically significant inconsistencies, the applicable scope, analyze the need to^{[3][4]}. I discovered through reading literature, domestic application of UTAUT model although the time is not long, but the application of a wide range of research, rich, unfortunately the UTAUT model has a large number of research results in the country, but there is little research on systematic analysis of these results, Verify and assess the effects of influence factors. I found that currently there are some conflicting conclusions, some variables in the study is significant, In other research is not significant, For example, Liu Bing (2008) on the adoption of enterprise information system study confirms the efforts expected to affect people's willingness to technology adoption^[5], Wu Lian-peng (2008) pointed out that effort is expected to adopted will and there was no correlation of enterprise information systems^[6]. The travel APP in the adopt study, Bruce Zhang et al (2016) confirm performance expectations, effort, expectations and social impacts were positive and significant impact on the willingness to adopt^[7], Lv Li-hui, Chen Ying (2016) research efforts identify performance expectations, expectations and social impact of these three variables are not significantly correlated with the willingness to adopt^[8]. These contradictory findings are not conducive to the academic circles to deepen understanding and promote future research. Need for systematic analysis of these results, published this study, 2007-2016 the UTAUT model quantitative meta-analysis research, check the stability of the relationship between variables in the model.

Meta-analysis is the second comprehensive analysis of research and evaluation, Aim is to coordinate the study found, use it for analysis, we can make up for the traditional narrative literature review relies too heavily on researchers subjective judgment and analysis^[9], Can also answer variable effect size, and whether significant and why are there differences between results and so on. Therefore, the meta-analysis is regarded as the most commonly used in the field of social science and quantitative synthesis^[10]. Despite the advantages of meta-analysis, but through the literature review, the author finds that domestic scholars rarely UTAUT model for meta-analysis of studies, UTAUT model meta-analyses

of studies abroad are also a few articles, Customer concerns are Taiwo and Downe (2013), published in the Journal of Theoretical and Applied Information Technology and Hager Khechine, et al (2016), published two articles on the Canadian Journal of Administrative Sciences, Taiwo and Downe (2013) meta-analysis found that only one expected performance impact on the willingness to adopt a medium effect, other factors influence the relationship between weak effects^[3]. Hager Khechine, et al (2016) in expanding Taiwo and came to the conclusion after analysis of samples and Downe (2013), previous studies have found different, Pointed out that performance expectations is a strong influence on the willingness to adopt effort utility, the impact of social influence on the willingness to adopt is a medium effect, facilities, willingness to take the effect of the adoption of a medium effect, and found a new relationship, that willingness to facilitate the conditions for acceptance^[4]. Meta-analysis of current UTAUT model does not have a unified, and greatly influenced by research samples. Munadil k. Noor Azizi and Faaeq Ismail, and other scholars point out that UTAUT model in different countries and different cultural backgrounds will give different results^[11]. For this reason, cannot help but ask, compared to foreign studies about the UTAUT model as a whole is what? Robustness of UTAUT model in the context of Chinese culture? Author of domestic research, through meta-analysis on domestic 2007-2016 integrates all of the empirical papers analyzing, Answer the UTAUT model in Chinese context applicability, robustness, and so on. Compared to existing meta-analyses, this study has three different: (1) increase the sample size, the above two foreign paper samples were 37 and 74, the study sample was 161 articles; (2) for UTAUT model in Chinese context of meta-analysis studies, cross-cultural dimensions the UTAUT model of conservatism (3) system for the first time to comb the UTAUT model research in China, testing.

2 literature review

2.1 Integration technology acceptance model

UTAUT model is by Venkatesh et al. (2003) integrated has rational behavior theory (TRA), and technology accept model (TAM), and motivation model (MM), and plans behavior theory (TPB), and integration plans behavior theory and integration technology accept model (C-TAM-TPB), and PC using model (MPCU), and innovation diffusion theory (ID), and social cognitive theory (SCT) this eight a model building obtained^[12]. Venkatesh et al. (2003) after the eight models are compared and analyzed, and their main limitations: (1) the research points to the technology of single, mainly for individual adoption of information technology, complex technology adoption rather than the Organization; (2) the survey mainly to students, with strong heterogeneity, restrict the promotion and application of the model; (3) the survey primarily for personal memories, lost to date. Therefore, in order to better predict user behavior, perfect the functions of model did not exist before, Venkatesh et al. (2003) designing the UTAUT model (Figure 1) contains four variables: Performance expectations (Performance Expectancy, PE), effort expected (Effort Expectancy, EE), social impacts (Social Influence, SI) and facilities (Facilitating condition, FC) and four control variables: gender, age, experience, and use on a voluntary basis

Through the models understand relationships among variables, measure the variable needs to be conceptualized, Venkatesh, Et al (2003) integrated studies of the past made a definition of variables: (1) performance expectation was that individuals believe the use of this system or technology degree will help him improve the performance of the work; (2) to expect is the ease of use of the system; (3) social impact refers to the degree of influence of individual behaviour of social groups; (3) social impact refers to the degree of influence of individual behaviour of social groups; To test if the UTAUT model to predict the degree of effective user adoption, Venkatesh with backgrounds, areas of the business were taken into account, select hetero-strong organization as the object of study, namely, entertainment companies, telecommunications providers (voluntary) and banking, tax administration (mandatory). These tests provides strong empirical support for the UTAUT model, UTAUT model uses the interpretation had increased to 70%, much more than other models of explanation, become the best model of information systems/information technology adoption.

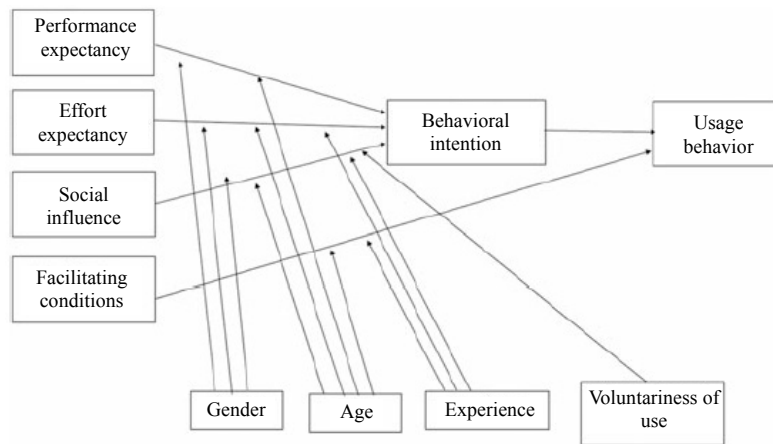


Figure 1 UTAUT original model

2.2 Integration application research on technology acceptance model

Once the UTAUT model has attracted wide attention from academia, test its applicability in different technical areas, such as communication services, finance, education, business, health, and so on. Author in the UTAUT model research in China's latest and most frequently cited in the literature as a representative literature are summarized in Table 1, and representation of the literature review.

Table 1 Integration representative of the technology acceptance model applied research documents

Author	Research object	Sample size	Variable correlation				
			PE-BI	EE-BI	SI-BI	FC-USE	BI-USE
He Dehua (2008)	Rural mobile services adoption	212	×	√	√	√	√
Wang Li (2009)	3G business user adoption	579	√	√	√	√	√
Jiang Hai-long (2010)	Mobile payment technology acceptance model	306	√	×	√	√	√
Feng Gao (2012)	Teachers' network acceptance	469	√	√	√	√	√
Zhao Bao-guo (2013)	Network Group wishes	286	√	×	×	-	-
Wu Yun (2014)	Chief social media adoption	439	-	×	√	-	-
Zhang Hong-ming (2015)	Online community participation	150	√	×	√	×	√
Liu Wei (2016)	SNS services for older persons to adopt	270	×	√	√	√	√
Bruce Zhang (2016)	Travel APP adoption	263	√	√	√	×	√

Note: √: To have significant relations, ×: No significant relationship, -: Studies do not involve

In the field of communication services, He De-hua (2008) the UTAUT model based analysis of mobile information services in rural areas, questionnaire was used to collect data, Study finds user acceptance of mobile information services in rural areas will be social impact, effort, expectations, and satisfaction with the positive effects, User behaviour to adopt will, satisfaction and convenience of positive effects, the cost factor is an important factor to prevent users from^[13]. Wang Li (2009) for 579 questionnaire analysis found that the acceptance of the 3G user intentions and performance expectations, to expect, social impacts are related to, and facilities, willingness to adopt positive effects on behavior^[14]. In the financial area, Jiang Hai-long (2010) the UTAUT model and risk perception theory, Mobile payment technology acceptance and use of a conceptual model is constructed, using empirical research

to test the model, found no significant correlation between work expectations and willingness to use, the remaining variables by examining^[15].

UTAUT model application in the field of education, mainly focus on teachers and students in education, education technology adoption. For example, Peak (2012) teachers at four universities on the network teaching mode of adoption survey, Study shows, Performance expectations, effort, expectations and social impact will be positive effects on network teaching mode of University's teachers continue to use will to network teaching continuance intention of network teaching methods and facilities has a positive impact on the level of use. In addition, gender, online teaching experience will impact on the sustainable use of the adjusting community impact, age-adjusted performance is expected to continue using the will and convenience on the level of use^[16]. In commercial applications in the field of research, Zhao Bao-guo (2013) based on the UTAUT model of factors influencing consumer purchase intention in buying the network model use a Likert 5 point scale for measuring, the study says, performance expectations and perceived risks directly affecting their willingness to purchase; To expectations, social impact, convenience, product characteristics on the purchase intention does not directly affect^[17]. Zhang Hong-ming, (2015) studies have shown that performance expectations, social impact positive impacts the user's online community participation; Performance expectations, to expect, social impact, positive impact in intention to use the user's online community participation; Facilitating factors no significant effect on user's online community participation; gender effect was not significant, experience trying to look forward to user community participation will influence the network has a moderating effect in^[18]. Liu Wei (2016) use the UTAUT model and task-technology matching theory explores the factors of the elderly use SNS, Discovery task matching, social effects and contributing factors of elderly users use social networking services will have a significant impact, and performance expectations are not tested^[19]. Bruce Zhang et al (2016) in the UTAUT and TTF theory as the theoretical basis, APP adoption questionnaire was used to collect tourism data through analysis: tasks/technical compatibility and effort expected to significantly impact user performance expectations; Performance expectations, to expect, social influence and trust affect a user's willingness to use performance expectations and social impact significant impact with trust, facilitating condition for use is not significant^[20].

In terms of Government affair information system adopted, Wu Yun, Hu Guang-wei (2014) according to the UTAUT impact structure, increased anxiety, perceived credibility, social assessment of three new variables, chief public acceptance of social media model is constructed. Analysis shows that social influence and social assessments are the main factors affect the actual intention, performance expectations and perceived credibility through social impact evaluation, expects no significant anxiety and effort^[21]. The literature shows, in the context of diversification of UTAUT model results the lack of robustness, and some studies of variable relationships were confirmed by other institutes in the negative. Faced with different results, meta-analysis are needed to determine the effectiveness and robustness of the relationship between variables in the model. As scholar Card (2012), "the advantage by using statistical methods for meta-analysis, combining more quantitative research, generating a summary of subject-specific knowledge, minimizes arbitrary, subjective of traditional literature reviews, conclusions can be replicated."^[22] Quantitative highlights analysis method and traditional literature reviewed maximum difference on is traditional of literature reviewed focused Yu literature in the of research conclusion, not consider sample volume and effect of significantly sex, highlights analysis is focused Yu data, through consider relative sample volume and effect value to merged various research, put not significantly of effect value and significantly of effect with for big range analysis, obtained general effect value^[23].

3 research design

3.1 A meta-analysis

Glass in the 1970s, the concept of a meta-analysis and research methods, scholars from various research areas to improve, the application matures. But differences in the academic understanding of the meta-analysis, Glass (1976) meta-analysis will be defined as the collection of results of statistical analysis, aims to integrate research results^[24]. De Coster (2004) described as a meta-analysis provides information to support a particular strength or consistency of the theoretical statements. Borenstein, et al

(2009) further literature is defined as the use of a predetermined and transparent criteria, on a specific research topic select or a large number of similar research using statistical analysis techniques from these disparate research results summarizes the main conclusions of the research topics^[25]. Refer to previous research combined with the aim of this paper, the author uses Borenstein, et al (2009) the definition of a meta-analysis. In reference to Taiwo and Downe (2013), Hager Khechine, et al (2016), and Deng Chao-hua (2012) studies, meta-analysis of the specific steps of this study, as follows: (1) identifying research topics, start retrieving documents; (2) according to the inclusion criteria, screening documents, (3) data extraction (4) statistical analysis: descriptive analysis, the z-test, failure of safety inspection and the effect classification determination (5) write a conclusion.

3.2 Selection of research literature

In order to maximize the UTAUT model of document retrieval in the country, the author attempts to search programme, the final "UTAUT" or "integration technology acceptance model" to retrieve the subject obtained from the literature search the literature number 333, retrieved January 1, 2017, by retrieving the results of literature published range of 2007-2016 years. In determining the document on the inclusion criteria, the author references Moher and Liberati, et al (2009), Free and others, including Phillips (2013) standards: (1) research must be quantitative research, (2) involves an act of willingness to adopt or adapt, (3) papers report the UTAUT model correlation matrices or other value that can be converted to the correlation coefficient (4) reports the sample size (5) original or amended UTAUT model is tested at least two variable relationships^{[26][27]}. Hager Khechine, et al (2016) believe in regulating different background variables of the meta-analysis was not possible, so not into regulating variable in the analysis. Initial search found 333 filter paper control document inclusion criteria, eliminate duplication, literature that does not meet the inclusion criteria, obtain the 161 articles. With 93 degree thesis (master's degree paper 90 doctor's paper 3), 68 journal articles, 36% samples are papers published in the last three years. Research methods involved in most structural equation modeling, so articles reporting values integrity software. I read on 161 samples, extracting samples of author, year of publication, volume, analytical methods, correlation coefficient and encode content such as system properties, provide a basis for further research.

4 data analysis and research

4.1 Data conversion

Meta-analysis, effect of different research results need to be converted to value, enable researchers to carry out a comprehensive comparison^[28]. Effects (Effect size) are the most important statistical meta-analysis of value represents the standardized measurements, indicates the strength and direction of relationships between variables. 161 research sample, 89.4% (144) study the correlation coefficient, 10.6% (17) no reported correlation coefficients in the study, reference to Zhu Hui, Zhou Gen-gui (2016) recommended conversion calculation method^[29]. Based data processing has been completed, for further analysis. First of all, the Pearson r correlation coefficient of each study into Fisher 's z, have access to comprehensive correlation coefficients, then the z-test, assess the statistical significance of Zr; and, finally, failure-safety assessment of meta-analysis of the robustness of the results.

4.2 Data analysis

4.2.1 descriptive statistics analysis

The UTAUT model study of five sets of relationships between variables related to quantity, quantity, p value describes the scope and sample size, numerical analysis. 161 study by 586 correlation coefficient, From Table 2 known, performance expects-behavior intention (PE-BI) has 146 a related coefficient is from 155 items research in the statistics obtained of, efforts expects-behavior intention (EE-BI) has 118 a related coefficient is from 154 items research in the statistics obtained, social effect-behavior intention (SI-BI) from 154 items research in the obtained 132 a related coefficient, behavior intention-using behavior (BI-USE) in 95 items research in the get 84 a related coefficient, Convenience-using behaviors (FC-USE) from 106 study correlation coefficient; This five group variable relationship of p value range for, SI-BI (-0.56~0.78), and EE-BI (-0.33~0.96), and BI-USE (-0.24~0.90) of p value span larger, in EE-BI, and SI-BI and BI-USE of research in the, also found has negative related, this not meet original model of assumed relationship; from sample number of statistics known, minimum

sample volume for 45 name by visit who, maximum of has 1423 name by visit who, All variable average sample size of 305-327 respondents. The results showed that five groups of variable number of persons involved in the investigation of the relationship is very close. Sample for SI-BI of the total, 50058, lowest in the BI-USE, 30310.

Table 2 Variable descriptive statistics

UTAUT links	Studies	Correlations	P-value range			Significant correlations		Negative correlations		Range of sample size		Sample size
			Min	MAX	AVE	Num	Ratio	Num	Ratio	Min	Max	
PE-BI	155	146	-0.09	0.97	0.18	146	100%	0	0%	45	1423	49483
EE-BI	154	118	-0.56	0.78	0.11	116	98.3%	2	1.7%	45	1423	49427
SI-BI	154	132	-0.33	0.96	0.13	128	97.0%	4	3.0%	45	1423	50058
BI-USE	95	84	-0.24	0.90	0.07	82	97.6%	2	2.4%	80	1423	30310
FC-USE	106	106	0.13	0.99	0.25	106	100%	0	0%	57	1423	32700

In this paper, reference Hunter and Schmidt (1990) the calculation formula provided in [30], Fisher r-z transformation of Zr and calculated a weighted average value and value range of Zr (confidence interval 95%). Weighted average value of the Zr is the focus of the entire meta-analysis, Table 3 shows the relationship between five groups of variables values, Zr-weighted average values from high to low is: BI-USE (0.51), PE-BI (0.43), SI-BI (0.34), EE-BI (0.28) and FC-USE (0.19). By calculating the standard error of different case studies to estimate the weighted average accuracy of Zr, standard errors of the relationship between these variables range from 0.002 0.034. Five groups of the statistical significance of the relationship between the UTAUT model, the Wald test. In these relationships, the z-value (| Z|) Is greater than 1.96, weighted average effect of Zr values can be obtained with statistical significance, each pair in the UTAUT model relationships are positive.

Table 3 Summary of meta-analytic results for UTAUT relationships

UTAUT links	Mean correlation r	Fisher's r-Z	Weighted average Zr	SE of Zr	Confidence Interval(95%)	Failsafe Num
PE-BI	0.37	0.42	0.43	0.002	0.38<Zr<0.47	375
EE-BI	0.25	0.27	0.28	0.022	0.23<Zr<0.32	252
SI-BI	0.29	0.32	0.34	0.027	0.28<Zr<0.37	278
FC-USE	0.17	0.18	0.19	0.012	0.15<Zr<0.22	138
BI-USE	0.38	0.49	0.51	0.034	0.41<Zr<0.56	215

Finally, the failure safety tests were conducted, and further examination of the effects of significant. Failure safety coefficient indicated a large number of requests for additional research rejected UTAUT model there is a significant correlation conclusion. Taiwo and Downe (2013) meta-analysis found that different, are shown in Table 3, five sets of variables through the fail safety tests, specifically, the 375 additional research is needed before they can eliminate the significant correlation between the variable PE-BI. Require an additional 252 study to refuse EE-BI a significant correlation, additional 278 more research to eliminate the SI-BI significantly correlated, need an increase of 138 and 215 research to refuse FC-USE, the significant correlation between BI-USE.

In this study, Cohen's (1988) from the weighted average of the average values are interpreted in the Zr^[31]. As a tool, Cohen's formula for making UTAUT model average effect sizes of six group categorized as high, medium, low, and discussions. According to Cohen's (1988) reported values greater than or equal to 0.1 and less than 0.3 degree of effect when low when value is greater than or equal to 0.3, and less than 0.5, the effect is middle, when value is greater than or equal to 0.5, the effects of high value. In Table 4, the results show that three sets of relationships with moderate effect sizes (EE-BI, SI-BI, BI-USE, FC-USE), relations between the two groups (EE-BI, and FC-USE) the effect value for low, all variable relationship between effects values through the failure of safety tests.

Table 4 Magnitude of mean effect sizes for UTAUT relationships

UTAUT links	Fisher's Z	Cohen's ES classification	Magnitude	Failsafe N test
PE-BI	0.42	$r \geq 0.30$	Medium	Yes
EE-BI	0.27	$r \geq 0.20$	Low	Yes
SI-BI	0.32	$r \geq 0.30$	Medium	Yes
FC-USE	0.18	$r \geq 0.20$	Low	Yes
BI-USE	0.49	$r \geq 0.30$	Medium	Tes

Performance expectations and behavior of Zr correlation coefficient of 0.42, effect values correspond to classification to medium, this discovery and Taiwo and Downe (2013) is consistent with the findings and at the theoretical level is confirmed by Venkatesh et al. (2003) the assumption of the users willingness to use information systems, because they believe information system will improve their working efficiency. Work expectations and behavior between effects values of 0.27, classified as low, and Hager Khechine, who studies (the effect value of 0.46, medium). Social and behavioral effects are classified as medium effect value of 0.32, confirmed the original hypothesis of UTAUT model. Facilities and use of effects is 0.18, classified as low UTAUT model assumptions did not go through. Behavioral intentions and behavior effect is 0.49, classified as medium, their effect is one of the largest in this meta-analysis, according to the results, you can determine intention and use this set of variables is the strongest group in the UTAUT model (Figure 2).

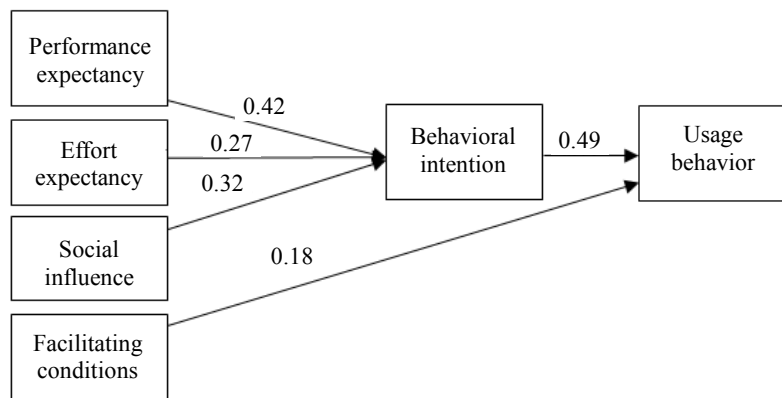


Figure 2. Pearson correlations r obtained from meta-analysis

5 Conclusion

This through integrating the research published by the Decade of 161 empirical papers assessed the UTAUT model robustness. Received 586 from 161 research paper correlation coefficient, calculated to test the performance expectations in the UTAUT model-behavior influence, social-behavioral intentions and behavior-behavior relationship between three variables is robust, effort expected-behavioral intentions, convenience-use the stability of the relationship between these two sets of variables was weak. Performance expectations is directly affected by the user's intention to use information systems, maximum of behavioral effects in the model; Work expectations and social impact is directly influencing factors of behavioral intentions, but their effects are different, work expectations and behavioral relationship was found to be weak, the relationship between social and behavioral intentions for the Middle, convenience and use of behavior are defined as weak. Behavioral intentions in other independent variables and dependent variables playing an intermediary role between, on the effects of using the middle. These findings via the failure of safety inspection, according to the results 252-375 expected performance, the study concluded that the need to increase efforts to expectations, social impact and does not have a significant correlation between behavioral intentions, at least 215 additional research to make behavioral intention does not have a significant correlation between the behavior and, in summary, this study is scientific, and stability. Combined with Li Mao-neng (2015) mentioned in the

book "remarkable statistical methods dependent on the sample size, sample p value smaller"^[32]. Our scholars to study the causes of conflict in the country summary for sample size, sampling and sample source.

Only 45 of those small amount of sample in the research literature, many have more than 1000; Sampling methods are mostly based on convenience sampling, Snowball sampling, and research the major target for student groups. Provides a contrary perspective for follow-up studies, to reduce randomness in selecting the sample size, sample under a scientific formula to determine the number of; sampling methods to avoid sampling, random sampling should be used so that representative sample sources according to the identification of research questions, pay attention to differentiation and hierarchical.

The research at the theoretical level, at home for the first time in ten years of research, the robustness of the system test the UTAUT model. On the behavioral intentions, two of the three variables variables (desired performance and social impact) confirmed the behavior of users of information systems/information technology has a positive impact. In terms of use, the two factors (behavioral intentions and facilities) behavioral intentions turned out to be a direct impact on the user in the use of information systems/information technology. These results suggest that by Venkatesh et al. (2003) and other scholars have proposed different original UTAUT model in the context of the relationship among the variables in 60% (3/5) was confirmed, confirmed in the study of information systems/information technology adoption of the most relevant factors. In practice, this study found that awareness can help managers to focus on system functionality and user demand is key to improve the intention to use (expected performance-with the intention to effect maximum), developers need to pay more attention to the new system functions and features to help users understand it ^[4]. Managers and developers need to consider the opinions of others can affect user adoption.

Finally, the limitations of two points:

(1) select only analysis of published journal articles and dissertations as samples, some in the study did not include the analysis of samples, the study found may result in some limitations;

(2) the UTAUT model with different background is not discussed separately the UTAUT model and its application to have a more comprehensive understanding.

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Analysis on the Informatization and Regional Economic Development of Qinghai Province of China Based on the Gray Correlation Method *

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Abstract This paper based on the basic theory of informatization and regional economy, on the basis of combing the research methods of informatization measurement at home and abroad and its relationship with regional economic development, according to the characteristics of Qinghai Province System, constructs the evaluation index of informatization and regional economic development level, the relationship between informatization and regional economic development in Qinghai Province is analyzed and calculated emphatically based on gray correlation method. The results show that the influence of different indicators on the regional economic development of Qinghai Province is different. Finally, the author puts forward some suggestions on the coordinated development of informatization construction and regional economy in Qinghai Province.

Key words Informatization, Regional economy, Gray correlation method, Qinghai Province

1 Introduction

Informatization generated on the basis of computer science and technology, communications engineering and bio-engineering technology and other advanced technology. Informatization is an important support for promoting economic development, has a huge role in promoting on a regional economic development. Informatization can promote the overall progress of the economy in the region and promote the optimization and upgrading of the regional economic structure. Informatization can accelerate the accumulation of knowledge within region, to create innovative space for economic development.

China have wide land and large population. By the impact of resources and national development policies, economic regional feature are more obvious. In recent years, the central government is also paying particular attention to informatization construction, so many domestic experts and scholars have carried out in-depth explore and research^[1-5]. Teng Li (2006) on the Chinese various provinces of the informatization level of a quantitative estimate and comprehensive evaluation. Meng Yuan (2010) draws conclusions through the data analysis, the deepening of the degree of informatization has had a positive impact on economic growth. Gao Xin-cai (2012) analyzed the contribution rate of information elements and found that there was a significant positive correlation between regional informatization level and economic development level. Merlin (2013) used the gray correlation method and the linear regression model, the analysis shows that the regional economic growth level of a region is largely determined by the level of informatization construction. Li Ling (2015) through a linear regression model found that the level of informatization development plays an indelible role in the economic development of a region. We can see that domestic scholars are very concerned about the impact of informatization on economic growth, affirmed the important role of informatization on economic and social development. Qinghai Province is located in the Qinghai-Tibet Plateau, the economic development is relatively backward. From the characteristics of industrialization and informatization in Qinghai Province, the development of informatization has become a bottleneck restricting the adjustment of economic structure, people's income increase and economic development in Qinghai Province. However, in the context of the western development, the empirical research on informatization and economic development in Qinghai Province is extremely lacking. Therefore, this paper takes the relationship between informatization and economic development in Qinghai Province as the research

* Financed by National Social Science Fund Program (Project No.: 15BJY-003, 2015.8-2017.12); Soft Science Project of Qinghai Science and Technology Agency (Project No.: 2016ZJ-605, 2016.1-2017.12)

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object, select the evaluation index related to informatization and regional economic development, and use the gray relational dynamic analysis method to carry on the empirical analysis, it is not only the reality of economic and social development needs, but also an innovation of this article.

2 The establishment of index system

Relevant theory has confirmed that informatization and regional economic development has a mutual promotion and coordination of the role. In order to better understand the relationship between them, this paper establishes the index system of informatization and regional economic development in Qinghai Province, and analyzes the correlation between them.

2.1 The establishment of indicator system of informatization level

In late July 2001, the Ministry of Information Industry in the national information of the indicators of the meeting officially announced a detailed national information technology indicators program, the program consists of 20 indicators. Which provides a good support for the quantitative analysis of the level of informatization in China's regional and rural areas. In this system, specific modules such as e-commerce, enterprise informatization, government informatization and information resources are established respectively. In 2006, the International Statistical Information Center of the National Bureau of Statistics, in order to focus on the evaluation of the level of informatization application, based on the previous research, designed the second set of information technology to evaluate the overall index, which contains six first-level indicators and 23 secondary indicators^[6]. Based on the actual situation of the development of informatization in Qinghai Province, this paper will integrate some of the available indicators and follow the principles of objectivity and operability to eliminate and introduce a number of new indicators, and finally form the evaluation index system of text. This evaluation system consists of informatization infrastructure, informatization development status, informatization development potential of the three first-level indicators and 10 secondary indicators (Table 1), so as to fully quantify the level of information, to enhance the accuracy and credibility of the results.

Table 1 Evaluation index system of informatization level in Qinghai Province

First index	Second index	Unit	Variable identifier
Informatization infrastructure	The number of telephones per one hundred people	[set]	X ₁
	The number of televisions per hundred households	[set]	X ₂
	The number of computers per hundred households	[set]	X ₃
	The number of internet users per hundred households	[household]	X ₄
Informatization development status	The tel-communications total quantity per capita	[RMB]	X ₅
	The number of scientific and technical personnel per ten thousand people	[person]	X ₆
Informatization development potential	The number of scientific research institutions	[ea]	X ₇
	The proportion of tertiary industry employment	[%]	X ₈
	The number of college students per ten thousand people	[person]	X ₉
	The R&D expenditure per capita	[RMB]	X ₁₀

2.2 The establishment of regional economic development index system

A regional economy is based on an objective regional unit, according to the principle of regional division of labor to establish a regional national economy with regional characteristics^[7]. Objective to measure the statistical data of the economic development process can accurately and comprehensively understand the regional economic development level of one region. However, to measure the economic development of a province (city), not only to refer to the output value of an industry, but also from all aspects of social production to study, to see the comprehensive effects of the production situation. This paper constructs the economic development index system of Qinghai Province through five indicators (Table 2). The first four aggregate indicators reflect the total scale economic strength of Qinghai Province, the latter one as an indicator to reflect the speed of economic development in Qinghai Province, but also can be used as an indicator to reflect changes in industrial structure in Qinghai Province.

Table 2 Evaluation index system of regional economic development level in Qinghai Province

Index	Unit	Variable identifier
GDP	[hundred million RMB]	Y ₁
Investment in Social Fixed Assets	[hundred million RMB]	Y ₂
Total retail sales of consumer goods	[hundred million RMB]	Y ₃
Fiscal budgetary revenue	[hundred million RMB]	Y ₄
Tertiary industry growth rate	[%]	Y ₅

3 Gray correlation dynamic analysis of informatization and regional economic development in Qinghai Province

3.1 Analysis principles and methods

Gray correlation analysis, is to quantify the research object and the object to be identified and the factor values of their influencing factors separately. And according to the similarity or dissimilarity of the development trend among the factors, that is, “gray relational degree”, as an analysis method to measure the degree of correlation between the factors.

Gray system theory to “small sample, poor information” uncertainty system as the research object, thinks that any gray sequence can weaken its randomness by some kind of generation, show its regularity^[8]. Due to the early statistical data of Qinghai Province were partially missing, and the existing part of the data accuracy is not high, there will be relatively large fluctuations, there is no typical distribution. Therefore, this paper chooses the gray correlation method as an important research tool.

The specific calculation methods and steps are as follows:

(1) Identify the reference series that reflects the system behavior characteristics and the comparison sequence that affects the system behavior

The sequence of data that reflects the system behavior characteristics, called a reference sequence. The sequence of data that affects the system behavior is called the comparison sequence.

(2) Dimensionless method of the reference sequence and the comparison sequence

Because the data in each factor column of the system have different meanings, the dimension is not necessarily the same, and it is difficult to get the correct conclusion. So in the correlation analysis of the gray correlation, generally have to first dimensionless data processing. The formula is:

$$X_i(k) = x_i(k) / x_i(k) \quad (1)$$

Where $x_i(k)$ is the raw data and $X_i(k)$ is the raw data initialization result.

(3) Calculate the difference sequence of the reference sequence and the comparison sequence. The formula is:

$$\Delta_i(k) = |Y_i(k) - X_i(k)| \quad (2)$$

(4) Find two range in sequence $\Delta_i(k)$

$$M = \max |Y_i(k) - X_i(k)| \quad (3)$$

$$m = \min |Y_i(k) - X_i(k)| \quad (4)$$

(5) Calculate the correlation coefficient. The formula is:

$$L_i(k) = m + \delta M / \Delta_i(k) + \delta M \quad (5)$$

Among them, δ is the resolution coefficient, the resolution coefficient δ in the range of 0-1, generally take $\delta = 0.5$.

(6) Calculate the degree of correlation

Because the correlation coefficient is the associated degree value at each moment, so its number is more than one. And the information is too scattered is not easy to conduct a holistic comparison. Therefore, it is necessary to focus the correlation coefficient at each moment as a value, that is, the average value. As the number of correlation degree between the comparison sequence and the reference sequence. The degree of correlation is calculated as follows:

$$r_i = \sum L_i(k) / n \quad (6)$$

3.2 Gray correlation dynamic analysis on the regional economic development of Qinghai Province by each informatization indicator

Since the western development in 1999, the development of informatization and regional economy in Qinghai Province is not smooth sailing, and experienced a tortuous development process. This paper divides this process into three stages. Respectively, calculated and contrast analyzed the relationship between informatization and regional economic development, and tries to find out the changing trends and law.

First, 10 informatization level indicators in Qinghai Province from 1999 to 2005 were used as the comparison sequence, $X_i = \{X_i(t), t = 1, 2, \dots, 17\} (i = 1, 2, \dots, 10)$. Five economic development levels were selected as the reference sequence, $Y_i = \{Y_i(t), t = 1, 2, \dots, 17\} (i = 1, 2, \dots, 5)$. Create a gray correlation sequence. According to the calculation method of the above gray correlation degree and combined with EXCEL software can draw the corresponding gray correlation matrix, see Table 3.

Table 3 Gray relational matrix of the relationship between informatization and regional economic development in Qinghai Province from 1999 to 2005

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀
Y ₁	0.9753	0.9922	0.6164	0.6135	0.9779	0.9874	0.9928	0.9903	0.9754	0.9745
Y ₂	0.9818	0.9853	0.6171	0.6142	0.9822	0.9806	0.9859	0.9835	0.9819	0.9810
Y ₃	0.9722	0.9956	0.6166	0.6137	0.9751	0.9908	0.9963	0.9938	0.9723	0.9714
Y ₄	0.9788	0.9884	0.6164	0.6135	0.9805	0.9836	0.9890	0.9866	0.9789	0.9780
Y ₅	0.9690	0.9968	0.6183	0.6154	0.9708	0.9920	0.9957	0.9950	0.9714	0.9706
Correlation degree	4.8770	4.9582	3.0848	3.0702	4.8865	4.9342	4.9598	4.9491	4.8799	4.8757

It can be seen that the correlation degree sort of informatization and regional economic development in Qinghai Province at this stage is:

$$X_7 > X_2 > X_8 > X_6 > X_5 > X_9 > X_1 > X_{10} > X_3 > X_4$$

It can be seen, Qinghai Province in 1999-2005, the number of scientific research institutions has the most significant impact on the regional economic development. Followed by the number of televisions per hundred households and the proportion of the tertiary industry employment population. Again is the number of scientific and technical personnel per ten thousand people, the tel-communications total quantity per capita, the number of college students per ten thousand people, the number of telephones per one hundred people, the R&D expenditure per capita, the number of computers per hundred households, the number of internet users per hundred households.

Similarly, the relationship between informatization and regional economic development in Qinghai Province in 2006-2010 was analyzed for gray correlation analysis. The results are shown in Table 4.

Table 4 Gray relational matrix of the relationship between informatization and regional economic development in Qinghai Province from 2006 to 2010

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀
Y ₁	0.7638	0.6288	0.6868	0.9079	0.7147	0.6377	0.6231	0.6445	0.8088	0.6735
Y ₂	0.7869	0.6796	0.7310	0.8684	0.7828	0.6884	0.6816	0.6938	0.7913	0.8088
Y ₃	0.8285	0.6663	0.7355	0.9129	0.6688	0.6771	0.6626	0.6847	0.8513	0.7040
Y ₄	0.7119	0.6215	0.6634	0.7980	0.8512	0.6286	0.6190	0.6331	0.7419	0.7478
Y ₅	0.8291	0.9450	0.9080	0.7478	0.6367	0.9247	0.8893	0.9417	0.7886	0.7166
Correlation degree	3.9203	3.5412	3.7248	4.2351	3.6543	3.5565	3.4756	3.5978	3.9820	3.6508

During this time, the gray correlation degree sort is:

$$X_4 > X_9 > X_1 > X_3 > X_5 > X_{10} > X_8 > X_6 > X_2 > X_7$$

The influencing factors in the top three are the number of internet users per hundred households, the number of college students per ten thousand people and the number of telephones per one hundred

people. Followed by the number of computers per hundred households, the tel-communications total quantity per capita and the R&D expenditure per capita. Finally the proportion of the tertiary industry employment population, the number of scientific and technical personnel per ten thousand people, the number of televisions per hundred households and the number of scientific research institutions.

At last, the gray relational matrix of the relationship between informatization and regional economic development in Qinghai Province from 2011 to 2015 is obtained from the above method (Table 5).

Table 5 Gray relational matrix of the relationship between informatization and regional economic development in Qinghai Province from 2011 to 2015

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀
Y ₁	0.7343	0.6337	0.9282	0.8690	0.7413	0.6391	0.7144	0.7074	0.7139	0.6695
Y ₂	0.6213	0.5859	0.6641	0.7120	0.7760	0.5874	0.6128	0.6118	0.6128	0.5990
Y ₃	0.6874	0.6094	0.8160	0.8608	0.7976	0.6140	0.6704	0.6644	0.6670	0.6386
Y ₄	0.6957	0.6151	0.8585	0.8252	0.7381	0.6169	0.6802	0.6790	0.6874	0.6408
Y ₅	0.8715	0.9019	0.7336	0.7251	0.6965	0.8954	0.8889	0.8530	0.8382	0.9009
Correlation degree	3.6102	3.3459	4.0003	3.9921	3.7495	3.3529	3.5668	3.5156	3.5192	3.4488

During this period, the gray correlation degree sort is:

$$X_3 > X_4 > X_5 > X_1 > X_7 > X_9 > X_8 > X_{10} > X_6 > X_2$$

It can be seen from 2011 to 2015, the first three factors that have the greatest impact on the regional economy in Qinghai Province are the number of computers per hundred households, the number of internet users per hundred households and the tel-communications total quantity per capita. Secondly, the number of telephones per one hundred people, the number of scientific research institutions and the number of college students per ten thousand people. Over again, the proportion of the tertiary industry employment population, the R&D expenditure per capita, the number of scientific and technical personnel per ten thousand people and the number of televisions per hundred households.

In order to further compare the changes in the impact of various informatization indicators about regional economic development in the three stages. Compare the first six influencing factors in the gray correlation degree sort of the above three periods, as shown in Table 6.

Table 6 A comparison about the correlation degree sort between informatization and regional economic development in Qinghai Province at three different stages

Stage correlation degree sort	1	2	3	4	5
1999-2005	X ₇	X ₂	X ₈	X ₆	X ₅
2006-2010	X ₄	X ₉	X ₁	X ₃	X ₅
2011-2015	X ₃	X ₄	X ₅	X ₁	X ₇

It can be seen that in the first stage, three indicators that have the greatest impact on regional economic development are the number of televisions per hundred households, the proportion of the tertiary industry employment population and the number of scientific and technical personnel per ten thousand people has been exit the top five in the latter two stages. While the number of computers per hundred households and the number of internet users per hundred households are not significant from the first stage to the second stage into the top five. Finally, the last stage ranked the top two. Description in recent years, with the gradual development of the Internet, the effect of Internet economy on the development of regional economy in Qinghai Province is more and more obvious. In addition, the tel-communications total quantity per capita and the number of telephones per one hundred people are also from the fifth and seventh of the first stage to the third and fourth of the third stage. Indicating that the mobile communication business has gradually developed more and more significant impact on the regional economic development of Qinghai Province.

4 Conclusion and countermeasure

Through the analysis of the data from 1999 to 2015, we can see that with the development of information globalization and economic integration, the economic development of a region depends largely on the level of informatization construction. According to the specific situation of Qinghai Province, we can improve the informatization level of Qinghai Province from the following aspects, so as to promote the regional economic development of Qinghai Province.

4.1 Strengthen the construction of informatization infrastructure

Infrastructure is the prerequisite and basis for the development of informatization, today is the golden period of the Informatization development for Qinghai Province. so Qinghai Province should strengthen the information network infrastructure construction. According to the above gray correlation matrix analysis of the relationship between informatization and regional economic development in Qinghai Province, it can be seen that the number of computers per hundred households and the number of Internet users per hundred households have the highest correlation with regional economic development. Therefore, the government should use a variety of public networks and a variety of access means to achieve information into various households, increase the construction of informatization infrastructure especially open network services for some remote rural users, popularize the knowledge and skills of information technology, so as to promote the all sectors of society can share the country's educational resources, scientific and technological resources, cultural resources, medical and health resources and public services provided by government^[9].

4.2 Perfect talents cultivation in informatization construction

Talent is the key to economic development, and information technology is mainly rely on people to research, development, master and application. From the above analysis, we can see that the number of scientific research institutions and the number of college students per ten thousand also have a high degree of correlation with regional economic development. Therefore, colleges and universities in Qinghai Province should strengthen the education of information technology applications, each enterprises and institutions should also establish their own information technology training system, conduct information technology vocational training activities for the staff, improve the overall level of informatization application of each enterprises and institutions. In addition, Qinghai Province should improve the training mechanism, attract high-tech talent, and can improve the treatment and create a favorable development environment and entrepreneurial environment to attract domestic and foreign informatization high-tech talent, on the one hand can increase the region's informatization talent reserves, on the other hand is conducive to promoting the extensive dissemination of informatization knowledge, in order to further narrow the regional differences in information^[10].

4.3 Promote the development of informatization industry

From the above results, we can see that the proportion of the tertiary industry employment in the relationship with the regional economic development in Qinghai Province ranked in the seventh place, and it also has a significant effect on the development of the economy. Therefore, the development of informatization industry is also the key to the informatization construction in Qinghai Province, for existing enterprises engaged in informatization-related enterprises, Qinghai Province should give technical support and policy encouragement, improve the financial, tax and related industrial policies, regard the informatization industry as an important strategic goal of industrial development, encourage, support and guide the development of informatization industry. In addition, Qinghai Province should encourage some non-informatization companies to understand more informatization and strive to the direction of the transformation of informatization technology development, for informatization-related start-up companies, the government can relax the loan and provide some policy support to make develop and then it can absorb more employment, increase the proportion of employment in the tertiary industry, and better promote the development of regional economy in Qinghai Province.

4.4 Give full play to the government's guidance and coordination function in informatization construction

Good development environment is an effective way to promote the development of informatization^[11], Qinghai Province is a relatively special multi-ethnic areas, so we should attach importance to the role of government in the construction of informatization. In the process of

informatization construction, the government should formulate reasonable rules and regulations for the informatization construction according to the special circumstances of Qinghai Province. The government should also improve the construction of informatization infrastructure, provide a powerful platform for the promotion and popularization of informatization^[12]. On the basis of planning and service, the government should respect the objective law of Qinghai Province and give full play to the function of resource allocation in Qinghai Province. In addition, the government can reform the investment mode, actively introduce the market mechanism, attract foreign capital or private capital to invest informatization project construction, give full play to the role of market mechanism in the informatization construction.

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The Impact of Urbanization on Carbon Emissions in China: Based on Provincial Panel Data

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Abstract With the worsening of the global environment, the problem of global climate change that caused by the emissions of greenhouse gases has aroused wide attention from all over the world. As the world's largest carbon emitter, China is experiencing tremendous international pressure to reduce emissions. It is necessary to research the specific influence and the regional difference of urbanization on carbon emissions in our country, and it is significant on promoting the development of urbanizations in our country and achieving goals of emissions reduction. This paper selects the panel data of 30 provinces of China from 1997 to 2014, and studies the influence of urbanization on the carbon dioxide emission and the regional differences. The result shows that there is an inverted U-shaped pattern between urbanization and carbon emissions in China. The low urbanization level regions negatively affected carbon emissions while the high and middle urbanization level regions positively affected carbon emissions. This study concludes that it is necessary for China to take a path of low-carbon urbanization that match the characteristics of environmental resources and the level of economic development.

Key words Urbanization, Carbon emissions, Regional differences, Extended STIRPAT model, Panel cointegration analysis

1 Introduction

Urbanization is an important factor to achieve economic growth and industrialization, China's urbanization rate increased year by year, from 1978 to 2014, the urbanization rate has increased from 17.92% to 54.77%, with an average annual growth rate of 1%. Mentioned in the development and Reform Commission announced the "13th Five-Year Plan" by 2020, the resident population urbanization rate will reach 60%. At present, China is in a critical period of social development, how to reduce carbon dioxide emissions in the process of urbanization is a major goal to be completed at this stage. The regional research level of Urbanization Impact on carbon emissions, contribute to the development of targeted policies to reduce carbon emissions, better to complete the "13th Five-Year plan" task. Therefore, research on urbanization of great influence on carbon emissions.

In the study of the impact of urbanization on carbon emissions, most scholars have studied the relationship among economic growth, urbanization and carbon emissions. Study on the relationship between economic growth and urbanization, the American economist H. Chenery (1957)^[1] through the study of 34 countries found that economic development, the upgrading of the industrial structure led to a country's economy, and promote the process of Urbanization. American geographer Ray. M. Northam (1975)^[2] analyzed the development process of urbanization in many countries in the world, and pointed out that there is a linear relationship between urbanization level and economic development level. City economists Vernon Henderson (2000)^[3] on the urbanization level and GDP per capita has carried on the regression analysis, it is concluded that the high correlation between urbanization level and GDP per capita. Zhan Ming-hua and Xu Yue-li (2006)^[4] through the construction of endogenous growth model, pointed out that the main factors affecting the level of urbanization is economic growth, while the level of urbanization will affect economic growth. But another conclusion by some scholars, such as Li Jin-chang and Cheng Kai-ming (2006)^[5] according to the relevant data of 1978-2014, the Grainger causality test on the level of urbanization and economic growth and other variables, we found that economic growth will have a significant impact on the level of urbanization, and the urbanization level has little effect on the economic growth of.

In the study of economic growth and carbon emissions, the most important is the environmental Kuznets curve proposed by Grossman and Krueger (1995)^[6], which expresses the inverse U-shaped relationship between the ecological environment and GDP per capita. MarzioGaleotti et.al (2006)^[7]

provides an empirical analysis of the relationship between carbon emissions and economic growth in the Organization for Economic Co-operation and Development (OECD), and concludes that the relationship between carbon emissions and economic growth is consistent with the EKC curve. In contrast, V. Lantz and Q. Feng (2006)^[8] studied the relationship between carbon emissions and GDP per capita in Canada from 1970 to 2000, using the panel data model to show that there is no EKC relationship between carbon emissions and per capita GDP. Chinese scholar Yang Zi-hui (2011)^[9] to study the dynamic relationship between carbon emissions and economic growth in China, using the method of acyclic graph”, found that the increase of carbon emissions is conducive to economic development. Li Guo-zhi and Li Zong-zhi (2011)^[10] analyzed the panel data of 1996-2008 in China from 1996 to 2008, and pointed out that the EKC curve was accorded with the carbon emission and economic development in the eastern and western areas of China, and the relationship between the two It is a linear relationship.

In the study of urbanization and carbon emissions, most scholars have concluded that urbanization has a positive impact on carbon emissions. Poumanyong and Kaneko (2010)^[11] collected data from 99 countries for 1975-2005 using a panel data model and found that the level of urbanization increases carbon emissions regardless of income level in any country. Liu Meng-qin, Liu Yi-jun (2011)^[12] using CKC model, using regression analysis, pointed out that China's urbanization and carbon emissions have a high correlation. While some scholars have come to the opposite conclusion. Susan Sunila Sharma (2011)^[13] analyzed the panel data from 69 countries and found that there was a negative correlation between the urbanization level and carbon emissions in these countries. Lu Zu-lan (2011)^[14] studied the relationship between urbanization and carbon emissions in China. Using the extended STIRPAT model, it was concluded that the urbanization level in the central and western regions of China would reduce carbon emissions. There are some scholars pointed out that the urbanization and the inverted u-shaped relationship between carbon emissions. Such as Wang Fang, Zhou Xing (2012)^[15] use of nine countries such as Japan, Brazil and India for nearly 50 years of panel data, used the KAYA identities model, empirical research on urbanization and carbon emissions, points out that the urbanization between carbon emissions and inverted.

From the above literature, the acceleration of urbanization will promote carbon emissions or reduce carbon emissions is still controversial, the reason may be the choice of the study object differences. In the past in the regional research, most scholars in our country is divided into regions according to the geographical position of this division, there is a major flaw is that with the acceleration of urbanization, the same area of the different provinces of carbon emissions will be different. In this paper, based on Northam's urbanization process and China's "13th Five-Year Plan", according to the level of urbanization in China to carry out regional division, to avoid such problems.

2 Regional division of urbanization and current situation of carbon emissions in China

2.1 Regional division of urbanization level in China

The urbanization process curve was proposed in 1979 by the American urban scholar Ray. M. Northam. According to his research, he found that each country's urbanization process basically presents a horizontal stretch of the S-shaped curve, and the process is divided into urbanization in the early stages of development (urbanization level is less than 30%), towns (The level of urbanization is between 30% and 70%) and the later stage of the stable development of urbanization (the level of urbanization is more than 70%) in the middle stage of development.

In this paper, based on Northam's division of urbanization process and China's "thirteen Five-Year Plan", to the level of urbanization is 50% and 70% for the two critical points, according to China's various provinces in 2014 (except Tibet P.R.China) (Urbanization level is greater than 70%); in the urbanization level group (the level of urbanization in 50% to 70%); low urbanization level group (the level of urbanization (urbanization level of more than 70% Less than 50%).The urbanization rate and grouping in 2014 are shown in Table 1.

Table 1 Theurbanization rate of each province in 2014

Region	Urbanization rate(%)	group	Region	Urbanization rate(%)	group
Guangdong	67.9970	Mid urbanization level group	Shanghai	89.5713	High urbanization level group
Liaoning	67.0462		Beijing	86.3383	
Jiangsu	65.2136		Tianjin	82.2676	
Zhejiang	64.8693		Qinghai	49.7427	Low urbanization level group
Fujian	61.7972		Hebei	49.3229	
Chongqing	59.6122		Hunan	49.2801	
Inner Mongolia	59.521		Anhui	49.1534	
Heilongjiang	58.0224		Sichuan	46.3022	
Hubei	55.674		Xinjiang	46.0836	
Shandong	55.0107		Guangxi	46.0034	
Jilin	54.8328		Henan	45.1992	
Hainan	53.8206		Yunnan	41.7268	
Shanxi	53.7829		Gansu	41.6827	
Ningxia	53.6254		Guizhou	40.0228	
Shanxi	52.5828				
Jiangxi	50.2202				

2.2 Current situation of carbon emissions in China

In the “China Energy Statistical Yearbook” did not give specific carbon emissions in China, and therefore only through the “China Energy Statistical Yearbook” in the relevant data to estimate. In view of the basic carbon emissions from fossil energy consumption, therefore, this paper will be based on the various provinces of coal, coke, crude oil, gasoline, kerosene, diesel oil, total consumption of fuel oil and natural gas estimates for carbon emissions in China. In this paper, the carbon emissions calculation method based on IPCC provides carbon emission coefficient that corresponds to the energy consumption multiplied by a variety of standard coal coefficient multiplied by the corresponding, can obtain the carbon emissions of various energy sources. Eight energy standard coal coefficient and carbon emission coefficients as shown in Table 2.

Table 2 Fold the standard coal coefficient and carbon emission coefficient

Species	Coefficient of discounted coal	Carbon emission coefficient
Coal	0.7143	0.7467
Coke	0.9714	0.1128
Orude	1.4286	0.5854
Gasoline	1.4714	0.5532
Kerosene	1.4714	0.3416
Diesel	1.4571	0.5913
Fuel oil	1.4286	0.6176
Gasoline	1.33	0.4479

By using the method of carbon emission estimation, we estimate the carbon emissions of each province in 1997-2014, draw the comparison chart of each group and the national carbon emissions, as shown in Figure 1.

From the national data, China’s carbon emissions increased year by year, China’s carbon emissions from 1043.09 million tons in 1997 to 3,197,150,000 tons in 2014, an increase of 215,406 tons, an average annual increase of 136.71 million tons. From 1997 to 1999, China’s carbon emissions basically unchanged, stable at 100 million tons, and since 1999, especially since 2002, China’s carbon emissions significantly faster, until recent years, China’s carbon emissions Stable point in about 31,000,000 tons.

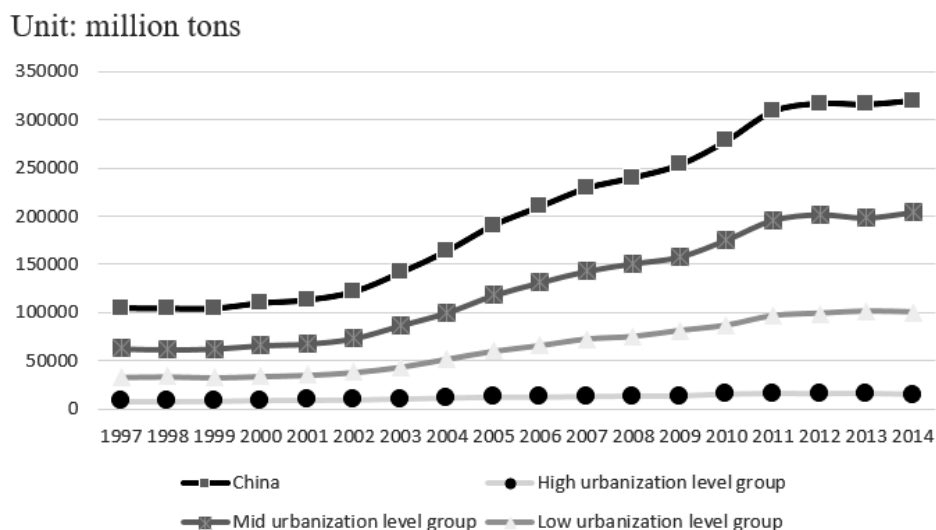


Figure 1 China's carbon emissions trends

From Figure 1 we can see that before 2002, regardless of the level of urbanization, the trend of carbon emissions consistent with the national trend of carbon emissions. The development trend of carbon emissions after 2002 the level of urbanization in different groups began to appear different. High carbon emissions level of urbanization was basically unchanged, the mid carbon emissions level of urbanization was rising rapidly, low carbon emission level of urbanization group also increased in a high speed, but low level group in town.

In order to more clearly understand the various provinces and cities in China from 1997 to 2014, roughly how the growth rate of carbon emissions, thus drawing the Figure 2.

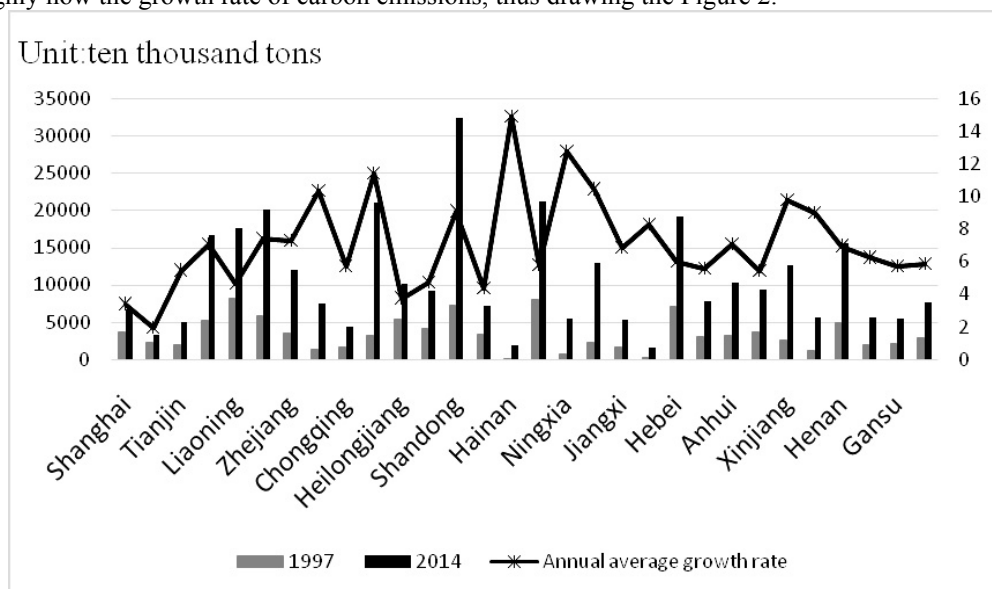


Figure 2 China's various provinces and cities of carbon emissions between 1997 and 2014

Carbon emissions from Figure 2 in various provinces and cities we can clearly can be seen in Beijing, Shanghai and Tianjin carbon emissions in these provinces and cities the growth rate is particularly slow, this is mainly to optimize the industrial structure of these cities, reduce carbon emissions and related policy more perfect. The provinces such as Shandong, Inner Mongolia, Fujian

and Hainan have a faster growth rate of carbon emissions, mainly because these provinces and cities are in a period of rapid economic development, resulting in a sharp increase in energy consumption. In addition, we can also see that the carbon emissions gap in different regions of the larger provinces, 2014 carbon emissions are the highest in Shandong, up to 323 million 435 thousand and 600 tons of carbon emissions, and Qinghai is the lowest, only 14 million 865 thousand and 700 tons. This gap is closely related with various provinces and the level of economic development and industrial structure.

3 Empirical analysis

3.1 Model construction

This paper is based on the IPAT model, STIRPAT extension model for the framework. IPAT model was proposed by Ehrlich and Holden in the early 1970s to study the relationship between population and environment. The formula for IPAT is:

$$I = P \cdot A \cdot T \quad (1)$$

Where I is the environment, "P" is the population, "A" is the wealth, "T" is the technology.

However, this IPAT model has some drawbacks, namely a single elasticity. In order to eliminate this defect, Dietz and Rosa improved the IPAT model and proposed stochastic model of STIRPAT environmental impact. The formula for the model is:

$$I = aP^b A^c T^d \mu \quad (2)$$

In the STIRPAT model, a represents the constant term coefficient, b represents the population index, c represents the wealth index, d represents the technology index, μ represents the error term.

In order to study the convenience, take the logarithm of (2), then (2) deformation:

$$\ln(I) = \ln(a) + b \ln(P) + c \ln(A) + d \ln(T) + \ln(\mu) \quad (3)$$

This paper needs to study the impact of urbanization on carbon emissions, so the STIRPAT model needs to be extended. The population variable P is measured by the total population and the urbanization level, and the wealth variable A is measured by per capita GDP, and the technical level T is measured by the intensity of energy consumption. So the extended STIRPAT model expression can be expressed as:

$$\ln(C) = a + b \ln(P) + c \ln(U) + d \ln(pgdg) + e \ln(en) + \mu \quad (4)$$

On the model of 4, C represents the total carbon emissions (million tons), P represents the size of the population (million), U represents the level of urbanization, PGDP represents the GDP per capita (yuan /person), en represents the intensity of energy consumption (tons of standard coal per thousand yuan), μ represents the error term.

At the same time, we need to verify our economic growth and carbon emissions is in accordance with the EKC curve, namely environmental Kuznets curve. According to the Environmental Kuznets curve of thought, of type (4) is extended, joining the square of the urbanization rate, model five:

$$\ln(C) = a + b \ln(P) + c \ln(U) + d \ln(pgdg) + e \ln(en) + f(\ln(U))^2 + \mu \quad (5)$$

3.2 Data sources

Since Chongqing was devided from Sichuan Province in 1997 and the data of Tibet P.R.China is not serious, this paper selects 30 provinces and cities in China from 1997 to 2014 to do the empirical analysis. Data from various provinces and cities are from the "China Energy Statistical Yearbook" and the People's Republic of China National Bureau of Statistics, part of the missing data using interpolation interpolation. The model of this paper needs to be logarithmized for each variable, but because the urbanization rate is a percentage, we do not logarithmically transform the urbanization rate.

3.3 Data sources

3.3.1 Panel unit root test

The unit root test is needed before the panel empirical analysis is carried out. The main reason is to prevent the occurrence of pseudo-regression. Unit root test is the most effective method to test smoothness. In this paper, two methods of LLC test and ADF-Fisher test are used to test. The original hypothesis of the two methods of LLC test and ADF-Fisher test is that the variables have unit roots.

In this paper, the unit root test for each variable is carried out in the general and the grouping. The

results are shown in Table 3:

Table 3 Results of unit root test

Region	Variable	LLC test	ADF-Fisher	First order difference	LLC test	ADF-Fisher
China	ln(C)	-1.13(0.13)	23.63(1.00)	dln(C)	-8.7(0.00)	173.62(0.00)
	ln(p)	-6.28(0.00)	110.11(0.00)	dln(p)	-10.3(0.00)	228.5(0.00)
	ln(U)	-2.52(0.01)	56.79(0.59)	dln(U)	-17.3(0.00)	274.7(0.00)
	(lnU) ²	0.106(0.54)	50.37(0.81)	d(lnU) ²	-18.7(0.00)	298.10(0.00)
	ln(pgdp)	-4.19(0.00)	58.11(0.55)	dln(pgdp)	-6.86(0.00)	107.87(0.00)
High urbanization level group	ln(en)	4.84(1.00)	15.00(1.00)	dln(en)	-13.8(0.00)	238.04(0.00)
	ln(C)	-1.39(0.08)	3.07(0.80)	dln(C)	-2.54(0.00)	22.06(0.00)
	ln(p)	0.74(0.77)	1.41(0.97)	dln(p)	-3.22(0.00)	22.48(0.00)
	ln(U)	-0.84(0.20)	4.66(0.59)	dln(U)	-6.51(0.00)	28.33(0.00)
	ln(pgdp)	-2.73(0.00)	6.06(0.42)	dln(pgdp)	-3.15(0.00)	14.75(0.02)
Mid urbanization level group	ln(en)	0.148(0.60)	0.59(1.00)	dln(en)	-4.76(0.00)	29.46(0.00)
	ln(C)	-3.26(0.00)	15.17(0.99)	dln(C)	-6.93(0.00)	90.47(0.00)
	ln(p)	-6.86(0.00)	89.3(0.00)	dln(p)	-9.74(0.00)	124.3(0.00)
	ln(U)	-0.84(0.20)	25.98(0.77)	dln(U)	-11.9(0.00)	136.9(0.00)
	ln(pgdp)	-4.20(0.00)	30.42(0.55)	dln(pgdp)	-4.07(0.00)	52.15(0.01)
Low urbanization level group	ln(en)	4.48(1.00)	7.10(1.00)	dln(en)	-10.3(0.00)	127.19(0.00)
	ln(C)	2.12(0.98)	5.40(1.00)	dln(C)	-4.80(0.00)	61.10(0.00)
	ln(p)	-1.02(0.15)	19.40(0.62)	dln(p)	-5.02(0.00)	81.73(0.00)
	ln(U)	-2.50(0.00)	26.15(0.25)	dln(U)	-10.8(0.00)	109.47(0.00)
	ln(pgdp)	-0.49(0.31)	21.63(0.48)	dln(pgdp)	-4.36(0.00)	40.97(0.00)
	ln(en)	3.30(1.00)	7.32(1.00)	dln(en)	-8.17(0.00)	81.40(0.00)

From Table 3 above, we can see that in the original sequence, only some variables of the LLC test and ADF-Fisher test P value is less than 0.05, that is, these variables reject the null hypothesis. While the remaining test P values are greater than 0.05, can not reject the original hypothesis. The P value of the first order difference of each variable is less than 0.05, that is, the LLC test and the ADF-Fisher test of all variables reject the original hypothesis.

3.3.2 Panel cointegration test

In order to test whether there is a long-term equilibrium relationship between carbon emissions and the total population, urbanization rate and energy consumption intensity, we need to do the panel cointegration test. The unit root test shows that all the variables are first order stationary sequence, which is in accordance with the requirements of co integration test. So we can do the cointegration test. In this paper, the panel cointegration test using the Pedroni test method, the original assumption of the method is: there is no cointegration between the variables. The test results are shown in Table 4.

Table 4 Panelcointegrationtest results

Statistics	China	
	Model Four	Model Five
Panel pp	-3.87*** (0.00)	-3.09*** (0.00)
Panel ADF	-3.23*** (0.00)	-3.12*** (0.00)
Group pp	-15.49*** (0.00)	-7.92*** (0.00)
Group ADF	-3.93*** (0.00)	-2.83** (0.00)

Note: the number in brackets is the P value of statistic; *, **, *** respectively, reject the null hypothesis at a significant level of 10%, 5% and 1%.

From Table 4, we can see from the table that the four statistics of the P values are less than 0.05, indicating that these four statistics at 5% significant level are rejected null hypothesis. Therefore, we conclude that there exists a long-term equilibrium relationship between the carbon emissions of the model and the total population, urbanization rate and energy consumption intensity.

3.3.3 Model estimation results

After all the above tests, all variables are first-order stationary series, there is a long-term equilibrium relationship between the variables. Therefore, the model is estimated. The estimated results are shown in Table 5 below:

Table 5 Model estimation results

	China		High urbanization level group	Mid urbanization level group	Low urbanization level group
	Model Four	Model Five			
C	-7.0202*** (0.00)	-7.0698*** (0.00)	-3.6570*** (0.00)	-7.3403*** (0.00)	-7.0624*** (0.00)
ln(P)	0.9700*** (0.00)	0.9802*** (0.00)	0.6311*** (0.00)	1.0117*** (0.00)	0.9772*** (0.00)
ln(U)	0.1587*** (0.00)	0.2461*** (0.00)	0.0720** (0.00)	0.1186*** (0.00)	-0.0742*** (0.00)
(ln(U)) ²		-0.2571*** (0.00)			
ln(pgdg)	0.9954*** (0.00)	0.9854*** (0.00)	0.8500*** (0.00)	0.9952*** (0.00)	0.9918*** (0.00)
ln(en)	1.0261*** (0.00)	1.0137*** (0.00)	0.7918*** (0.00)	1.0144*** (0.00)	0.9985*** (0.00)
sample size	540	540	54	288	198
R ²	0.996732	0.996868	0.995562	0.998270	0.996444
Adj-R ²	0.996707	0.996838	0.994996	0.998246	0.996370

Note: the numbers in parentheses are the P values of statistics; *, **, *** means t values are significant at 10%, 5%, and 1%

The empirical study is to estimate the two models and different levels of urbanization in China. At the national level, the main research is to analyze the impact of various variables on carbon emissions. In the group level, the main research is to analyze the impact of different urbanization levels on the carbon emissions. In the estimation of each model, the R² and Adj-R² of the model are relatively large, and the estimated statistic P (except for individual variables) of each variable is significant at 1% level, so the model setting effect can be considered well.

3.4 Empirical analysis

3.4.1 The impact of urbanization on carbon emissions in China

From the above model estimation results, at the national level, both the model four or model five variables, the urbanization rate statistic value is positive, respectively 0.1587 and 0.2461, which indicates that China's urbanization level to promote carbon emissions. Similarly, other variables statistical values are all positive, showed that the total population, the per capita consumption of GDP and increase the intensity of energy will also promote carbon emissions.

From the estimated variables results show that energy consumption intensity of this variable is 1.0261, the maximum statistics, shows that the impact of energy consumption intensity of carbon emissions, energy consumption intensity changes 1%, carbon emissions will change 1.0261%. The intensity of energy consumption is an important index to measure the level of technology, the impact of energy consumption intensity of carbon emissions the model estimation results are mainly dominated by the service industry of the third industry in our country industrial structure is relatively low, the first industry represented by agriculture and manufacturing the representative of the second industry accounted for a relatively high in the industrial structure, which is an important cause of China's carbon emissions is high.

Model 5 was established to explore whether the relationship between urbanization and carbon

emissions has an inverse U-shaped relationship, so the expansion of the model based on the four, an increase of the square of urbanization. In Table 7, the statistic value of $\ln U$ is 0.2460, while the statistical value of $(\ln U)^2$ is -0.2571, which means that urbanization and carbon emissions have inverse U-shaped relationship.

3.4.2 Study on the impact of urbanization on carbon emissions in China

From table 5, the model estimation results can be seen in the study of China's Urbanization Impact on carbon emissions in different groups, the estimated coefficient group's urbanization rate of this variable difference, while other variables estimation results are basically the same. The estimated coefficient difference is mainly reflected in the high level group and the level of urbanization in the urban group has estimated variable rate of urbanization the urbanization rate of this variable is positive, while the estimated coefficient is low the level of urbanization was negative. This shows that with the acceleration of urbanization, low urbanization level group will curb carbon emissions, on the contrary, the level was higher in the level of urbanization and urban group will promote carbon emissions. But the high level of urbanization the urbanization rate estimation coefficient is 0.0720, the estimated coefficient is small, can be regarded as the level of urbanization to improve the small carbon emissions impact on the high level of urbanization group.

4 Conclusions

In this paper, the relationship between urbanization and carbon emissions in China is studied by combining the quantitative analysis with the quantitative analysis:

The total population, urbanization level, per capita GDP and energy consumption intensity will promote carbon emissions, and the intensity of energy consumption has the greatest impact on carbon emissions. The initial stage of development, with the advance of the urbanization process, carbon emissions gradually increased, but to a certain stage, the amount of carbon emissions will increase because of the urbanization level decreased gradually, suggesting that the relationship between the two with EKC curve. There are provincial differences in the impact of urbanization on carbon emissions. On the contrary, the high urbanization level group and the urbanization level group will promote carbon emissions, in which the high urbanization level group has less influence on carbon emission, while the low urbanization level group will inhibit the carbon emission.

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Research on the Impact of Government Organizational Culture on Paternalistic Leadership Based on Competitive Values Framework *

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Abstract Though the research on organizational culture and leadership is quite hot in academic field, research on the impact of government organizational culture on paternalistic leadership is not well explored. This research proposed hypotheses on the influence of four types of government organizational culture on the three dimensions of paternalistic leadership based on competing values framework. By using statistical methods, the impact relationship between them is proved in order to flourish the research results of both government organizational culture and leadership.

Key words CVF, Government, Organizational culture, Paternalistic leadership

1 Introduction

Service-oriented governmental construction is significantly contributed by highly effective governmental organization^[1]. Many researches suggest that, organizational performance is usually affected by several elements such as organizational cultures, leaders and so on^[2]. Researchers carry out researches on organizational cultures mainly from the perspectives of phenomenism and functionalism. Phenomenism pays special attention to the essence of organizational cultures, along with the researching approaches, deciding elements, management and transformation of organizational cultures. However, functionalism finds the relationship between culture and performance most intriguing. Therefore, they carry out researches mainly focusing on the influences of organizational cultures on organizational and individual performance. Besides, defining the classification and dimension of organizational cultures is also at the heart of academic researches. In terms of the classification of organizational cultures, Deshpande (1993) divides organizational cultures into market culture, bureaucratic culture, committee culture and team culture^[3]; Tsui (2006) divides it into “strong culture” and “weak culture” based on the extent of attention that enterprises pay to the value of organization^[4]; And Quinn (1991), with the Competing Values Framework as its theoretical base, divides it into team culture, development culture, bureaucratic culture and rational culture. This division is now widely recognized and adopted by the academia^[5]. And in terms of the dimension of organizational cultures, Tsui (2002) put forward a five-dimension value model of organizational cultures^[6]; Denison (1995) constructed a four-dimension character model of it^[7]; And Zheng Bo-yun (1993) established a nine-dimension model which includes some criteria and concepts such as being scientific and authentic, being client-oriented, and valuing integrity and credibility^[8].

In terms of leadership, after Bass (1985) put forward the transformational leadership theory and the transactional leadership theory^[9], the two theories has become the main-stream and classical theories in the leadership researches, correspondingly producing a great number of normative and empirical research findings. With the development and prosperity of family businesses in ASEAN countries in 1960s, scholars has begun to explore certain leadership behaviors which are related to the successes of those businesses. Westwood (1992) observed and researched into the leaders born in overseas Chinese families, and found that paternalistic leadership is a fatherly leadership with both authority and care combined^[10]. Fan Jingli and Zheng Bo-yun (2000) summarized the features of paternalistic leadership into three dimensions as authoritative leadership, merciful leadership and moral leadership^[11]. The fact that paternalistic leadership affects individual and organizational performance is also verified in abundant empirical experiments.

*Financed by National Social Science Found, Project Title: Research on the Relationship between Supply Side Reform and Sense of Access in China’s Basic Public Service (Project No.:16AZD029)

In general, researches concerning organizational culture and leadership have a relatively long history and rich findings. However, in recent years, owing to unreasonable construction of organizational cultures within government, leaders have been having conflicts with the organizational cultures. And such conflicts result in frequent internal losses and low efficiency. Surprisingly, seldom research concerning this phenomenon has been done. Therefore, under the theoretical guidance of Competing Values Framework, this paper will discuss multiple dimensions of influences and functions of different types of organizational cultures on paternalistic leadership within government on the premise of literature review. Then, this paper will also build up a hypothetical model to reflect the relationship between organizational culture within government and paternalistic leadership. Finally, by means of empirical analysis and experiments, this paper will unveil the interaction mechanism between the two subjects.

2 Research framework and theoretical assumptions

In order to verify the influences of organizational cultures within government on paternalistic leadership, this paper, on the premise of wide investigation on relevant theories and researches both at home and abroad, adopted the Competing Values Framework as its theoretical base, analyzed the features and forms of different types of organizational cultures^[12], referred to the dimension-dividing method of paternalistic leadership proposed by Zheng Bo-yun and others (2000), built up conceptual models to reflect the multidimensional influences of different organizational cultures on paternalistic leadership, and then, according to the analysis, put forward its theoretical assumptions. Competing Values Framework is also simplified as CVF. It mainly investigates the competing relationship and stiff conflicts which concern human organizations. CVF divides organizational culture into four types: team culture, development culture, bureaucratic culture and rational culture. This research defines paternalistic leadership according to the three-dimension model proposed by Zheng Bo-yun and others. This model refers to paternalistic leadership as a combination of merciful leadership, moral leadership and authority leadership. Among the three types of leadership, merciful leadership presents care to public servants and their families; moral leadership unites people and encourages the morale by demonstrating virtues and selflessness; and authority leadership shows government controls on public servants and demands full obedience to instructions.

On the basis of the definition of different dimensions of organizational culture and paternalistic leadership, and according to the built conceptual model, this paper further analyzed the features and forms of the four organizational cultures, and the fit situation between the culture and the leadership, and make relevant theoretical assumptions.

Team culture especially emphasizes the interpersonal relationship inside governmental organizations (abbreviated as GO in the paper). It is featured by its special attention to the inside environment of GO and the flexibility of management. Team culture-featured GO are more people-oriented by encouraging public servants to participate in regular management. And by building a communication bridge between leaders and public servants, team culture guarantees the enthusiasm and loyalty of the staff. In this kind of GO, leaders usually play the role of father and mentor, and they boost the morale of the staff by creating an open management atmosphere. In team culture, leaders prefer to adopt merciful leadership style, for it reflects the common interests of leaders and staff. Under such leadership, leaders usually show care to the work and life of staff in exchange for their full commitment to work and loyalty to the organization. Besides, team culture is not just about boosting morale and pledging allegiance, it also values moral leadership. By making themselves as examples in terms of virtues and morals, leaders can win respect, support and obedience from staff, thus lifting up the morale and strengthen team cohesion. However, authority leadership suggests otherwise. It puts stress on the absolute control on staff and 100% obedience to leaders, and advises against the open and flexible management atmosphere created by team culture, which will destroy the enthusiasm in participation and discourage the morale. Therefore, the theoretical assumptions about the 3-dimension effects of team culture on paternalistic leadership are as follows:

H1: Team culture has positive effects on merciful leadership;

H2: Team culture has positive effects on moral leadership;

H3: Team culture has negative effects on authority leadership.

Development culture is featured by its concentration on the outside environment and management flexibility of GO. GO dominated by development culture are actively dynamic. Within such GO, innovation and reform are the keys to organizational cohesion, and development is the unchangeable pursuit. In the context of development culture, government leaders mainly play the role of innovator and risk undertaker. These leaders pursue new ideas of development, and constantly seek support from the outside and acquire new resources. The stress on management flexibility usually guides the government to adopt merciful leadership style and moral leadership style because the two styles are beneficial to creating an easy and innovative management environment. Therefore, in this way, public servants not only will become more active, but also will strengthen their identification of the developing strategies of the government, and their sense of belonging and loyalty to the government. Authority leadership, on the contrary, is quite against new ideas and easy environment for innovation. So, under the background of development culture, leaders usually prefer not to adopt authority leadership as their managing style. Assumptions about the 3-dimension effects of development culture on paternalistic leadership are as follows:

H4: Development culture has prominently positive effects on merciful leadership;

H5: Development culture has prominently positive effects on moral leadership;

H6: Development culture has prominently negative effects on authority leadership.

Bureaucratic culture suggests that GO must have clear and stable hierarchy, strict regulations and rules, normative divisions and reasonable routines. Maintaining stability and normalization with GO is the main feature of this organizational culture. Under such cultural background, GO leaders play the role of partner or manager. Long-lasting stability inside GO is the basic index to measure work. Bureaucratic culture requests that leaders take effective measures to maintain stability and normalization. Merciful leadership constructs a stable relationship of interests between leaders and staff, while moral leadership helps strengthen cohesion inside GO, especially under the hierarchy culture. However, according to research findings by Fan Jingli and Zheng Bo-yun, in GO with stable structure and strict rules, if leaders manage organizations by means of authority leadership, they may arouse resistance and dissatisfaction, and then jeopardize the development of GO. Therefore, theoretical assumptions about the 3-dimension effects of bureaucratic culture on paternalistic leadership are as follows:

H7: Bureaucratic culture has prominently positive effects on merciful leadership;

H8: Bureaucratic culture has prominently positive effects on moral leadership;

H9: Bureaucratic culture has prominently negative effects on authority leadership.

Rational culture mainly focuses on the outside environment of GO, and emphasizes control of management. Rational culture is featured by goal management, goal setting, subdivision, accomplishment of tasks, improvement in productivity, functional performance and contextual salary. Within this cultural environment, leaders play the role of producer and technician. They set goals, assign tasks, set up standard for reward and punishment, which is significantly contributed by the accomplishment of tasks and goals. Profits and improvement in productivity is the pursuit of rational culture. The relatively coherent standard and stable relationship of interests agreed by leaders and public servants under merciful leadership and moral leadership is in accordance with the main features of rational culture. Besides, authority leadership also helps leaders effectively control the whole managing process, set goals and assign tasks. Therefore, assumptions about the 3-dimension effects of rational culture on paternalistic leadership are as follows:

H10: Rational culture has prominently positive effects on merciful leadership;

H11: Rational culture has prominently positive effects on moral leadership;

H12: Rational culture has prominently positive effects on authority leadership.

According to the information above, we can analyze the influences of GO culture on paternalistic leadership in the hypothetical model 1. In this model, full lines present positive relations while imaginary lines present negative relation.

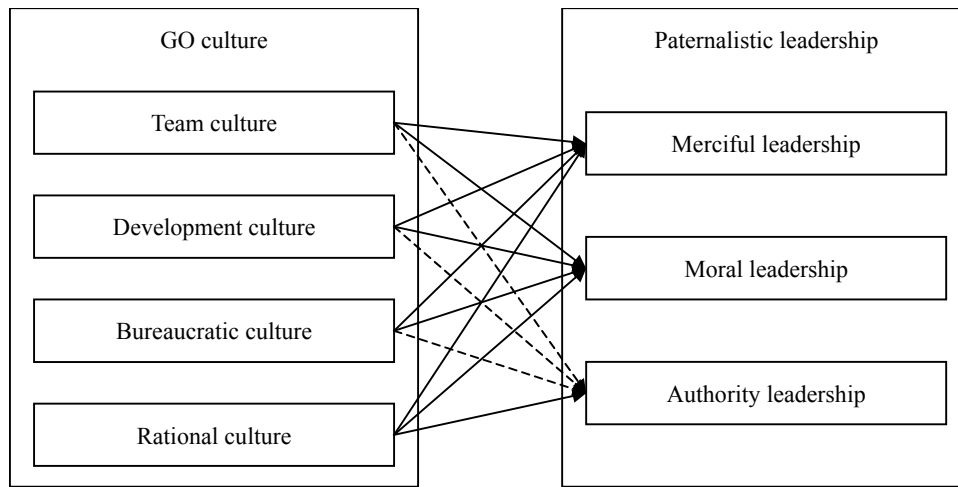


Figure 1 The hypothetical model of the influences of GO culture on paternalistic leadership

3 Research design

3.1 The establishment of scales

To verify those theoretical assumptions above, this paper carried out questionnaire spot checks about different organizational cultures and multidimensional paternalistic leadership behaviors. The questionnaire contains two parts. The first part is spot check about organizational culture, including team culture, development culture, bureaucratic culture and rational culture. This research adopted CVF-based questionnaire scale designed by Lau^[13]. This questionnaire scale includes 16 items, of which each four items measure one culture. The second part is spot check about three dimensions of paternalistic leadership behaviors, including merciful leadership, moral leadership, authority leadership. This research adopted the measurement scale of paternalistic leadership designed by Zheng Bo-yun and others^[14]. This scale contains 28 items, of which 11 items measure merciful leadership, 8 items measure moral leadership, 9 items measure authority leadership. This questionnaire check adopted the 5-point scoring system of Likert. Respondents with more points have stronger sense of identity.

Besides, correlation analysis were adopted to measure the relationship among 4 organizational cultures, among three dimensions of paternalistic leadership, and between organizational culture and paternalistic leadership. Meanwhile, multiple regression analysis were adopted to measure the extent of the influences, and examine the multicollinearity among variables.

3.2 Reliability and validity

The designs of questionnaires in this paper, compared with those of similar researches at home and abroad, adopted more developed theories and scales, which ensures the validity of two questionnaires. As for the measurement on the reliability of the two questionnaires, this paper adopted Cronbach's alpha and results can be seen in Table 1. In terms of the the analysis result of reliability, the coefficient values of both the cultures and the paternalistic leadership are above the critical value-0.6, indicating the high reliability of the questionnaires and spot check data.

Table 1 Questionnaire reliability

	Variables	Krone Baha reliability coefficient
GO culture	Team culture	0.626
	Development culture	0.817
	Bureaucratic culture	0.808
	Rational culture	0.784
Paternalistic leadership	Merciful leadership	0.933
	Moral leadership	0.741
	Authority leadership	0.81

3.3 General information about the spot check

This research adopted convenience sampling, and conducted the questionnaire survey in the cadre training center in S province and MPA educational institute of D university. From September 2016 to January 2017, the author delivered questionnaires to 700 people in both the training center and the institute. There are 458 valid questionnaires of all reclaimed ones. The reclaim rate is up to 65.4%. (see the basic information of respondents in Table 2)

Table 2 Basic information of respondents

		N	%
Gender	Female	264	57.6
	Male	194	42.4
Age	20-30 years old	218	47.6
	31-40 years old	166	36.2
	41-50 years old	61	13.3
	51-60 years old	11	2.4
	60 years old and above	2	0.4
Education	Junior College	145	31.6
	Undergraduate	267	58.3
	Master degree or above	42	9.2
	Others	4	0.9
Work experience	Less than 1 years	44	9.6
	1-3 years	103	22.5
	3-6 years	96	21
	6-9 years	71	15.5
	More than 9 years	144	31.4
Positions	Finance	45	9.8
	Public relations	46	10
	Office administration	75	16.4
	Professional technology	108	23.6
	Propaganda work	31	6.8
	Administrative law enforcement	39	8.5
	Others	114	24.9
Total (N)		458	100

4 Data analysis

4.1 Analysis of the correlation between different GO cultures and paternalistic leadership

This paper employed statistical software to analyze the correlation between different GO cultures and paternalistic leadership (see results in Table 3). From the correlation analysis inside one group, we can tell that there are prominent correlations among four organizational cultures and among three dimensions of paternalistic leadership. But each correlation value is smaller than the critical value (0.8) of multicollinearity among variables. Therefore, the conclusion that no multicollinearity can be found among variables of organizational cultures and paternalistic leadership can be drawn.

From the correlation analysis between groups, we can tell that merciful leadership is obviously related with all four cultures, and the correlation values respectively are 0.436, 0.501, 0.499 and 0.428, far exceeding those of other correlations. Moral leadership is also positively correlated with 4 cultures, and the values are 0.194, 0.228, 0.29 and 0.221. Authority leadership is negatively correlated with bureaucratic culture, and the value is -0.134, but it is not very closely correlated with rational culture. Therefore, under 4 different GO cultural backgrounds, GO leaders are more inclined to merciful leadership and moral leadership yet more resistant to authority leadership.

Table 3 Results of correlation analysis

		Team culture	Development culture	Bureaucratic culture	Rational culture	Merciful leadership	Moral leadership	Authority leadership
Team culture	Pearson Correlation	1	.629**	.563**	.448**	.436**	.194**	-.127**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.006
Development culture	Pearson Correlation	.629**	1	.770**	.619**	.501**	.228**	-.100*
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.033
Bureaucratic culture	Pearson Correlation	.563**	.770**	1	.635**	.499**	.290**	-.134**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.004
Rational culture	Pearson Correlation	.448**	.619**	.635**	1	.428**	.221**	-.063
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.178
Merciful leadership	Pearson Correlation	.436**	.501**	.499**	.428**	1	.476**	-.115*
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.014
Moral leadership	Pearson Correlation	.194**	.228**	.290**	.221**	.476**	1	.198**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
Authority leadership	Pearson Correlation	-.127**	-.100*	-.134**	-.063	-.115*	.198**	1
	Sig. (2-tailed)	.006	.033	.004	.178	.014	.000	

** The correlation coefficient was significant at the significance level of 0.01 (two-tailed test)

* The correlation coefficient was significant at 0.05 significance level (two-tailed test)

4.2 Multiple regression analysis of different GO cultures and paternalistic leadership

On the basis of the correlation analysis, this paper took GO cultures as independent variables, and paternalistic relationship as dependent variables. By multiple regression analysis, this paper further verified the extent of the influences of organizational cultures on paternalistic leadership. From the variance analysis in Table 4, we can know that the F-statistics of all three models are equally prominent, suggesting strong linear relations among three regression equations.

Table 4 Results of variance analysis

Models		Sum of square	df	Mean square	F	Sig.
1	Regression coefficients	78.632	4	19.658	50.393	.000(a)
	Residual error	176.713	453	.390		
	Total	255.345	457			
2	Regression coefficients	18.545	4	4.636	10.856	.000(a)
	Residual error	193.046	452	.427		
	Total	211.591	456			
3	Regression coefficients	5.361	4	1.340	2.745	.028(a)
	Residual error	221.172	453	.488		
	Total	226.533	457			

Model 1 a Predictor variable: (constant), Team culture, development culture, bureaucratic culture, rational culture

Dependent variable: Merciful leadership

Model 2 a Predictor variable: (constant), Team culture, development culture, bureaucratic culture, rational culture

Dependent variable: Moral leadership

Model 3 a Predictor variable: (constant), Team culture, development culture, bureaucratic culture, rational culture

Dependent variable: Authority leadership

As can be told from Table 5, the tolerance values of 4 organizational cultures respectively are 0.588, 0.332, 0.359 and 0.554, all exceeding 0.1, the critical tolerance value of multicollinearity. Besides, the VIF values respectively are 1.702, 3.011, 2.782 and 1.804, all below 10, the critical VIF value of multicollinearity. Accordingly, there is no multicollinearity among 4 organizational cultures. And as can be seen from the results of regression analysis, the regression coefficient values between merciful leadership and team culture, and between merciful leadership and bureaucratic culture respectively are 0.612 and 0.197. The concomitant probability value is less than 0.01. At the same time, the linear relations between merciful leadership and development culture, and between merciful leadership and rational culture are especially prominent at significant 0.05 level, of which the regression coefficient values are 0.170 and 0.125. Values mentioned above explains that GO leaders prefer merciful leadership more, which also conforms to the conclusion of correlation analysis. In chart5 and model 2, the regression coefficient value of moral leadership and bureaucratic culture is 0.248, and is prominent at the 0.01 significant level. However, the linear relations between moral leadership and other GO cultures are not prominent, indicating leaders' preference for moral leadership with GO with bureaucratic culture. Moreover, as can be told from the regression results in model 3, the linear relation between authority leadership and bureaucratic culture are prominent at the 0.1 level, and the two are negatively correlated. It has a regression coefficient value of -0.138, indicating leaders' resistant attitudes toward authority leadership are even more prominent in bureaucratic culture.

Table 5 Results of regression analysis

Models	Unstandardized coefficient		Standardized coefficient	t	Sig.	Collinearity statistics	
	Beta	Standard error	Beta			Tolerance	VIF
1	(Constant)	.703	.200		3.520	.000	
	Team culture	.139	.044	.162	3.176	.002	.588
	Development culture	.195	.078	.170	2.509	.012	.332
	Bureaucratic culture	.239	.079	.197	3.027	.003	.359
	Rational culture	.145	.061	.125	2.384	.018	.554
2	(Constant)	2.046	.209		9.789	.000	
	Team culture	.035	.046	.046	.777	.437	.588
	Development culture	-.031	.081	-.030	-.387	.699	.332
	Bureaucratic culture	.274	.083	.248	3.312	.001	.359
	Rational culture	.065	.064	.062	1.028	.305	.554
3	(Constant)	3.432	.223		15.358	.000	
	Team culture	-.075	.049	-.093	-1.528	.127	.588
	Development culture	.041	.087	.038	.477	.633	.332
	Bureaucratic culture	-.157	.088	-.138	-1.780	.076	.359
	Rational culture	.046	.068	.042	.676	.500	.554

Model 1 Dependent variable: Merciful leadership

Model 2 Dependent variable: Moral leadership

Model 3 Dependent variable: Authority leadership

According to the statistical analysis above, the verification results of assumptions about the influences of different organizational cultures on paternalistic leadership are given in Table 6. Seen from the results, merciful leadership-related assumptions H1, H4, H7 and H10 are successfully verified.

Assumptions H8 and H9 about the influences of bureaucratic culture on moral leadership and authority leadership are successfully verified. In addition, the rest of the assumptions fail the verification.

Table 6 Results of the hypothesis validation

Hypotheses	Results
H1: Team culture has positive effects on merciful leadership.	support
H2: Team culture has positive effects on moral leadership.	not support
H3: Team culture has negative effects on authority leadership.	not support
H4: Development culture has prominently positive effects on merciful leadership.	support
H5: Development culture has prominently positive effects on moral leadership.	not support
H6: Development culture has prominently negative effects on authority leadership.	not support
H7: Bureaucratic culture has prominently positive effects on merciful leadership.	support
H8: Bureaucratic culture has prominently positive effects on moral leadership.	support
H9: Bureaucratic culture has prominently negative effects on authority leadership.	support
H10: Rational culture has prominently positive effects on merciful leadership.	support
H11: Rational culture has prominently positive effects on moral leadership.	not support
H12: Rational culture has prominently positive effects on authority leadership.	not support

5 Conclusions and discussions

Basing on the review of research findings at home and abroad, this research put forward several theoretical assumptions about the influences of the organizational culture on paternalistic leadership, employed statistical software to carry out empirical analysis on the correlations between the two subjects, and reached the following conclusions:

First of all, every organization contains at least four organizational cultures. Seen from this paper, although there isn't any multicollinearity among the four cultures, they are still prominently correlated. Why? Because the definition of four organizational cultures is based on the CVF, which is built on a fundamental assumption that each organizational culture is at its ideal state and would present varied intensity in an organization. Therefore, the research findings in this paper, to some extent, verified the fundamental prerequisite of CVF, i.e., four organizational cultures coexist in the same organization, presenting varied intensities, and overvaluing any of the cultures would jeopardize the complete functioning of the whole and destroy the balance of CVF.

Second, the three dimensions of paternalistic leadership are relatively independent of each other. According to the survey, merciful leadership and moral leadership is positively and prominently correlated, while merciful leadership and authority leadership is negatively and prominently correlated. What's more, despite that moral leadership and authority leadership is positively related, it is still very hard to explain their correlation in theory. During the management practice, no leader adopted merciful leadership and authority leadership at the same time. What the paper concluded above accords with the research findings of Fan Jingli and Zheng Bo-yun, i.e., the three dimensions of paternalistic leadership are relatively independent of each other, and they cannot coexist in one leader but can coexist in one team.

Third, according to the verification of assumptions, assumptions about the influences of four organizational cultures on merciful leadership are all successfully verified as true. Therefore, we can come to a conclusion: Whatever organizational culture background the GO is under, leaders prefer merciful leadership more. And it turns out that this leadership style is most welcomed by all kinds of organizational cultures. Beside, assumptions about the influences of bureaucratic culture on moral leadership and authority leadership is also verified as true, showing that, in the context of bureaucratic culture, leaders prefer moral leadership more, and that leaders in GO with bureaucratic culture featured by stable structures and strict disciplines are, to some extent, resistant to authority leadership.

However, assumptions about the influences of team culture and rational culture on moral leadership didn't pass the verification. As a matter of fact, in recent years, the construction of service-oriented Chinese government has put public interests at the top of GO's pursuits. And in the process of pursuing public interests, flexibility management makes GO and leaders tend to ignore the constraints of administration ethics. Therefore, with the national economy skyrocketing, the construction

of ethics framework of GO and GO leaders and its influences will become the focus of future researches. At the same time, assumptions about team culture, development culture and rational culture on authority leadership also didn't pass verification, either. There is an important reason for it. In fact, with the construction of entrepreneurial government, especially the introduction of standardized performance management, GO featured by development culture and rational culture often manage public servants through quantizing targets and distributing. This type of quantitative management mode will gradually replace the authoritarian style of leadership. The harmonious relationship between public servants and leaders worshiped by team culture is also resistant to authority leadership.

These conclusions above create a new thinking pattern for the study of public management practice and public organizational behaviors. In terms of management practice, GO should adopt and cultivate organizational cultures according to the leadership style. Meanwhile, leaders should also adjust or adopt new leadership style according to existing organizational cultures, so as to precisely match organizational culture with the leadership, widely develop a sense of identify among public servants, and improve individual and team performance. In terms of academic research, organizational culture is not the only factor affecting leadership style and behaviors. Therefore, to further study the influences of other factors on leadership, especially paternalistic leadership, will help to enrich and expand research findings in the field of leadership and corporate accountability.

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Stability Analysis of PPP Mode in Infrastructure Construction Based on Evolutionary Game Theory *

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Abstract China put forward “the Belt and Road” initiative and established the Asian Infrastructure Investment Bank initially, making infrastructure construction indispensable. However, due to various reasons, infrastructure construction will meet a huge shortage of funds in the foreseeable future, which makes it significantly to introduce PPP Mode. But in China, the application of PPP Mode in the field of infrastructure construction is still in exploring stage, and the feasibility of large-scale promotion has not yet been fully demonstrated. This paper take the stability of PPP Mode in infrastructure construction as the research object, construct evolutionary game model by regarding the government, enterprise and social public (public consumer) as the game subject, analyze the survival of PPP Mode in system by introducing the Evolutionary Bionic Model and come to the equilibrium solutions. Finally, simulate the model by the MATLAB software, the simulation results showed that PPP Mode could survive in the system ultimately; the diffusion of PPP Mode is comprehensive influenced by the government, enterprise and social public; government’s tax preference to encourage social capital investment should follow proportion principle; effect rank of government’s measures is: tax preference > policies and legislation > establish institutions. The conclusions of this research are of reference values for infrastructure construction.

Key words Infrastructure construction, PPP Mode, Evolutionary game theory, Numerical simulation

1 Introduction

In 21-st Century, world economy shows the trend of globalization and regional integration. Various economic and commercial platforms, organizations and alliances have emerged worldwide. In March 2015, the Ministry of Commerce, Ministry of Foreign Affairs, and National Development and Reform Commission of China jointly issued the document *Vision and Action to Promote the Silk Road Economic Belt and the Twenty-first Century Maritime Silk Road*, infrastructure construction become the priority of “the Belt and Road”. However, the weak recovery of world economy led to fiscal tightening for infrastructure construction of many concerned countries, while China’s economy under the sustain increase pressure, too. As the basis of international cooperation, infrastructure plays a decisive role in the recovery of world economy as well as China’s sustainable development, while infrastructure construction will meet a huge funds requirement in the foreseeable future. Take Russia and Mongolia as example, Russia plans to implement or complete 92 huge infrastructure projects before 2025, which expect to cost \$196 billion; the *Grassland Road* of Mongolia also expect to cost \$50 billion. So, introduce PPP Mode to infrastructure construction is of great significance to alleviate the government financial pressure.

2 Diffusion mechanism of PPP Mode in infrastructure construction

PPP (Public-Private-Partnership) also known as “the cooperation model between government and social capital”. China’s Ministry of Finance defined PPP Mode as “a long-term cooperation relationship established in the public service fields”, and the return way is “governmental pay” and “users’ pay”^[1]. Different from the joint state-private ownership led by the government, in PPP Mode, relationship between government and social capital (enterprise) is cooperation partnership. When provide public services, they share risks and responsibilities, and improving efficiency by exerting their comparative advantages. The operation mechanism of PPP Mode is take government and enterprise or non-profit organization as partners, forming different legal relations, and different types

* Financed by the International Exchange Program of Harbin Engineering University for Innovation-oriented Talents Cultivation.

and levels of interests and responsibilities [2, 3], including public-private cooperation mechanism, market competition mechanism, special permission delegation mechanism and government credit guarantee mechanism [4].

In infrastructure construction, the main source of social capital is enterprise. Whose strategy, participate in infrastructure construction or not is affected by their own management state, the government policies and the public attitudes. If they choose to participate, they would make profits according to the PPP Mode agreements, but they must provide funds, technology and management at first. As the external environment manager, the government is the stakeholder, too, and whose behaviors would directly affect the enterprise [5]. And in the process of cooperation, there would be some contradictions between the government, enterprise and social public, such as the benefit distribution confliction, quality standard and environmental awareness differences. Which means, PPP Mode in infrastructure construction affected by the social public, either.

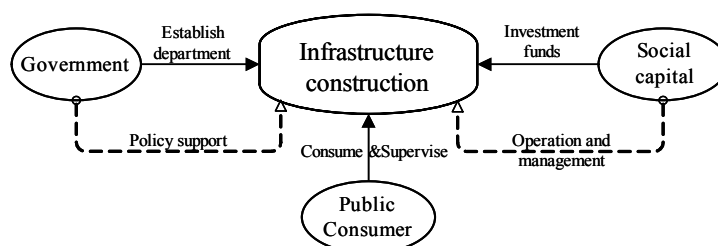


Figure 1 Structure diagram of PPP Mode in infrastructure construction

According to the ecology theory, biological population will spread from the birthplace to the surrounding areas under the influence of the complex environment, showing the phenomenon of “nature choice” and only the fittest can survive [6]. This rule also suitable for the survival of PPP Mode. For the constant change of macroscopic and microscopic investment environment, attitudes of the government, enterprise and social public toward PPP Mode in infrastructure construction are changing. The government decide whether to introduce PPP Mode or not according to the budget; the enterprise decide whether to invest or not according to their financial situation; while the public attitudes mainly affected by tax capacity and revenue rate. Thus, every body’s strategy would be affected by the two others, different strategies of each body would lead new evolution, make PPP Mode show a dynamic evolution process [7].

3 Evolutionary Game Model of PPP Mode in infrastructure construction

3.1 Construct evolutionary game model

Based on the analysis above, we put forward the hypothesis as follows:

H₁: Treat a certain area as an opening system, where the government, enterprise and social public are independent participants to get information and make decisions with bounded rationality.

H₂: Each participant has two kinds of alternative strategies: positive and negative, thus, introduce PPP Mode, invest funds, supervise, or not. And the probability of the government, enterprise and social public were: $P_g\{\text{positive, negative}\}=[x, 1-x]$, $P_e\{\text{active, passive}\}=[y, 1-y]$, $P_p\{\text{in favor of, do not in favor of}\}=[z, 1-z]$. Both the variable “x”, “y” and “z” follow the function take time (t) as the abscissa.

H₃: Classified the measures of the government into three forms according to the stage and extent of PPP Mode evolution in infrastructure construction: make supported policies and regulations, establish relevant institutions, and give tax preference [8]. And the executive intensity were α , β and γ , the executive cost were αO , βT and γM .

H₄: The enterprise’s strategies affect PPP Mode in infrastructure construction most. Namely, it would not bring benefits to the government and social public if the enterprise do not participate, even the government take positive strategy; while the enterprise could also bring benefits in other ways even the government take negative strategy.

According to the hypothesis above and the analysis steps of evolutionary game theory, construct the benefit matrix of the government, enterprise and social public as Table 1 and Table 2:

Table1 benefit matrix when social public participate in supervision (P_p=z)

	The government active			The government negative		
	Government benefit	Enterprise benefit	Social public benefit	Government benefit	Enterprise benefit	Social public benefit
Enterprise active	$P_1 - \alpha O - \beta T - \gamma M - C_1$	$P_2 + \Delta P + \Delta P_2 + \alpha O + \beta T + \gamma M - C_2$	$P_3 + \alpha O + \beta T + \gamma M - C_3$	$P_1 - \alpha O - \beta T - \gamma M$	$P_2 + \Delta P + \Delta P_2 + \alpha O + \beta T + \gamma M - C_2$	$P_3 + \alpha O + \beta T + \gamma M - C_3$
Enterprise passive	$P_1 - \alpha O - C_1$	$P_2 + \alpha O$	$P_3 + \alpha O$	$P_1 - \alpha O$	$P_2 + \alpha O$	$P_3 + \alpha O - C_3$

Table 2 benefit matrix when social public does not participate in supervision (P_p=1-z)

	The government active			The government negative		
	Government benefit	Enterprise benefit	Social public benefit	Government benefit	Enterprise benefit	Social public benefit
Enterprise active	$P_1 - \alpha O - \beta T - \gamma M - C_1$	$P_2 + \Delta P + \Delta P_2 + \alpha O + \beta T + \gamma M - C_2$	$P_3 + \alpha O + \beta T + \gamma M$	$P_1 - \alpha O - \beta T - \gamma M$	$P_2 + \Delta P + \Delta P_2 + \alpha O + \beta T + \gamma M - C_2$	$P_3 + \alpha O + \beta T + \gamma M$
Enterprise passive	$P_1 - \alpha O - C_1$	$P_2 + \alpha O$	$P_3 + \alpha O$	$P_1 - \alpha O$	$P_2 + \alpha O$	$P_3 + \alpha O$

If enterprise does not invest, its benefit is P_2 , it would increase ΔP if it invests. If government and social public both take active strategy, benefit of enterprise would increase ΔP_1 . If government active while social public negative, benefit of enterprise would increase ΔP_2 . If government active while social public negative, benefit of enterprise would increase ΔP_3 . If government and social public both negative, benefit of enterprise would increase ΔP_4 . The cost of government would increase C_1 when it active compared with negative, while the cost of enterprise would increase C_2 and social public would increase C_3 . If the administrative costs of them are both 0 if they both negative, and the benefit of government and social public is ΔP_1 and ΔP_3 if they both active. If enterprise negative, benefits of enterprise and social public are only the policy support: αO .

From Table1 and Table 2 we can know that:

If the government taking active strategy, its benefit is:

$$U_{11} = y(P_1 - \alpha O - \beta T - \gamma M - C_1) + (1 - y)(P_1 - \alpha O - C_1) \quad (1)$$

If the government taking negative strategy, its benefit is:

$$U_{12} = y(P_1 - \alpha O - \beta T - \gamma M) + (1 - y)(P_1 - \alpha O) \quad (2)$$

The benefit exception is:

$$U_1 = xU_{11} + (1 - x)U_{12} \quad (3)$$

If the enterprise invests funds, its benefit is:

$$U_{21} = x(1 - x)(P_2 + \Delta P + \alpha O + \beta T + \gamma M - C_2) + xz\Delta P_1 + z(1 - x)\Delta P_2 + x(1 - z)\Delta P_3 + (1 - x)(1 - z)\Delta P_4 \quad (4)$$

If the enterprise does not invest funds, its benefit is:

$$U_{22} = P_2 + \alpha O \quad (5)$$

The benefit exception is:

$$U_2 = yU_{21} + (1 - y)U_{22} \quad (6)$$

If the social public participate in supervision, its benefit is:

$$U_{31} = y(\beta T + \gamma M) + P_3 + \alpha O - C_3 \quad (7)$$

If the social public do not participate in supervision, its benefit is:

$$U_{32} = y(\beta T + \gamma M) + P_3 + \alpha O \quad (8)$$

The benefit exception is:

$$U_3 = zU_{31} + (1 - z)U_{32} \quad (9)$$

3.2 Introduce diffusion model in PPP Mode

When the government taking active strategy, the enterprise has two choices: invest or not, using J_P and J_N to represent the benefit of this two strategies. Using R_1 and R_2 to represent the strength of institution establishment and sum of tax preference. Using $\pi_{NP} = \frac{K_N}{K_P}$ to represent the prevention ratio of enterprise's active strategies to the negative, which was mainly influenced by enterprise's profitability^[9]. Using $\pi_{PN} = \frac{K_P}{K_N}$ to represent the prevent ratio of PPP Mode to none PPP Mode, which was mainly influenced by public consumer's acceptance of social capital. According to the Evolution Bionic Model^[10], the projects' survival situation influenced by the enterprise's strategies can be expressed as:

$$\begin{cases} \frac{dJ_P(t)}{d(t)} = R_1 \cdot J_P \cdot \left(1 - \frac{J_P}{K_P} - \pi_{PN} \cdot \frac{J_N}{K_P}\right) \\ \frac{dJ_N(t)}{d(t)} = R_2 \cdot J_N \cdot \left(1 - \frac{J_N}{K_N} - \pi_{NP} \cdot \frac{J_P}{K_N}\right) \end{cases} \quad (10)$$

3.3 Analyze the diffusion stability of PPP Mode

To meet the economic development, government would adjust the investment in infrastructure construction continuously, so π_{PN} and π_{NP} would change by the same time, and "survival" of PPP Mode would also evolve and come to a steady state gradually. In addition, under the guidance of the government, there are asymmetries between the three body when they acquire information, labor and other resources. In the game process in infrastructure construction, the three body would adjust their strategies by continuous learning, trial and error, and refer to the historical experience or the other two's strategy adoption. So, the revolution of x, y, z exhibit the dynamic replication of evolutionary game theory. The dynamic replication equation of the three body is:

$$f(x) = \frac{dx}{dt} = x(U_{11} - U_1) = x(1-x)(2y-1)C_1 \quad (11)$$

$$f(y) = \frac{dy}{dt} = y(U_{21} - U_2) = y(1-y)(U_{21} - U_{22}) \quad (12)$$

$$f(z) = \frac{dz}{dt} = z(U_{31} - U_3) = -z(1-z)C_3 \quad (13)$$

The three equations above described the dynamic process when the government, enterprise and social public adjusting their strategies. When their strategies gradually reached a steady state, means there is an effective Nash equilibrium in the system. To come out the new balance point when the enterprise invests under the situation than the government provide adequate supporting policies, set up organizations actively, and give tax preference ultimately, let be:

$$\begin{cases} f(x) = 0 \\ f(y) = 0 \\ f(z) = 0 \end{cases} \quad (14)$$

Solving Eqs. (14) we can know that there are 8 equilibrium points: (1,1,1), (1,1,0), (1,0,1), (1,0,0), (0,1,1), (0,1,0), (0,0,1), (0,0,0). Obtain the first derivative of the three party's dynamic replication equations:

$$f'(x) = (1-2x)(2y-1)C_1 \quad (15)$$

$$f'(y) = (1-2y)(U_{21} - U_{22}) \quad (16)$$

$$f'(z) = (2z-1)C_3 \quad (17)$$

The Jacobi matrix of the system is:

$$J = \begin{bmatrix} (1-2x)(2y-1)C_1 & 0 & 0 \\ 0 & (1-2y)(U_{21}-U_{22}) & 0 \\ 0 & 0 & (2z-1)C_3 \end{bmatrix} \quad (18)$$

The determinant of the Jacobi matrix is:

$$DetJ = (1-2x)(2y-1)C_1 \times (1-2y)(U_{21}-U_{22}) \times (2z-1)C_3 \quad (19)$$

The trace of the Jacobi matrix is:

$$TrJ = (1-2x)(2y-1)C_1 + (1-2y)(U_{21}-U_{22}) + (2z-1)C_3 \quad (20)$$

According to the Evolution Game Theory^[9] and mathematical derivation we can know that if $f'(x) < 0$, $f'(y) < 0$, $f'(z) < 0$, formula (14) is the State Stable Strategy (ESS) of the three body. And the evolution phase of stability of the government strategy is relate to the linear $(2y-1)C_1 = 0$, what of the enterprise is relate to the curve $U_{21}-U_{22} = 0$, what of the social public is relate to the linear $(2z-1)C_3 = 0$.

To find out the balance situation when the enterprise improving its activity in the t time, namely, strategy survival of the system and benefit of the enterprise will no longer change whether it invest funds or not, let be $\frac{dJ_P(t)}{d(t)} = \frac{dJ_N(t)}{d(t)} = 0$, thus:

$$\begin{cases} \frac{dJ_P(t)}{d(t)} = R_1 \cdot J_P \cdot \left(1 - \frac{J_P}{K_P} - \pi_{PN} \cdot \frac{J_N}{K_P} \right) = 0 \\ \frac{dJ_N(t)}{d(t)} = R_2 \cdot J_N \cdot \left(1 - \frac{J_N}{K_N} - \pi_{NP} \cdot \frac{J_P}{K_N} \right) = 0 \end{cases} \quad (21)$$

From formula(21)we can know that there are four equilibrium point: $A(0, 0)$, $B(0, K_P)$, $C(K_N, 0)$, $D\left(\frac{K_P(1-\pi_{PN})}{(1-\pi_{PN} \cdot \pi_{NP})}, \frac{K_N(1-\pi_{NP})}{(1-\pi_{NP} \cdot \pi_{PN})}\right)$.

A means the enterprise do not take active strategy, nor take passive strategy in all infrastructure construction projects; B means the proportion of the projects is K_P which the enterprise take active strategy, while the rest do not take active strategy, nor take passive strategy; C means the proportion of the projects is K_N which the enterprise take active strategy, the rest do not take active strategy, nor take passive strategy; D means the proportion of the projects is $\frac{K_P(1-\pi_{PN})}{(1-\pi_{PN} \cdot \pi_{NP})}$ which the enterprise take active strategy, while the proportion of the projects is $\frac{K_N(1-\pi_{NP})}{(1-\pi_{NP} \cdot \pi_{PN})}$ which the enterprise take passive strategy. According to the hypotheses, point A , B and C have no meaning.

For the enterprise, if just a few projects absorb social capital, invest tendency would be repressed by the non-invest tendency. When the number of the projects which the enterprise invests funds gradually increased to an equilibrium state, means the proportion of the projects which the enterprise takes active strategy achieved the saturated state, there are line L and M :

$$\begin{cases} L(J_P, J_N) = 1 - \frac{J_P}{K_P} - \pi_{PN} \cdot \frac{J_N}{K_P} = 0 \\ M(J_N, J_P) = 1 - \frac{J_N}{K_N} - \pi_{NP} \cdot \frac{J_P}{K_N} = 0 \end{cases} \quad (22)$$

In the rectangular coordinate system take J_P as the X axis and J_N as the Y axis, when L and M do not intersect in the first quadrant, there may be two distributions as Figure 2 and Figure 3:

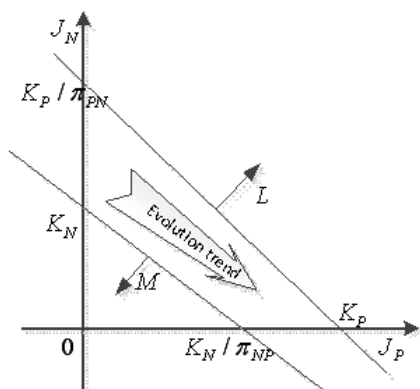


Figure 2 Survival and evolution of the enterprise invest funds (The first equilibrium solution)

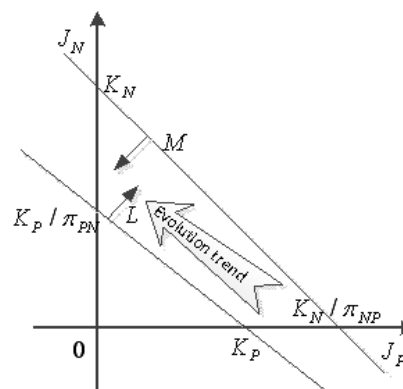


Figure 3 Survival and evolution of the enterprise do not invest funds (The second equilibrium solution)

In the cases shown in Figure 2 and Figure 3, because the government and social public always have different attitudes in infrastructure construction, enterprise's strategies would have some advantages in all situations. According to the geometric properties of line L and M , the primitive function value outside the line is positive while inside is negative. Value of L and M are relating to the benefit of the enterprise strategies. According to the properties of two order derivatives, we can know that outside the line means the number of projects which enterprise take active or passive strategy were decrease, while inside the line were increase. So, when the government introduce PPP Mode, if they increase policy support, establish relevant organizations, give tax preference and other financial support, and the social public take part in supervision actively, number of projects the enterprise take active strategy will increase, and diffusion of PPP Mode's evolution situation is shown as Figure 2.

While if the government and social public take the same attitude in all infrastructure construction projects, survival of enterprise's strategies would compete constantly, and restrain each other's maximal capacity in the system. At last, one survives and another perish. But in fact, the government and the social public would not take the same attitude in all projects, there must be the situation that one active while another negative. In that way, line L and M will intersect in the first quadrant, survival of enterprise's strategies can be described like Figure 4 and Figure 5:

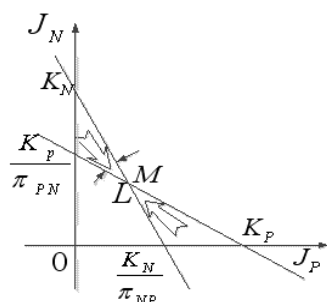


Figure 4 The third equilibrium solution

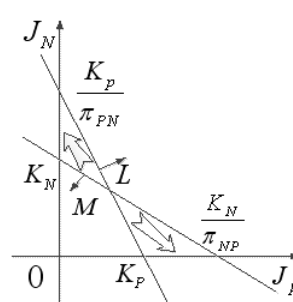


Figure 5 The fourth equilibrium solution

Figure 4 shows that in infrastructure construction, due to the attitude inconsistencies of the government and social public, number of the projects which enterprise take different strategies will achieve a relative equilibrium ultimately through compete constantly and restrain each other's system maximal capacity. Thus, just a part of the projects will adopt PPP Mode. Similarly, Figure 5 shows that the game result is two strategies of the enterprise will be perished finally, which is contradict with the hypotheses, and did not exist.

4 Simulation Analysis

To exhibit the evolution of PPP Mode when the government, enterprise and social public taking different strategies, we use MATLAB to simulate the evolution of the game model. If the initial x, y, z was 0.5, the maximum capacity of the system is 500 ($K=500$). Respectively, simulate the main body's attitudes, policy support, institution establishment and tax preference of the government.

4.1 Simulation of main body's attitude

Simulation of the participation behavior of the government, enterprise and social public. If $O=270, T=250, M=300, P_1=400, P_2=500, P_3=350, C_1=100, C_2=450, C_3=50, \Delta P_1=100, \Delta P_2=50, \Delta P_3=75, \Delta P_4=20$, the time step $t=0.005$, so the participation of the main body is as Figure 6. The height on z axis of the three lines from the highest to the lowest respectively on behalf of the government, enterprise and social public. We can know: final stable strategies of the three party game are both the active strategy; strategy evolution of the enterprise lags behind the government, and which of the social public lags behind the enterprise; distribution of the government and the enterprise is denser at first, and then become more sparse, while the social public is on the contrary, indicate that the main body has different frequency to adjust their strategies in different period of the introduction of PPP Mode in infrastructure construction, that's to say, the frequency of the government and the enterprise from high to low, while the social public from low to high.

4.2 Influence simulation of policy support coefficient α

Analyze the influence of policy support coefficient α on system evolution. If α were 0.1, 0.3, 0.5, 0.7, 0.9, simulation of the system evolution is as Figure 7. We can know that the stronger the government policy support is, the more conducive the system come to adopt PPP Mode eventually. In addition, when $\alpha < 0.5$, the final evolution of the system is PPP Mode perished; when $\alpha > 0.5$, equilibrium of the system is all the projects adopt PPP Mode. So, relevant policies and regulations of the government have an apparent influence on the introduction of PPP Mode in infrastructure construction.

4.3 Influence simulation of establish institution coefficient β

Analyze the influence of establish institution coefficient β on system evolution. If β were 0.1, 0.3, 0.5, 0.7, 0.9, simulation of the system evolution is shown as Figure 8. It is concluded that with the government set to increase investment in establish institutions, survival speed of the PPP Mode in system will accelerate significantly. At the same time, we can see that influence of the strength coefficient of establish institutions on system evolution is not obvious, indicate that in practice, the government set up corresponding function organizations would not have decisive influence on system evolution, just a kind of auxiliary measures in the introduction of social capital.

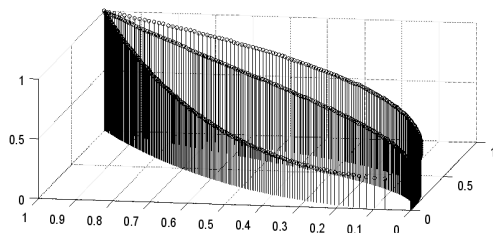


Figure 6 Main body's participation evolution trend

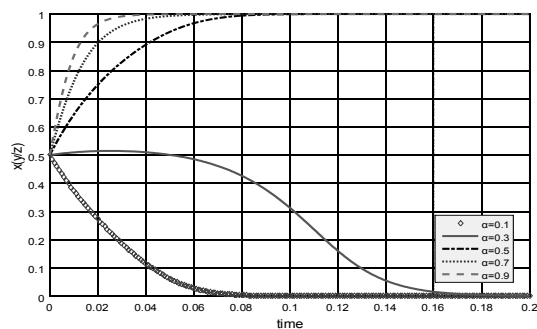


Figure 7 Influence of α on system evolution

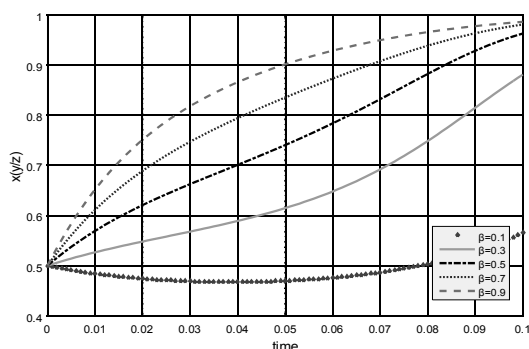


Figure 8 Influence of β on t system evolution

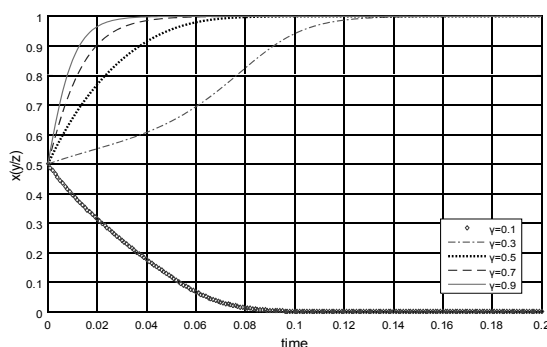


Figure 9 Influence of γ on system evolution

4.4 Influence simulation of tax preference coefficient γ

Analyze the influence of tax preference coefficient γ on system evolution. If γ were 0.1, 0.3, 0.5, 0.7, 0.9, simulation of the system evolution is shown as Figure 9. We can know that if the government increase tax preference on the enterprise who participate in infrastructure construction in the system, survival evolution speed of the enterprise strategy that to invest funds will accelerate. That's to say, tax preference will encourage the enterprise to participate in infrastructure construction, but the amount of tax preference should be limited because it can aggravate the financial burden on the government.

5 Conclusions

After demonstrated the feasibility of introduce PPP Mode in infrastructure construction, this paper analyzed the relationship between the government, the enterprise and the social public, and their influence on PPP Mode diffusion in the system. Then, using evolutionary game theory to build a model take the government, the enterprise and the social public as the game body. Next, derived the three-body game benefit matrix, and introduced the evolution bionic model; calculated the equilibrium solutions and draw the main body's different strategies on the evolution of PPP Mode. Finally, simulated the system by using MATLAB, and came to the following conclusion: first, the diffusion of PPP Mode in infrastructure construction is influenced by the government, the enterprise and the social public; second, if the three-body take natural attitude in the initial, PPP Mode will eventually survive in the system after the evolution of a certain period of time; third, the support of policy and legislation, establishment of institutions and tax preference of the government have positive incentive effect on the enterprise to participate in infrastructure construction, but the tax preference should follow the principle of moderation; fourth, under the common initial conditions, the government measures' incentive to enterprise is: tax preference > policy and legislation > establish institutions.

Because the government, enterprise and social public are all indispensable in infrastructure instruction, so they should play a good part of themselves to make the PPP Mode exist and diffuse favorably. To the government, in infrastructure construction, they should be cautious in making policies and regulations to ensure the funds amply and the sources adequately, to create a harmony atmosphere for PPP Mode. To the social public, as the direct beneficiaries of infrastructure, they have duty to supervise the behavior of the government and the enterprise, and at the same time, because of their complicated social network nodes, they should participate in supervision actively to safeguard their own interests and reduce rent-seeking and resource wastes. To the enterprise, as the indispensable component of PPP Mode in infrastructure construction, they should make full use of the resources provided by the government, and participate in infrastructure construction actively to fulfill its social responsibilities. This study has reference significance to alleviate the finance pressure in infrastructure construction under the background of "The Belt and Road", and to the participants of PPP Mode.

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A Study on the Psychological Dimension of the Rural-urban Migrant Workers' City Embeddedness

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Abstract Based on the theory and approach of “job embeddedness”, this study constructs a psychometric tool of the rural-urban migrant workers’ urbanization with five psychological dimensions. The results show that the psychological dimension of the rural-urban migrant workers’ city embeddedness is composed of five factors, including sense of pressure, sense of welfare, sense of linkage, sense of support and sense of gap. The reliability and validity of the questionnaire are tested and both of them are acceptable. The status quo of the Chinese rural-urban migrant workers’ urbanization is described by employing this tool for measurement.

Key words The rural-urban migrant workers, city embeddedness, Urbanization

1 Introduction

The phenomenon of migrant workers’ urbanization has already aroused wide attention and in-depth study of scholars. Jiang Li-hua described the social exclusion and marginalization of migrant workers in the process of changing to the citizen, mainly used two adaptation models: self-isolation and active integration (Jiang Li-hua, 2003^[1]). Chen Ying-fang started with the concept of “civil rights”, and analyzed the institutional background and identity construction mechanism of the rural migrants to become “non-citizen” (Chen Ying-fang, 2005^[2]). Cai He further studied the migrant workers’ willingness to permanent migrate and the influencing factors of migrant workers’ urban identity (Cai He and Wang Jin, 2007^[3], Cai He and Cao Zhi-gang, 2009^[4]).

Most of the above studies on the process of urbanization of migrant workers or the rural-urban migrant workers have discussed the causes, status quo, influencing factors, core contradictions and development trend of migrant workers from the perspectives of philosophy, economics, sociology, public management and other disciplines. Related research on migrant workers payed more attention to the occupational or economic level of city embeddedness than the psychological level. This study intends to examine the urbanization process of the rural-urban migrant workers from the perspective of psychology, and to evaluate the status quo of the rural-urban migrant workers from the microcosmic individual and social psychological level, in order to provide a psychological perspective and methods to help the rural-urban migrant workers achieve urbanization more successful.

As a research paradigm of the new economic sociology, the “embedded” theory is proposed by American sociology Granovetter (Granovetter, 1985^[5]). The theory holds that any individual is not isolated, they are embedded in a specific social structure and network of relationships, with the help of a specific social network, including information, emotional, service and other aspects of the resources, to obtain a wide range of social support (Li Xiang, 2014^[6]), thus to achieve a strong connection with the social environment and even integration. The process of the rural-urban migrant workers’ urbanization is a process that is loosely embedded by the initial superficial exposure to repeated temptations, and then completely rooted in the urban living environment. It is not a simple fit or not into the form, but a gradual embedded contact process, this process may be long and tortuous, and there are a retrogression and repeated in the middle. Therefore, the use of “city embeddedness” to describe the process of the rural-urban migrant workers’ urbanization is undoubtedly objective and accurate.

The core concept of embedded research in the field of organizational behavior is “job embedded”. The research on job embedded not only has a unified conceptual definition, but also establishes a powerful measurement model and develops the corresponding measurement tool. Therefore, the research on the embedding of the rural-urban migrant workers can draw lessons from the research results of job embedded. The concept of job embedded was originally proposed by the American

psychologist Mitchell (Mitchell, 1985^[7]). And introduced to the field of the initiative to leave of the employee (Yuan Qing-hong, Chen Wen-chun, 1985^[8]). The researcher constructed three key analytical dimensions of job embedded, namely, link, fitting and sacrifice (Liang Xiao-wei, Liao Jian-qiao and Zeng Qing-hai, 1985^[9]).

At present, the rural-urban migrant workers' urbanization or the degree of it are that people are more interested in. To solve this problem, we need to construct scientific and reasonable evaluation indicators and effective assessment tools. Liu Chuan-jiang established the index system of migrant workers' urbanization process (Liu Chuan-jiang and Chen Jian-lin, 2008^[10]). Zhou Mi establish the indicators of the degree of rural-urban migrant workers' urbanization from the perspective of human capital and social capital, the degree of urbanization and inhibition of the public of the rural-urban migrant workers in the sample area were measured by using the biprobit model which was recognizable by demand (Zhou Mi, 2011^[11]). Based on the new characteristics of the rural-urban migrant workers, Li Chang-xin constructed a five-in-one citizenship measurement index system which composed of five dimensions: economic conditions, political participation, cultural quality, social relations and psychological identity (Li Chang-xin, 2013^[12]). The above indicators are based on objective indicators, to a certain extent, can objectively reflect the state of the rural-urban migrant workers' urbanization, but they fail to more deeply involved in the process of urbanization in the psychological state.

Inspired by the theory of job embedded, this study proposes the concept of city embeddedness and defines it as the sum of the forces that make migrant workers stay in the city, including job hours, community participation, psychological adaptation, benefits calculation and other factors. Whether it is the interaction between employees and the organization or the interaction between the rural-urban migrant workers and the city, the embedded nature is embodied. Therefore, this study holds that the basic dimensions of city embeddedness are similar to the job embedded, including three core elements: link, fitting and sacrifice, the measurement of urban embedded can be directly assessed by self-rating scale, the measurement results can reflect the state of the rural-urban migrant workers' urbanization, it can also predict the development trend of embedded interaction.

2 Research methods

2.1 Subjects

The rural-urban migrant workers in Chengdu, Chongqing, Guangzhou, Shenzhen, Wuhan, Beijing and Shanghai, as well as urban youth with their peers. A total of 1066 questionnaires were collected, of which 1011 data were valid and the effective data rate was 94.8%. The proportion of men and women was 66% and 34% respectively. The average age was 26.48 years old. The proportion of "70s", "80s" and "90s" were 7.8%, 42.5% and 49.7% respectively. The number of people who were born with the rural household registration were about 710, accounting for 74% of the total sample. The proportion of academic level for high school, secondary school or vocational level was the highest (about 30%). Followed by junior high school (20.5%), specialist or vocational (19.7%), and general undergraduate (19.4%).

2.2 Project preparation

Job embedded reflects the factors that affect the organization of internal and external (community) of people's retention or turnover relationships, including three psychological dimensions: link, fitting and sacrifice. The greater degree of association between people and work and their communities, the higher degree of fitting, the greater loss from the existing of work and the community environment, the less likely to leave. We assume that, similar to job embedded, city embeddedness also includes three psychological dimensions: link, fitting and sacrifice, and conducting in-depth interviews around these three dimensions provides material for the preparation of the initial questionnaire items. A total of 32 items are prepared with a review of the literature, a questionnaire with the same research area and an in-depth interview with the rural-urban migrant workers. Each item uses 1 (very inconsistent) ~ 5 (very consistent) Likert Five-point scale form.

2.2 Statistical processing

The survey data are randomly divided into two halves, half used as exploratory factor analysis,

and the other half of the data are used to cross-sample reliability and validity analysis. Survey data uses SPSS 22.0 for windows and AMOS 7.0 for windows for processing.

3 Results and analysis

3.1 Test reliability and validity of the questionnaire

3.1.1 Exploratory factor analysis

Using SPSS 22.0 for windows for exploratory factor analysis. The results show that the KMO value is equal to 0.909, and the Bartlett spherical test $\chi^2 = 7110.147$ ($p < 0.001$) indicates that the data is suitable for exploratory factor analysis. Using principal component analysis and variance maximal orthogonal rotation method, five common factors with eigenvalue greater than 1 are extracted. Deleting three items with classified logic confusion and items whose factor load of less than 0.40, retaining a total of 29 items, the factor load matrix and named in Table 1.

Table 1 City embedding first - order exploratory factor analysis load matrix

Items	Dimensions				
	Sense of pressure	Sense of welfare	Sense of linkage	Sense of support	Sense of gap
I feel helpless when I am in trouble in the city	0.72				
Working in the city makes me feel that I'm in a weak position	0.63				
Working in town to separate me and my family that makes me feel painful	0.62				
I paid much more in the city than what I gain	0.60				
Living in the city I feel people are always very cold	0.60				
Living in the city makes me feel a lot of economic pressure	0.59				
Living in the city, I lack a sense of belonging	0.59				
My job in the city is unstable and the outlook is uncertain	0.55				
Employment, medical treatment, difficult to go to school and high prices of the house, making me feel there is a lot of pressure to settle in the city	0.47				
I have already felt the good living conditions in the city (eg, employment, education, medical, culture, transportation, entertainment, etc.)		0.65			
I believe that the city will eventually bring me more convenient and more comfortable life		0.63			
Compared to rural areas, the city is in line with my future development needs		0.62			
I am more and more adapted to the city's lifestyle		0.62			
The life in the city widened my horizons		0.61			
The city can give me a better development prospects and platform		0.59			
Buying a house in the city is an important goal for me		0.56			
My city life experience is getting richer		0.53	0.47		
I have a lot of important life experiences that happen in the city			0.73		
I have a lot of important connections in the city			0.73		
I often participate in various social communication activities in the city			0.54	0.42	
I have made a lot of good friends in the city		0.41	0.51		
The government's policy support gives me some confidence to live in the city				0.68	
Living in the city I get a lot of strong social support				0.64	
Living in the city has improved my social status				0.57	

Items	Dimensions				
	Sense of pressure	Sense of welfare	Sense of linkage	Sense of support	Sense of gap
Living in the city, I feel the tolerance and acceptance between people rather than exclusion and discrimination				0.52	
I do not adapt to the city's climate, diet, air and other living environment					0.64
The way of thinking and the idea of values have significant differences between people in the city and me					0.55
Living in the city, I have a feeling that I'm an outsider	0.47				0.53
The household registration problem is a huge obstacle for me to root in the city					0.50
Eigenvalues	6.83	3.77	1.34	1.23	1.05
Contribution rates	23.53	12.99	4.61	4.23	3.61

3.1.2 Analysis of reliability and validity

The scores of the items corresponding to the five first-order factors are summed respectively, then divided by the number of items for each factor, and finally getting the original scores of the five first-order factors. An exploratory factor analysis of the five first-order factors is carried out again, KMO has a value of 0.909, and the Bartlett spherical test χ^2 achieves a very high level of significance, indicating that the original scores of the five first-order factors are suitable for exploratory factor analysis. Two principal factors with eigenvalues greater than 1 are extracted by principal component analysis and variance maximal orthogonal rotation. The factor load matrix is shown in Table 2.

From the factor load of Table 1, we can see that "sense of welfare, Sense of linkage, sense of support" belong to the first second-order factor, and "sense of pressure, sense of gap" belong to the second second-order factor. Combining the connotation analysis of the first-order factor, we can know that the first second-order factor can be named "the pull of city embeddedness", the second second-order factor can be named "the push of city embeddedness". In economics, the study of labor mobility, there are two well-known classic theory, one is the early so-called "Push and Pull Theory", it argues that the relocation of labor from rural to urban areas may be caused by the "pull" that may be formed by the favorable economic development of the town, or it may be due to the "push" which caused by the adverse economic development of rural areas (Li Pei-lin, 1996^[13]). This study further studies the two different forces encountered by the rural-urban migrant workers embedded in the city from the social psychological level, which further confirms the predecessors' "Push and Pull Theory". It also shows that "the rural-urban migrant workers' city embeddedness questionnaire" prepared in this study has good structural validity.

Table 2 The second - order factor load matrix of city embeddedness

Dimensions	The pull of city embeddedness	The push of city embeddedness
Sense of welfare	0.85	
Sense of support	0.81	
Sense of linkage	0.80	
Sense of pressure		0.87
Sense of gap		0.86
Eigenvalues	2.48	1.26
Contribution rates	49.51	25.17

Cronbach's α coefficient of the five first-order factors are: sense of pressure: 0.806; sense of welfare: 0.805; Sense of linkage: 0.728; sense of support: 0.674; sense of gap: 0.633, the above results indicate that there is a good homogeneity between the internal items of the subscale. Furthermore, the correlation coefficient between the factors can also reflect the rationality of the theoretical conception to a certain extent. Table 3 shows the specific degree of each factor, from the table shows that the five-factor city embeddedness scale has a good conceptual validity.

Table 3 Coefficient matrix of five first-order factors of city embeddedness

	Sense of pressure	Sense of welfare	Sense of linkage	Sense of support	Sense of gap
Sense of pressure	1				
Sense of welfare	-0.14**	1			
Sense of linkage	-0.26**	0.58**	1		
Sense of support	-0.23**	0.54**	0.53**	1	
Sense of gap	0.60**	-0.22**	-0.27**	-0.19**	1

Note: **p<0.05

In order to further validate the constructive validity of the scale, the structural equation of the second-order five-factor model was established according to the attribution relation between the items of the questionnaire and the factors in the factor load matrix which obtained by exploratory factor analysis (see Table 1). Data for cross-sample structure validity validation (confirmatory factor analysis), using the other half of the survey data to carry out cross-sample structure validity test (confirmatory factor analysis). The values of the relevant fitting indexes obtained from this confirmatory factor analysis are as follows: NNFI = 0.91, CFI = 0.93, RMSEA = 0.062, $\chi^2 / df = 3.23$, which are better than the critical value. It further indicates that the questionnaire has a better conceptual validity. In addition, this study uses in-depth interviews to generate initial items and invites experts in the field to carry out strict quality checks on the initial items of the questionnaire, which can ensure that the above items can fully reflect the various factors that impact the rural-urban migrant workers in the process of urbanization, so as to ensure that the scale has a high content validity.

3.2 Descriptive results

The descriptive analysis of the questionnaire was shown in Table 4. The higher rate of sense of welfare detection means that urbanization has become the mainstream trend, urban life compares to the traditional rural life, people reaches a high consensus on the superiority. But at the same time the higher detection rate in the sense of pressure dimension shows that the life of most of the rural-urban migrant workers in the city is a little bit difficult, they feel that they are in a certain degree of weakness, in the event of trouble and difficulties, they are easy to produce helplessness, and perceive less social support, in the process of city embeddedness there are still some difficulties.

Table 4 Psychological dimension of rural-urban migrant workers' city embeddedness

psychological dimension	Minimum value	Maximum value	Average value	Standard deviation	Skew factor	Detection rate (Rated value> 3)
Sense of pressure	1.33	5.00	3.36	0.69	-0.11	73.5%
Sense of welfare	1.25	5.00	3.69	0.63	-0.52	87.8%
Sense of linkage	1.00	5.00	3.27	0.83	-0.31	70.3%
Sense of support	1.00	5.00	3.05	0.78	-0.09	59.7%
Sense of gap	1.00	5.00	2.91	0.80	0.10	51.3%

4 Conclusion and application prospect

This study draws the following conclusions: (1) People should use the concept of continuum to look at the concepts of older generation of migrant workers, new generation of migrant workers and typical urban residents and other groups. The process of urbanization of the new generation of migrant workers is essentially a process of human modernization, which is a process of slow continuous rather than discontinuous jump (Ren Juan-juan, 2012^[14]). Whether it is the older generation or the new generation of migrant workers, or typical urban dwellers, the difference between them is that these groups are in different positions of people's modern continuum. (2) The process of urbanization of new immigrants in cities reflects the "embedded", and the measure of citizen's state can revolve around the core conception of "city embedding". (3) The urban embedding scale developed by this study contains two second-order factors and five first-order factors. The second-order factor of "urban gravity" includes three first-order factors such as "sense of welfare", "sense of linkage" and "sense of support", and the "city repulsion" of the second-order factor contains two first-order factors: "sense of pressure"

and “sense of gap”. This model is also consistent with the “push factor” and “pull factor” in the “push-pull theory” that influence the population migration. (4) The reliability and validity test results show that the urban embedding scale has good structural validity and empirical validity.

In short, the scale directly from the psychological experience of the parties to measure the status of their citizenship, which helps to quickly and accurately describe the degree of urban residents of the new immigrants from multiple dimensions. Future studies can further increase the sample size and improve the representation of the sample, and establish a detailed norm, which can accurately determine the degree of relative urbanization of the subjects. In addition, the study laid the foundation for subsequent quantitative studies: Based on accurate measurement of the degree of urbanization of people, which can help researchers to in-depth analysis the former dependent variable that affecting the process of urbanization and its effect. And finally constructing a multi-variable complex mechanism model to explain the process of urbanization.

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Research on the Supplying Problem of Vehicle Parking in Beijing Municipality, China

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Abstract Due to the excessive accumulation of population and related factors in recent years, the “urban disease” has seriously impacted the sustainable development of Beijing, resulting in a surge in population and vehicle ownership. Besides, because of the inefficiency in the parking management, the Beijing Municipality parking problem has hampered the production and life of residents in and around the city, and has inhibited the core functioning of the capital city. This article carry out a general analysis on the existing problems in the parking management of Beijing municipality. First, by analyzing related facility construction, human factors and policy influence, this article will find out the causes of parking problems. Then, it will give a summary to the advantages of Beijing municipality in terms of parking management. Finally, it will propose some parking managing measures to mitigate existing problems, and to better serve the urban functions. In addition, it will also suggest that relevant departments issue laws and regulations, establish professional institutions, and inhance law enforcement to achieve an improvement in the overall traffic condition in Beijing Municipality.

Key words Parking, Management, Measures, Traffic relief plan

1 Introduction

According to the statistics of the Beijing Municipality Traffic Management Bureau^[1], as of August 2015, the volume of Beijing vehicle ownership has reached 5.575 million and the number of drivers has reached 9.71 million, which is nearly half the number of Beijing’s permanent residents in 2014. Meanwhile, the statistics also shows that, the city only has 2.9 million parking spaces, which are only half of the total motor vehicles^[2]. Although restricted by the vehicle restriction order and *Beijing vehicle parking regulations*, Beijing residents still hold an ever-growing desire for automobiles. Therefore, the short supply of the vehicle parking lots not only brings inconvenience to the everyday lives, but also leads to more serious traffic congestion in Beijing. Supplying more parking lots is the key to relieving the parking problem in Beijing municipality. Parking problem not only is related to people’s daily lives, but also affects the future development of transport of Beijing, and has a great influence on the harmonious march of social economy.

2 The supply and distribution of vehicle parking lots in Beijing municipality

In May 2015, Zhang Yan-kun, the vice mayor of Beijing, said that the parking facility is an important part of urban transportation infrastructure, and has a public attribution. Therefore, the government should provide its establishment with solid support in terms of planning, land, investment, etc.. But on the other hand, he particularly emphasized that the parking facility also has a merchandise property^[3]. Therefore, the fee scale and the layout of parking lots will play a decisive role in the contradiction of supply. How to use the fee lever to ensure the balance between supply and demand, so as to achieve a proper layout, will become an important node to resolving the contradiction.

2.1 The present condition of vehicle parking supply in Beijing municipality

From Table 1 and Figure 1 we can notice a serious difference between the number of cars and the number of parking spaces in Beijing municipality. Although these data may not cover every parking space in the realistic situation, when it comes to parking in real life, there still will be a serious shortage of supply, far below the growing demand of Beijing’s existing vehicle number. Besides, parking spaces in the downtown area are basically saturated now.

Table 1 Condition of Beijing municipality’s on-record vehicle parking lots(space) ^[4]

As of June 30, 2015

Regions	Roadside	Under the overpass	Public area	Housing estate	Supporting facilities	Company	Other	Total
East Side	5016	45	5653	36812	42492	7919	151	98088
West Side	11583	131	2157	51547	47911	10817	5807	129953
Chaoyang	6313	1448	121888	229868	73126	14504	0	447147
Haidian	6948	90	12542	174465	127425	23909	823	346202
Fengtai	4204	131	22946	158088	31723	5063	9553	231708
Shijingsha	2517	0	4852	36244	0	0	0	56199

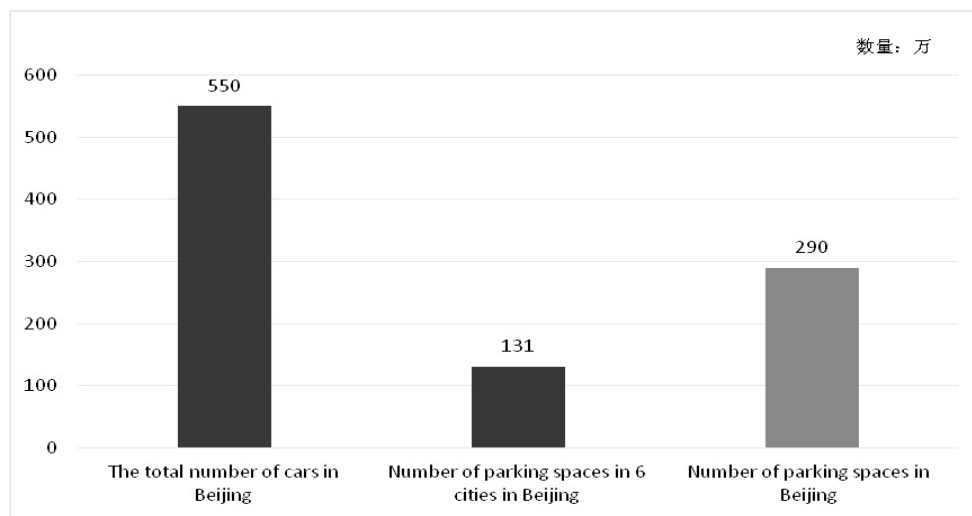


Figure 1 Comparison of parking spaces and vehicle ownership in Beijing^[5]

2.2 The layout status of vehicle parking lots in Beijing

Cars are not likely to move 24 hours a day. Therefore, eventually they need to be parked in a place. A related survey shows that the ratio of average travel time and parking time is about 1:7. Therefore, the bureau can effectively restrain the traffic flow by strengthening the management of parking, coping with motions by remaining motionless^[6], thus relieving urban traffic congestion and other relevant issues.

From the chart above, we know that most of the parking lots are located in Chaoyang, Haidian and Fengtai districts, while only a small number of that in the two major districts in the downtown area. However, due to the restrictions of urban planning, cost of living and rapid growth of vehicle ownership, a large number of vehicles from and around the fifth ring-road would flow to the downtown area and merge there for work, school and business every day. Therefore, the situation has further worsened the contradictions between parking demand and parking supply, and highlights the layout problems.

3 Causes of vehicle parking problems in Beijing municipality

Liao Luming, the deputy to The Beijing Municipal People’s Congress, once elaborated on the Beijing Municipal Council with data: “The insufficiency of Beijing’s parking lots is obvious.” He indicated that, as of December 2015, the number of motor vehicles in Beijing has exceeded 5.5 million, but the number of parking spaces is about 2.9 million, nearly 3 million parking spaces failed to fill the gap between demand and supply. And also, the insufficient supply of parking spaces led to many parking problems such as difficult parking difficulty, parking disorder and so on.

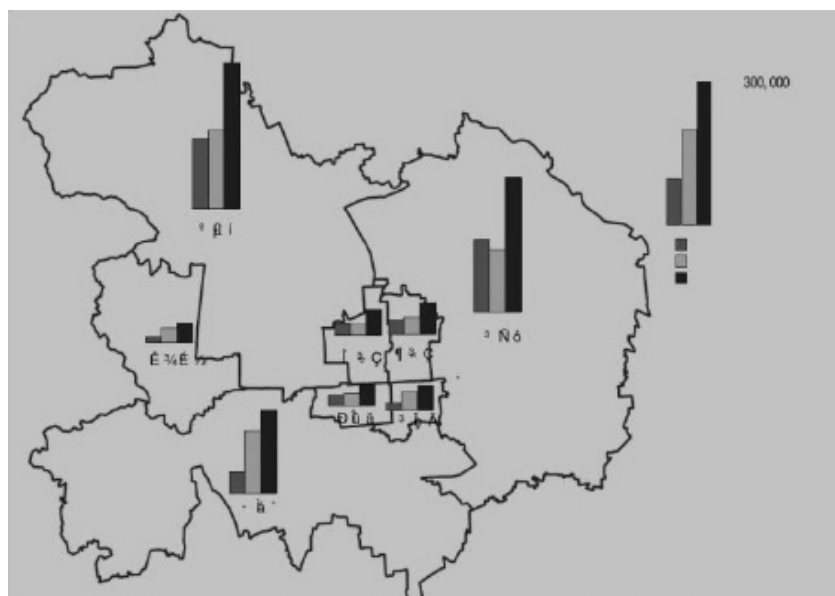


Figure 2 The construction scale of vehicle parking lots in Beijing^[7]

3.1 Unscientific overall arrangement of parking lots

At the present stage, parking lots in Beijing are mainly divided into off-road parking lot, roadside parking lot and building's parking lot, in which parking disorder occurs frequently. In Beijing, it would be very normal to catch sight of many vehicles occupying non-parking spaces, parking by the roadside of non-vehicle space, and even parking on the main-vehicle lane. These actions eventually led to traffic congestion.

Table 2 Distribution map of daily utilization rate of vehicle parking lots in Beijing municipality^[8]

	Second ring	Three ring	Four ring
Complete set service	0.58	0.19	0.54
Outside road	0.5	0.54	0.41
Inside road	0.79	0.05	0.47

Table 3 Distribution map of daily turnover rate of of vehicle parking lots in Beijing municipality^[9]

	Second ring	Three ring	Four ring
Complete set service	2.25	2.28	2.72
Outside road	1.37	2.77	0.05
Inside road	2.52	2.5	3.5

The table shows that, the daily utilization rate of outside-road parking lots inside the second ring-road of Beijing municipality is significantly lower than that of the other two types. Therefore, according to the data, we could prove that the failure in the layout is a leading cause of parking difficulty. There are many vehicles travelling on the second ring-road every day, and most of the car owners choose to park their vehicles at roadside parking lots out of convenience and safety. However, since land shortage is already very tense inside the second-ring area, vehicles parking in the roadside parking spaces will bring even more pressure to the road traffic. Furthermore, it increases the difficulty in planning an overall arrangement of vehicle parking lots.

3.2 Unreasonable parking pricing

With the modern development of the city, the automotive industry is also rising rapidly. In real life, due to some objectively existing imperfections in public transportation, many people prefer to travel by car. But first of all, at present, the charging standard of parking is still imperfectly structured. For roadside parking, the charge of ground parking is relatively cheap, especially compared with that of the

garage parking and other outside parking tunnels. As for some high-cost parking lots such as the “P+R parking building” (one-day charge is about 2 yuan^[10]), they are more likely to be wasted.

Beijing’s specific vehicle parking fee standard are as follows:

Table 4 Fee standard of open-air parking lots (7:00-21:00) in non-residential areas^[11]

Parking type		First-tier area(yuan)		Second-tier area(yuan)		Third-tier areas(yuan)	
		Small car	Big car	Small car	Big car	Small car	Big car
Road parking area	Whihin the first hour	2.5	5	1.5	3	0.5	1
	After the first hour	3.75	7.5	2.25	4.5	0.75	1.5

Table 5 Fee standard of open-air parking lots (7:00-21:00) in non-residential areas^[12]

Area	Unit	Price(yuan)	
		Small car	Big car
First-tier areas	15minutes	1.5	3
Second-tier areas		1.25	2.5
Third-tier areas		0.5	1

Secondly, at present stage, the vehicle parking charging system of Beijing municipality still needs to be improved and perfect. In addition to high parking charge fees in CBD, parking fare in the rest of many other areas is flexible. But this will not help regulate the whole charging system. Accordingly, under the case of a large difference in land use situation, lots of cars surge up to the commercial center, thereby increasing regional traffic pressure and highlighting parking difficulty.

3.3 Low supervision strength

One of the important reasons for parking difficulty is that the phenomenon of “arbitrary charges” often happens. Fare collectors often ask the car owners to pay first, or arbitrarily change the charging rule, such as charging extra fees, deducting time, charging in a non-regular way, etc.. Worse more, some people privately take up land and paint parking spaces without authorization, some counterfeiting as collectors to conduct illegal charging and so on. These major problems are especially prominent in the downtown area.

There are about 16 departments involving Beijing parking management.

Beijing Municipal Commission of Transport is responsible for the development and direction of the parking management; Urban Management Department is responsible for banning illegal parking lots; National Development and Reform Commission is responsible for setting up charging standards; the Finance Bureau is responsible for the fare collection of road occupation; other Departments such as Beijing Municipal Commission of Urban Planning, Beijing Municipal Bureau of Land and Resources, Beijing Municipal Commission of Housing and Construction, Beijing Municipal Bureau of Landscape and Forestry are responsible for their respective administrative affairs. In this way, the functions of law enforcement departments are so refined that, when problems arise, it would be too hard to conduct overall command and dispatch.

3.4 Delayed update of policies and regulations

Beijing’s construction standard of building’s parking spaces is originated in *Interim Provisions on the management and construction of large and medium sized public buildings in Beijing Municipality* published in 1994. According to the provision, parking spaces should be built in accordance with the 0.3space / household standard within the third ring-road^[13]. In 2004, the twenty-fifth executive meeting of the Beijing Municipal People’s Government has partially modified the provision^[14]. On January 1, 2014, the government has implemented *The Beijing Municipality vehicle parking administration approach* again, regulating that the construction newly-built residential parking spaces adopt 1space/ 1 household standard^[15].

As can be seen, from 1994 to 2014, it took the government 20 years to have effectively modified the construction standard of building’s parking lots. However, the car ownership has been soaring in Beijing Municipality. Although in December 2010, *Interim Provisions on the regulation and control of*

minivans in Beijing Municipality went up and started to take effect, by 2015, the number of motor vehicles in Beijing municipality was 5.75 million, and the average congestion duration (including severe and moderate congestion) was over 1 hour and 55 minutes^[16].

To sum up, these measures could not fundamentally change the realistic situation of a late start and big base. At present and in a short future to come, the parking space is and will still be an tricky problem.

3.5 Unwillingness to share parking lots

In Beijing city, especially in the CBD, drivers could barely find a regular parking space while a lot of enterprise-owned and institution-owned parking lots are usually found idle. According to some relevant data, the utilization rate of Beijing city parking lots is about 55%. This is most typical of parking spaces of hospitals, schools, governmental agencies, most of which were often idle at night. In December 2015, Beijing proposed a staggering parking policy to encourage companies and institutions to open their parking lots to the public at night, but when it came to the the actual operation, lots of issues stood in the way. For example, how many parking places on earth should be open to the public? And who would be responsible if those outside cars get stolen or scratched? Issues like this make many companies unwilling to get involved.

4 Countermeasures and suggestions for parking lots supplying

The supplying contradiction of Beijing's parking lots does not only include field layout, but also includes charge, supervision and utilization. As mentioned above, to relieve these issues, we need both time and effective and proper measures to make continuous improvements.

4.1 Reforming on fare collection of road occupation and the standardization of road-occupying parking lots

For a mega city like Beijing, every inch of land is valuable, therefore the construction scale of parking lots should keep within small to medium size with a scattered layout. Most of drivers today like to pull up in a parking lot, and then walk to the destination. Accordingly, the parking service shouldn't be too far from major buildings. According to literature research and practical investigation, it is optimal to take about 5 - 8 minutes from the parking lot to the destination by foot. In addition, the government should also create an acceptance and supervision mechanism of parking lots of newly built, renovated, and expanded public buildings, residential areas and other supporting constructions. Furthermore, the government should further clarify parking spaces of regular parking lots. Finally, they should diversify the road-occupying fare, reforming on the collection of roadside parking lots, and standardizing temporary roadside parking lots.

4.2 Adopting competitive mechanism of parking fare

The parking fare standard should be formulated in three tunnels: market-set pricing, government-suggested pricing, and government-set pricing. Under the trend of government's letting loose its price control, the pricing of parking fare should adopt a competitive mechanism, according with the market price according to supply and demand. On this basis, the standard of parking fare plan should be put forward by the investment sector of each parking lot. And each plan should be submitted to the Department of Price for approval and recording. After determining the parking rates, the rates should always update and change with the improvement of varied transportation service, parking lots' construction, closure and scale^[17].

In addition, we should also increase the intensity and frequency of supervision and inspection on parking lot. Moreover, we should conduct timely detection, timely disposal, expose typical cases of wrongful charge to the media and the public, and strictly banning parking lots that charge without license and that commit mistakes repeatedly, thereby ensuring a competitive mechanism with fair price.

4.3 Integrating coordination and command and strengthening supervision

Parking fare issues involve many departments and have a wide impact. To regulate the parking fare collection order, and effectively govern irregular parking charging, relevant departments should take a combining approach of managing and striking, achieving a comprehensive governance. Measures are as follows: first, strengthen government's responsibility in constructing public parking

lots; second, rationalize the operating and managing system of road-occupying parking lots, specifying the subject of liability and perfecting the managing system; third, enhance policy propaganda and educational training, through which cultivating the consciousness of the integrity of fare collectors. Fourth, enhance the introduction of parking guidance system, which can improve the transparency of parking charging while bringing convenience to fare collecting^[19].

In addition, since there are lots of institutions that are responsible for parking management, if we want to achieve a unified and coordinated command, we should set up unified parking management agencies for the city. We suggest a command organization set up by the Transportation Committee and the Urban Management and Law Enforcement Bureau joined by other relevant functional departments, building an inquiry platform of law enforcement, and hiring a team of experts to adjust the charging standard of public parking lots based on different regions and different periods of time, and occasionally giving several regions the freedom to price. And also, the platform can collect and sort out the data of the regulatory authorities, input these data into a shared database, and receive timely telephone inquiries and other instructions^[20]. After discovering the problems, the platform will directly contact the law enforcement departments, and then conduct real-time tracking on the result of governance.

4.4 Promulgating laws and perfecting a series of measures

At present, the management of parking lots and parking behaviors still follows local policies. So it lacks of relevant laws and regulations at the national level. The planning, construction, use, supervision, punishment and rewards of all kinds of parking lots has no unified provision. Therefore, firstly, while the legislation is helping solve the problem of the supply of parking spaces, it should also clarify the ownership of property rights to reduce vacancies and low utilization rate. Secondly, the government should continue to delegate charging and managing authorities in terms of communities, auxiliary roads and alleys, to bring social forces into order management, and to delegate confirmation and punishment authorities of illegal parking to the property or management unit, so that they can punish this act within its jurisdiction. Lastly, the government should often adjust existing policies for car-purchasing target and parking space ratio, avoiding “ten years, one standard” situation.

4.5 Encouraging enterprises and institutions to open internal parking spaces to the public

The parking issue has become an “urban disease” for mega cities like Beijing. Relieving parking problems require a combining approach of “managing and striking”. Encouraging units to open charging parking spaces to the public can be regarded as a good way to solving the parking difficulty of the society. During holidays or nighttime, units could manage outside cars according to the market price. In this way, it will not only effectively increase the number of existing public parking spaces, but also increase the non-operating revenue of enterprises and institutions. Although the policy was promulgated long before, the implementation condition hasn't been optimistic.

Chao Gang, former secretary of Fengtai district once said that, according to the existing planning standards, parking spaces at the party and government offices, enterprises and institutions are planned in accordance with 6.5 space/ 1000 m² standard, basically matching with that of big shopping malls.

According to the statistics of the Department of Transportation, the average occupation of land for each ground parking space is about 25 m², while, that for an underground parking space is about 40m². Therefore, apart from setting up a more strict construction standard of parking lots in party and government offices, enterprises and institutions, improving the the sharing of parking spaces is imperative.

5 Conclusions

Due to the excessive aggregation of population and related factors, “urban disease” has seriously affected the sustainable development of Beijing. The surge in population and car ownership, along with imperfect parking management, has contributed to the parking difficulty, bring inconvenience to the production and living of the public, and also damaging the image of the capital. To govern the parking chaos, two different approaches must be adopted. On one hand, the government should improve the policy for license-plate lottery and parking space; On the other hand, the authorities should improve and perfect existing parking management institutions and systems, so as to achieve pleasant results.

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A Study on the Mechanism of the Initial Adoption Behavior of Government Websites in China

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Abstract Government website is a part of E-government, so it is great importance to achieve modernization of governance by improving the construction efficiency and promoting public adoption of government website. For the problem of public's adoption of government website, their initial adoption should be solved at first. Therefore, based on TAM, integrated with trust theory, status quo bias theory and implementation intention, this paper constructs a research model of public initial adoption of government website, aiming at explaining how the initial adoption behavior is produced and revealing the relationship between intention and behavior. Through quantitative analysis, this paper confirms trust and perceived usefulness positively affect initial adoption intention, and initial adoption intention positively affects initial adoption behavior; it also finds implementation intention of initial adoption has a mediating effect between initial adoption intention and initial adoption behavior. Besides, status quo bias negatively affects initial adoption behavior and it has a significant moderating effect on the relationship between initial adoption intention and initial adoption behavior. This paper provides a new theoretical reference for the government taking measures what can promote the adoption of government website, and provides a new model for the adoption research of E-government.

Key words Government website, Initial adoption behavior, Adoption intention, Implementation intention, Status quo bias, Mechanism

1 Introduction

In 2015, China conducted the first national government website census, found that there were many problems in the government website, for example, the information upgrading was unpunctual, the content accuracy was low, interactive response was not active and other issues, which also led to a lower public use rate. In response to the above problems, the country continued to conduct the second national government website sampling in 2016, the results showed that although most of the content protection level of the government website has been significantly improved, and "zombie", "sleeping" and other phenomena were significantly reduced, the phenomenon of low response rate and non-upgrading information still existed. It can be seen that how to improve the efficiency of government website construction and promote the adoption of government website has become one of the urgent problems in the process of modernization of state administration.

From the perspective of theoretical research, the adoption of government websites can be divided into two stages: the initial adoption of government websites and the continuous adoption of government websites. Based on this, this paper chooses the government website's public initial adoption behavior as the research object, explores the factors that affect the initial adoption behavior of the public, and tries to find out the correlation in order to explain the mechanism of the initial adoption of the government website. From the point of view of research methods, the existing research results not only use quantitative research methods and qualitative research methods, but also try the mixed research method; from the perspective of theoretical basis, scholars mainly discuss the theory or model of TAM, UTAUT, IDT, ECT, D & M model and trust theory^[1]. These theories or models come from the disciplines such as sociology, psychology and economics, so it can be seen that the initial adoption of government websites has been interdisciplinary and diversified. Even so, the existing research also has the following shortcomings: (1) Few researchers explore the reasons for restricting the initial adoption of government websites. TAM, UTAUT, D & M model study the adoption of the system from a positive perspective based on the public subjective feelings or the characteristics of the system itself, but does not explore the factors that restrict the systematical adoption, which affects the

comprehensiveness of the study to some extent. (2) The existing study has not really explored the initial adoption of government websites. The core dependent variable that the TAM, UTAUT, D & M model and other theories or models is the behavioral intention, when researchers study the public initial adoption of the government website based on the above theory or model, the intention is directly associated naturally, or even equal to the behavior, but ignores the whether there are other factors between intention and behavior. So what is the intrinsic logic of the initial adoption behavior of the public? How to make a reasonable explanation for the relationship black box between intention and behavior? In order to explain the problem clearly, this paper divides the initial adoption of the government website into two processes: the formation of the initial adoption intention and the initial adoption behavior, based on the classic model that studies the initial adoption-the technology acceptance model.

2 Theoretical basis and research hypothesis

2.1 Technology acceptance model

In 1989, in terms of the issue of user adoption information systems or information technology, Davis proposed a technology acceptance model (TAM) based on the theory of rational behavior^[2] The model considers that the behavioral intention is the core predictor of the using behavior, and proposes two main influencing factors of behavioral intention: perceived usefulness and perceived easiness.

With the development of information technology, more and more public begin to use the network service, technology acceptance model and its improved model are also applied to the adoption research of e-government, and find that perceived usefulness and perceived easiness positively affect the public adoption of e-government services. For the public, if the use of government websites can enhance their work efficiency and life quality, the perceived usefulness of the public will be stronger, and they are more likely to adopt the government website; If they think that using a government website is easier for themselves, the stronger the perceived easiness, the stronger their intention to adopt it. Therefore, this study argues that whether the government websites are useful and easy are the primary consideration of the public before the government websites are accepted by the public, and determines the public's intention to adopt the government website. In addition, the technology acceptance model clearly suggests that the using behavior is determined by the intention of the behavior, the stronger the individual's behavioral intention, the more likely he will make actions. Based on this, the following hypotheses are made:

H1: Public perception of the usefulness of government websites positively affects initial adoption intentions.

H2: Public perception of the easiness of government websites positively affects initial adoption intentions.

H3: The initial adoption intention positively affects the initial adoption behavior.

2.2 The trust theory

At present, the trust theory is widely used in the study of the adoption of e-government. Lian (2015) found that e-government trust significantly affected the public's adoption of e-services^[3]; the study of Zhao Li (2013) also confirmed the positive role of trust in the adoption of e-government information resources^[4]; the empirical study of Guo Jun-hua (2015) concluded that the explanation of trust for using intention of mobile government services reached 48%^[5]. It can be seen that trust is an important predecessor of the public's willingness to adopt e-government services and has a positive impact on the adoption intention of the public. Therefore, the hypothesis is put forward:

H4: Government website trust positively affects the public's initial adoption intentions.

With regard to the relationship between trust and perceived usefulness and perceived easiness, academics have explored a lot and found that trust affected perceived usefulness and perceived easiness. Dong Ya-li (2010) conducted empirical research on the influencing factors of consumers' online shopping intention in the network environment, and concluded that trust had a significant positive effect on perceived usefulness^[6]; Zhang Cheng-hu (2015) found that trust had a positive effect on perceived usefulness and perceived easiness when studying the willingness of Internet financial clients to accept^[7]. Chircu (2000) argued that the expected utility of the user from the website

depended on the web service provider, they will feel better utility when trusting the website service provider, so trust has a positive impact on perceived usefulness; moreover, trust also positively influences perceived easiness, in the e-commerce environment, trust can reduce the consumer's desire to understand, view, and control the transaction process, making online transactions easier and faster^[8]. As e-government and e-commerce are providing services through the network and online interaction and service process has some similarities^[9], so the author believes that if the government website is trusted by the public, it will promote the public perceive that government websites are more useful and easier. Based on this, the hypotheses are put forward:

H5: The public's trust of government website positively impacts perceived usefulness.

H6: The public's trust of government website positively impacts perceived easiness.

2.3 Behavioral execution intention theory

The emergence of behavioral execution intention theory has aroused widespread concern in academia, especially in the field of psychological research, and many scholars began to study the influence of execution intention on behavior. The empirical research of Orbell(2000) found that the formation of an execution intention was easier and better to complete the target behavior than subjects who did not form an execution intention, and that the effect of the execution intention on the target behavior can't be explained by attitudes, perceived behavioral control, subjective norms and target intentions^[10]. Bayer (2007) conducted a comparative study of subjects with executive intentions and behavioral intentions alone, and found that execution intention was more effective in achieving goals^[11]. Although these studies confirm the role of executive intention in promoting behavior, does not explain the role of execution intention on behavior intentions, execution intentions, and behaviors. Sheeran (2000) first pointed out that the individual will form a corresponding action plan after owning the intention behavior in terms of different external circumstances through the execution intention^[12]. Edwin (2005) examined the mediating role of execution intention by examining the evolutionary relationship between job-searching intention and job-searching behavior and regarding the execution intention as an intermediary variable between behavioral intention and behavior. Gollwitzer & Sheeran (2006) used the meta-analysis method to prove that the execution intention was 65% effective to predict the target behavior, and the execution intention was acting as an intermediary variable between intention and behavior.

This article draws on the previous research results, and argues that the public will produce the execution intention after forming the initial adoption intention on the government website based on the actual situation, and then lead to the corresponding behavior. The following hypotheses are proposed:

H7: Initial adoption intention positively impacts initial adoption intention.

H8: Initial adoption execution intention positively affects the initial adoption behavior.

H9: The initial adoption execution intention has an intermediary effect on the relationship between the initial adoption intention and the initial adoption behavior.

2.4 Status Quo Bias Theory

Status Quo Bias Theory was presented by Samuelson and Zeckhauser in 1988, which includes three aspects of rational decision making, cognitive illusion and psychological commitment to explain why the user is biased towards maintaining the existing behavior or state, rather than making new changes, even if the new changes may be better. Through the literature combing, the author found that Status Quo Bias Theory has been widely used in the field of economics and psychology, but it rarely appeared in in the adoption of information systems research, which needed to strengthen academic attention. In addition, research on the combination of Status Quo Bias Theory and adoption behavior can be divided into two categories: (1) Hsieh (2015) studied the adoption of cloud health services by combing Status Quo Bias Theory and planning behavior theory. Empirical studies show that health care professionals are resistant to cloud health services due to their current bias, and refuse to use the services. (2) Study users' continuous use of the system being used, for example, Lin (2015) built a two-factor model from the the promotion-constraint perspective and cognition-influence perspective based on the expectation confirmation model and Status Quo Bias Theory, and conformed that the status quo bias had a significant influence on users' loyalty to the use of existing information technology products. Li Qian (2013) divided the user's behavior into three stages: rational decision

making, emotion decision making and customary decision making, and analyzed the impact mechanism of status quo bias on user's continuing use behavior by using Status Quo Bias Theory . From the above research, it can be drawn that status quo bias negatively affects users' adoption of a new information system, while positively promotes users' continuous use of the existing information system. Government website also belongs to a kind of information system , therefore, this paper holds that Status Quo Bias Theory is suitable for the government website adoption question research. In terms of the initial adoption stage of the government website, because the public are bias towards the current way to acquire government information or services, it will negatively affect the initial choice of the public to use government website. Therefore, the following hypothesis is proposed.

H10: Status Quo Bias of the public negatively affects the initial adoption behavior.

In addition, in a stable social environment, the public basically form own behavior bias, and psychological cognition is gradually completed, therefore, this paper holds that why the public at this time to adopt a new behavior can be explained by their current behavior bias and psychological cognition. The public's current behavioral bias can be represented by the status quo bias, and psychological cognition can be expressed by the behavior intention (initial adoption intention). When the status quo bias is stronger, the public may have a smaller possibility of adopting new behavior, and if the public adopt a new way of behavior, then it can be seen that the behavior is mainly driven by the behavior intention, at this time, the explanatory power of behavior intention will enhance. Similarly, when the status quo bias is weak, the explanatory power of behavioral intention is weakened. Therefore, the following hypothesis is proposed.

H11: The public's status quo bias has a positive effect on the relationship between the initial adoption intention and the initial adoption behavior.

Based on the above research hypotheses, the research model of this paper is constructed, as shown in Figure 1.

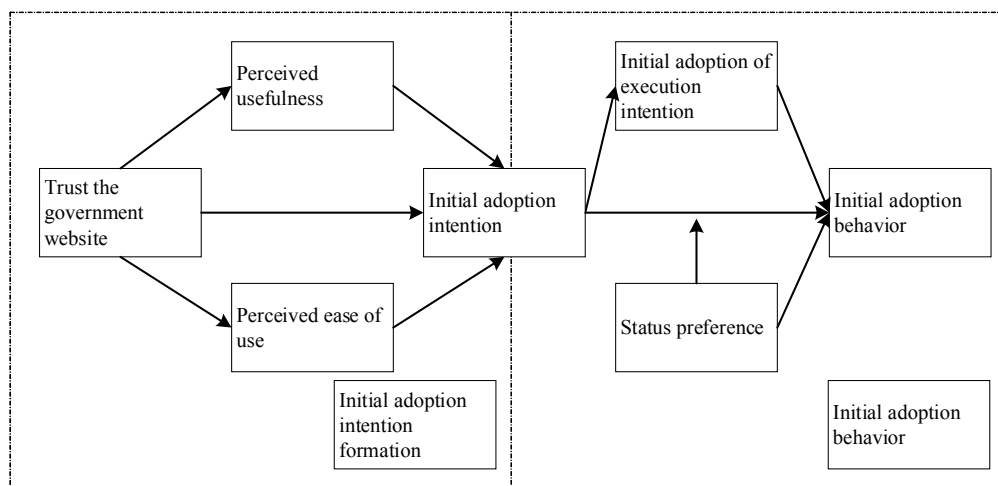


Figure 1 Government website public initial adoption behavior research model

3 Research design

3.1 Questionnaire design and data collection

The questionnaire design of this study is divided into two parts: personal basic information and variable measurement. Personal basic information includes gender, age, education, occupation, political outlook. The measurement of the variables is based on the results of previous studies to prepare the measurement items, and uses the Likert five scale to score (1 on behalf of very disagree → 5 on behalf of very agree). There are four items in the perception of usefulness and easiness. The government website trust contains 10 items. The initial adoption intention, the initial adoption execution intention, status quo bias, and the initial adoption behavior have three items respectively.

First of all, the questionnaire is pre-investigated, and one term of perceived easiness is deleted, so the formal questionnaire is formed with in a total of 34 questions. After that, the question is sent to the research objects through the questionnaire star, QQ, WeChat, mail and forums and other network ways. Finally, a total of 676 questionnaires were collected in 20 days, and 612 valid questionnaires were obtained after the invalid questionnaires were removed. The effective rate of the question was 90.5%. Among the valid sample data, 41.2% are male, and 87.6% of the respondents are mainly aged between 18 and 29. The objects are mainly concentrated in undergraduate or master's degree accounting for 36.6% and 48.4% respectively, the proportion of students is 24.8%, corporate staff and civil servants or public service staff account for 24.8% and 14.4% respectively. The political outlook includes party members, members and the masses, and they take up a proportion of 45.1%, 34%, and 20.9% respectively.

3.2 Data analysis and result

3.2.1 Reliability and validity test

Cronbach's α coefficient and CR is used to reflect the reliability of the questionnaire. As can be seen from Table 1, all variables meet the Cronbach's α coefficient, greater than 0.7, CR is greater than the test standard 0.6, indicating that the questionnaire has a good reliability. In order to enhance the content validity of the questionnaire, the measurement items are derived from the classical literature, and are formed through the correction of pre-investigation and the continuous comparison and improvement of three graduate students. In addition, AVE is used to test the discriminant validity of the scale. The AVE of the variables in the table is greater than 0.5, and the discriminant validity of the questionnaire is good. In summary, the questionnaire of this study has a good quality.

Table 1 Measurement model test value

Variable	Cronbach's Alpha	CR	AVE
Perceived usefulness	0.917	0.906	0.707
Perceived easiness	0.875	0.885	0.720
Government website trust	0.823	0.814	0.601
Initial adoption intention	0.908	0.881	0.712
Initial adoption execution intention	0.925	0.896	0.741
Status quo bias	0.905	0.905	0.763
Initial adoption behavior	0.880	0.897	0.744

3.2.2 Model fitting and hypothesis testing

The test results of the research model fitness are shown in Table 2. It can be seen that each fitting index satisfies the adaptation criterion, indicating that the research model and the sample data is well fitted.

Table 2 The fitting degree of the research model

Fitting index	RMR	RMSEA	GFI	AGFI	NFI	RFI	IFI	TLI	CFI	PGFI	PNFI	PCFI	CMIN/DF
Reference	<0.08	<0.08	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	>0.50	>0.50	>0.50	<3
The model value	0.048	0.054	0.95	0.91	0.97	0.95	0.98	0.97	0.98	0.501	0.559	0.565	2.75

Then, the structural equation model is used to carry out the confirmatory factor analysis (Figure 2). It can be seen from the figure that: (1) In the three hypotheses corresponding to the technology acceptance model, the perceived usefulness positively affects the initial adoption intention, the initial adoption intention positively affects the initial adoption behavior, but the effect of perceived easiness on the initial adoption intention is not significant, the possible reason is: with the rapid development of national information construction, the computer application capacity of the public is enhancing, they have been able to use the Internet site or product, in particular, the research object of this paper mainly comes from the young people, and most of the respondents are undergraduate and above qualifications, their computer level is generally high, thus making the influence of perceived easiness on the initial

adoption intention is not significant in this research. (2) The three hypotheses based on the trust theory are confirmed, which shows that the trust of the government website plays an important role in promoting the public's perception of usefulness, easiness, and the initial adoption intention. (3) The influence of initial adoption intention on initial adoption execution intention, the influence of initial adoption execution intention and status quo bias on initial adoption behavior is significantly verified. In summary, hypothesis H1, H3, H4, H5, H6, H7, H8, H10 are confirmed, except that hypothesis t H2 does not pass through the test.

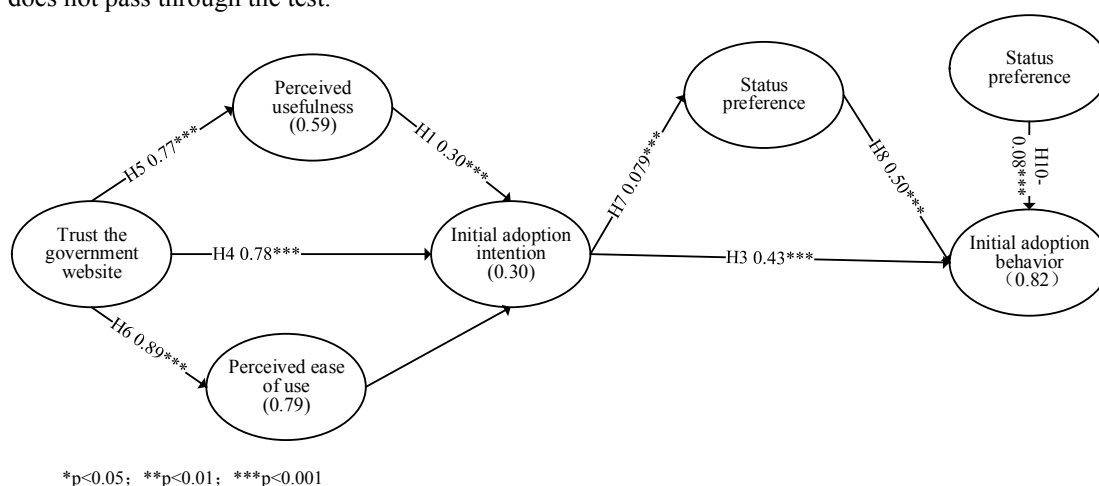


Figure 2 Structural equation model hypothesis test results

3.2.3 Mediation effect and regulatory effect test

In the analysis of the relationship between the initial adoption intention and the initial adoption behavior, the mediation effect of the initial adoption execution intention and the regulatory effect of status quo need to be solved. First, the mediation effect of the initial adoption intention is judged by the regression coefficient and significance of the test equation. For the fluency described in the article, we define the following three equations: (1) $Y=cX+e_1$; (2) $M=aX+e_2$; (3) $Y=c'X+bM+e_3$. Y represents the initial adoption behavior of the dependent variable, X represents the initial adoption intention of the independent variable, and M represents the initial adoption execution intention of the mediator variable. The first step tests the coefficient c of equation (1) to obtain $c = 0.729$, indicating that the initial adoption intention of the independent variable has a significant effect on the initial adoption behavior of the dependent variable. The second step is to test the coefficient a of equation (2) and coefficient b of equation (3) to obtain $a = 0.696$, $b = 0.486$. Since the a and b coefficient are significant, indicating that the indirect effect is significant, then the third step is to test the coefficient c' of equation (3) to obtain $c' = 0.391$ and it is significant, indicating that the direct effect is also significant. Therefore, through comparing the sign of $a \times b$ and c' , it can be seen that $a \times b$ has the same sign with c' , indicating that the initial adoption intention has some mediation effect between the initial adoption intention and the initial adoption behavior, and the effect amount $=a \times b = 0.338$, the proportion of the total effect is $a \times b / c = 0.464$, hypothesis H9 passes partially.

Table 3 The mediation effect regression result of initial adoption execution intention

Step	Independent variable	Dependent variable /Mediation variable	B	Sig.	Adjust party R
Step 1 (Independent variable- dependent variable)	Initial adoption intention	Initial adoption behavior	0.729***	0.000	0.512
Step 2 (Independent variable- mediation variable)	Initial adoption intention	Initial adoption execution intention	0.696***	0.000	0.384

Step	Independent variable	Dependent variable /Mediation variable	B	Sig.	Adjust party R
Step 3 (Independent variable, mediation variable- dependent variable)	Initial adoption intention	Initial adoption behavior	0.391***	0.000	0.689
	Initial adoption execution intention		0.486***	0.000	

* p<0.05; ** p<0.01; *** P<0.001.

Second, it tests whether the status quo bias has a regulatory effect in the process of initial adoption intention directly affecting initial adoption behavior. Firstly, the initial adoption intention of the independent variable and the status quo bias of mediation variable are centrally treated, and then produce the initial adoption intention×status quo bias of interactive items, and finally the multiple regression analysis will be carried out. From the analysis results (Table 4), the coefficient of the interactive items is 0.053 and it is significant, indicating that the status quo bias has a positive regulatory role on the relationship between initial adoption intention and initial adoption behavior, so the hypothesis H 11 is supported.

Table 4 The mediation effect regression result of status quo bias

Variable	Initial adoption behavior			
	Model 1		Model 2	
	B	Sig.	B	Sig.
Initial adoption intention	0.700***	0.000	0.668***	0.000
Status quo bias	-0.155***	0.000	-0.172***	0.000
Initial adoption intention status quo bias			0.053*	0.016
Adjust party R	0.542		0.546	
R party changes			0.004	

* p<0.05; ** p<0.01; *** P<0.001.

4 Conclusions

This research takes the public's initial behavior of the government website as a research object, taking into account the factors that promote the public to accept and limit the public to accept the government website comprehensively. On the basis of the technology acceptance model, the theoretical model is constructed by combing the trust theory, behavioral execution intention theory and status quo bias theory. Through the quantitative analysis, it not only confirms what factors can influence the initial adoption behavior, but also carries out an in-depth study of the relationship black box between intention and behavior, so as to clarify the internal logic of the initial adoption behavior of the government website, which is a supplement and deepening of the study of public behavior in the view of e-government.

(1) This paper provides a new theoretical reference for the government to adopt the relevant measures to promote the public to adopt the government website. In the past, the government's initial adoption research proposal focused on improving the initial adoption intention of the public, but this paper first used the theory of behavioral execution intention and status quo bias theory to analyze the mechanism of the initial adoption intention on the initial adoption behavior, confirms the mediation role of the execution intention and the regulatory role of the status quo bias. It is found that the effect of the execution intention on the behavior is stronger than the adoption intention, and if the government website retains the public's previous bias, it will be more conducive to the transformation initial adoption intention to initial adoption behavior, so this paper emphasizes that the government needs to pay more attention to how to improve the public's execution intention and how to make the use of government websites to maintain some of the public's status quo bias characteristics.

(2) The research results of this paper provide a new research model for the research of e-government adoption. The research model constructed by the paper is based on the government website to carry on the empirical investigation, and the explanatory degree to the initial adoption behavior reaches 0.82, and has a good explanatory power, which is a theoretical contribution to the

research of e-government adoption. In addition, the author thinks that the research model can be applied to the research of the adoption of other information systems, and hopes that the paper can play a role in attracting attention, to attract academic attention to the relationship between intention and behavior.

It is necessary to add that although some of the new findings have been found in this study, some of the parts are subject to further research. First, the representation of the research sample needs to be improved, and the sample size and coverage should be expanded in subsequent studies. Secondly, there are many factors that affect the status quo bias, but it needs further discussions on what specific factors can make the public have the status quo bias, and then affect the public's adoption of government websites, and whether the status quo bias can affect the execution intention and its mediation, and its mediation effect also needs to be discussed in the future.

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Innovation-Driven Model: A Conceptual Model of Leadership Education for Universities of Science and Engineering *

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Abstract Innovation driven development is the demand of the times, leaders of new era need extraordinary innovation ability, advanced strategic decision-making ability and powerful influence output ability. On the base of recent research in students' leadership education, this paper constructs a conceptual model of leadership education—Innovation-Driven Model—specially for universities of science and engineering. This model points out, to cultivate the science and engineering universities' students' leadership, the cultivate direction is “innovation-driven leadership”, the cultivate method is “stereoscopic personalized supply”, the cultivate condition is constructing “ecosystem of educational resources” and the cultivate power is constructing “dynamic feedback regulation system”. Apply this model into practice at UESTC—a students' leadership cultivation system called “UESTC's Dong Liang Project”, integrating an educational resource platform which includes teaching resources, project resources and base resources, and formulating three layering projects named “Pioneer-Project” “Elite-Project” and “Excellent-Project” according to the development status of students' leadership and creativity. This model takes both the characteristics of students of science and engineering universities and the actual needs of social development into consideration, fully respects the needs of students, consider both education efficiency and education fairness, and has achieved some success in practice.

Key words Leadership, Innovation-driven, Model construction, Education

1 Introduction

Innovation driven development is the demand of the times, in the wave of information revolution, the world needs a large number of elites in the industry to lead human beings to go forward^[1]. This trend needs universities of science and technology to foster more innovate talented students and the key point in their reform of talent cultivation is cultivating their students' leadership. This paper will discuss, as for science and technology universities' students, what's the content of their leadership, how to help them develop leadership and how to constant cultivating their leadership.

2 Research and practice of student leadership

Research on leadership dates back centuries, but leadership as a discipline be researched in academic filed begin in the late 19th and early 20th century^[2], in American's social science filed. In 1980s, “leadership education for college students” has received extensive attention and has gradually become an emerging issue in the development of higher education. Many achievements have been made in the study of leadership abroad, and many theoretical models have been formed. The widely used theoretical models in student leadership education are Servant Leadership Model^[3], Leadership Challenge Model^[4], Social Change Model of Leadership Development^[5], Relationship Leadership Model^[6] and Leadership Identity Development Model^[7]. Among them, Social Change Model of Leadership Development (SCM) is the most practical leadership theory using in college leadership projects^[8]. Compared with the results of foreign theoretical research, the theoretical research achievements on student leadership of domestic are relatively few and the “VCP-COS model of leadership education” proposed by Tao Si-liang is a relatively complete leadership education model^[9]. Although the connotation of college students' leadership failed to reach an agreement in research field, it is generally acknowledged that leadership is a process, and could acquire by learning. The practice of

*Financed by Fundamental Research Funds for the Central Universities

student leadership development has been widely hold in various colleges and Universities. The main methods using in developing students' leadership are courses, projects, activities, social practices and community services.

In sum, a lot of achievements has been made in the research field of student leadership and a variety of universities and colleges have promoted the cultivation of students' leadership. However, their education objects are general students and the cultivation mode special for the universities of science and technology have not yet become systematic.

3 Conceptual model of leadership: innovation-driven model

3.1 Cultivate direction: innovation-driven

Innovation driven development is the demand of the times, as for Colleges and universities, the core task is to cultivate creative talents. "Innovation-driven" contains two concepts: "innovation" and "driven", "innovation" represents "innovation ability", "driven" implies the direction of innovation. The innovation our society needs is "positive innovation", which could guide the right development direction of social development, and this kind of innovation needs "leadership" to guide. To find out which kind of leadership the universities of science and technology should cultivate, our team developed a "comprehensive quality assessment scale" in 2014, and implement 3 years in succession. Within the analysis of more than 60 thousand data, we find out the leadership cultivate direction of universities of science and technology is innovation-driven, it emphasizes both "innovation" and "leadership", needs to grow in the soil of "comprehensive quality", "Thinking ability" is its core, "knowledge", "skills" and "values" are its three dimensions.

In view of this, we could take "innovation ability" as the ordinate, "leadership" as the abscissa to construct a "Double-Strong Ability" (both innovation ability and leadership are strong) driven mode. As educators, we have an obligation to find out the students whose both abilities are relatively strong and then cultivate them. At the same time, we also should find out the students whose single ability is strong (either innovation ability or leadership is strong) and the students whose both abilities are weak. We should education them in classification and guide them develop their leadership in more proper way.

3.2 Cultivate method: stereoscopic personalized supply

The contradiction between the supply and demand of higher education objectively exists, while the disorderly and misplaced betting of educational resources has increased the waste of educational resources. For the universities of science and technology, due to the constraints of their histories, their environments and their own conditions, it is difficult for them to foster their students' leadership in a short time through the construction of humanities, the development of general education and the improvement of the quality education system. Therefore, in order to realize the effectiveness of student leadership education, universities of science and technology should think from the point of view of accurate and orderly allocation of educational resources, consider construct a stereoscopic personalized supply system for their students. That is to say, educators should grasp the needs of students accurately and provide their education resources they really need.

On this issue, we have carried on three aspects of thinking:

Horizontal clustering: take "innovation ability" as the ordinate, "leadership" as the abscissa, constructing "Double-Strong Ability" clustering model. According to the model, dividing students into three categories: double strong (both innovation ability and leadership are relatively strong), single strong (either innovation ability or leadership is relatively strong) and double weak (both innovation ability and leadership are relatively weak).

Longitudinal segmentation: according to the law of students' growth and development, cultivating students' leadership in 4 phases. The theme of each phase is as follows: "seeing" (self-exploration, imitation), "thinking" (understanding environment, responsibility), "moving" (influence output, positive change), "innovation" (retrospect and reflection, inheritance and innovation).

Conjunction: take both group characteristic and their own development characteristics into consideration, layering formulating periodical education plans, trying to achieve "popularize on the plane, strengthen on the line and focus on the point" so as to develop students' leadership orderly.

3.3 Cultivate condition: ecosystem of educational resources

Compared with comprehensive universities, universities of science and technology are lack of humanities subjects. It is difficult for universities of science and technology to breed the soil of comprehensive quality in a short time. Therefore, the universities of science and technology should choose to make efforts on the integration and allocation of education resources. For universities of science and technology in developing students' leadership, a more sensible way is to break the shackles of ideological thinking and carry out system reform and mechanism construction. In summary, the correct condition to develop science and technology universities' students' leadership is to create an ecosystem of educational resources.

Firstly, "Student Leadership Education Committee" should established. This committee can unify educational goal in the whole school and break departmental segregation. Under the leadership of the Student Leadership Education Committee, a networked department coordination system will be build. Next, the networked department coordination system should serve student leadership programs in layer: the first layer, focus on mobilizing of the two levels of education resources of universities and schools, relies on the leadership training camps, implement leadership training programs for all students. Second layer, focus on connecting education resources of functional departments, relies on the special programs in developing students' leadership, implement leadership training programs specifically for the group of "single strong" students. Third layer, focus on grabbing high-end education resources, relies on experimental classes, establish a mechanism of a single sector led and multi-sector guide, implement systematic leadership training programs specifically for the group of "double strong" students.

3.4 Cultivate power: dynamic feedback regulation system

In the information age, everything varies from minute to minute. If we do not consider the vitality of the system from the perspective of development and dynamics, the work of leadership education will easily get into a tight spot. Therefore, in cultivating students' leadership, it is still necessary for educators in universities of science and technology to consider how to realize the dynamic linkage among students' individual needs, educators' training plans and schools' educational resources:

Firstly, constructing a stereoscopic platform of education resources according to thinking of "classroom-community-practice" as the point, "teaching-project-base" as the line and "individual-organization-society" as the plane. Point and line to plane, constructing the stereoscopic platform of education resources in order to integrating the educational resources of student leadership development in and out of school. Next, establishing an education data-integration platform which concludes individual assessments, education resources and feedback data. This data-integration platform can realize "individual's real time evaluation→systematical analysis data→systematical recommendation projects→individual's project choice→individual participate project→individual evaluate project→system record data→system design adjustment" seamless connection.

Through the real-time tracking and analysis on students' behavior data and coding and monitoring educational resources, the data-integration platform can realize real-time prediction on individual students' status in developing leadership and give them correct suggestions and matching them proper educational resources. Only in this way, can educators ensure the vitality of the students' leadership education system.

4 Innovation-Driven Model of student leadership in practice

4.1 UESTC's Dong Liang Project

Under the guidance of the theory of Innovation-Driven Model of student leadership, University of Electronic Science and technology of China (UESTC), design a students' leadership cultivation system called "UESTC's Dong Liang Project" (Figure 1). "UESTC's Dong Liang Project" concludes three layering projects named "Pioneer-Project", "Elite-Project" and "Excellent-Project", formulating an educational resources platform and an educational data-integration platform. Through the educational data-integration platform, this project successfully connecting student groups, student individuals and educational resources. In practice, this project can develop students' leadership orderly.

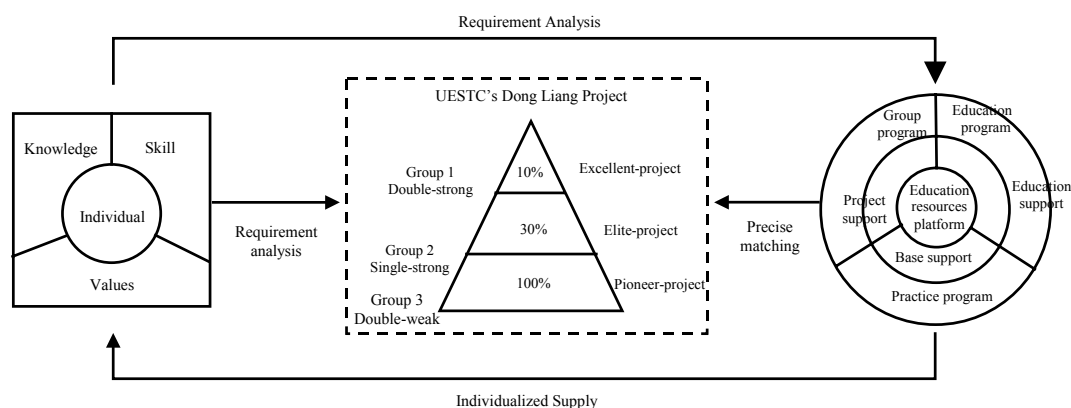


Figure 1 UESTC's Dong Liang Project

First layer, “Pioneer-Project”, popularize on the plane, through “4 on 1 plan” (each student give a speech on the stage each semester, organize an activity each year, complete a set of credit of general education courses within three years, has a cadre experience within four years), cultivate all the students’ leadership.

Second layer, “Elite-Project”, strengthen on the line of 30% “single strong” students, through the community activities, social practice and innovation project which integrity “ideological education, skills upgrading and quality development”, cultivate “single strong” students’ leadership specifically.

Third layer, “Excellent-Project”, focus on the point 10% “double strong” students. This layer’s project is specially designed for an experimental class named the “UESTC-Liren class”. This project will rely on “6 hundred percent plan” (100% public welfare plan, 100% literature and art plan, 100% health plan, 100% study abroad plan, 100% practice plan and 100% innovation plan), through a systematic program of “teaching, group and practice” in four succession levels of “seeing, thinking, moving and innovation”, cultivate students’ leadership systematically. “6 hundred percent plan” means every student in UESTC-Liren class should participate in public welfare program, participate in literature and art activities, has experience study abroad, participate in social practice program and finish an innovation project.

4.2 Cultivation effect of UESTC's Dong Liang Project

“UESTC's Dong Liang Project”, the students’ leadership development project, officially launched in September 2015, and has achieved remarkable results in only one year:

The first layer’s “Pioneer-Project”, led by student affairs department and be held by each school. So far, 1561 growth self-report activities, 712 thematic party caucus activities and more than 3000 cultural activities have been carried out. 232 posts for student cadres have been added. 21,799 undergraduate students benefit from the “Pioneer-Project”.

The second layer’s “Elite-Project”, led and held by the School League Committee. So far, 120 league cadre trainings and about 400 thematic learning for party members have been carried out. More than 2100 students’ innovation programs have been authorized and finished. 6268 of “single strong” undergraduate students benefit from the “Elite-Project”.

The third layer’s “Excellent-Project”, led and held by the National Base for University Students Cultural Quality and Education. Every year, about 500 “double strong” undergraduate students will be selected to organize 19 “UESTC-Liren class” and finish a 4-phase systematic leadership development project in 2 years. During the systematic project, leadership courses, regular activities and social practices will be carry on elaborate and orderly. Every year, 10% “double strong” undergraduate students benefit from the “Excellent -Project”. Students benefit from the “Excellent -Project” step into the international, showing Chinese students’ youth leadership to the world: our student delegations have been invited to participate in the UNESCO Youth Forum, Youth Assembly at the United Nations and United Nations Climate Change Conference 3 years in succession. They make statements on the international stage on behalf of Chinese youth. They communicate with representatives of the United

Nations and the global youth elite. They have received scholarship funding from United Nations with their outstanding performance. In 2016, Asian Pacific Youth Dialogue which hosted by UNESCO and convergence youth elites from 46 countries organized in UESTC. During this dialogue forum, our students were highly commended by UNESCO as their perfect leadership and service spirit. Our students also actively take part in some domestic activities such as China University Youth Leaders Summit, Dameisha Forum and activities hold by the Central Committee of Chinese Communist Youth League, showing the excellent leadership quality of Students of universities of science and technology.

5 Conclusions

We proposed the Innovation-Driven Model of student leadership development, special designed for universities of science and technology, considered the direction, method, condition and power of leadership education. We put this model into practice and achieved some teaching effects. This model respect students' characteristics, take both education efficiency and education fairness into consideration, provide a new theoretical perspective and practical experience in student leadership education.

Cultivating students' leadership is very important for universities of science and technology. To some extent, developing students' leadership is the most important way in science and engineering universities' education reform. More scientific, rational and effective ways to cultivate student leadership need to be developed. More college students' leadership development system with high theorization and practicality should be constructed. Welcome more scholars and educators join in the research field of college students' leadership education and make deeper researches.

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Studies on Governmental Responsibility of Urban Community Home-based Elderly Supporting Model

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Abstract With urban economic development, ever-increasing aging population and changing urban family structure, urban community home-based elderly supporting service has become a government leading and developing pension service mode. As a beneficial supplement and renewal of traditional family supporting mode, urban community home-based elderly supporting model is good for improving the quality of elderly care and service and solving the aging problem in China. With public service theory, citizen right theory, service-oriented government and other theories as basic tools, this article has analyzed the theoretical basis and practical basis of government responsibilities in urban community home-based elderly supporting model. Currently, in the process of promoting urban community home-based elderly supporting model, there still exist some problems in government work, such as lack of financial investment, insufficient human resources and ambiguity of power and duties in government administration sectors, which have seriously impacted the quality of urban community home-based elderly supporting. By referring to foreign countries' experience of urban community home-based elderly supporting, to promote urban community home-based elderly caring work, the government should strengthen professional talent team system building, optimize personnel structure in urban community home-based elderly supporting service, gradually increase financial investment, encourage multi-investment, consummate market-oriented and informatization platform construction, facilitate intelligent elderly supporting, standardize operation procedures and evaluation supervision mechanism, and establish risk prevention and control mechanism, etc.

Key words Aging of population, Urban community home-based elderly supporting, Elderly supporting mode, Governmental responsibility

1 Concept and contents of urban community home-based elderly supporting

Currently, there are three modes of elderly supporting, traditional family supporting, social pension and community home-based supporting. Family elderly supporting mainly based on family is the specific manifestation of Chinese traditional children-raising for old age; social pension refers to elderly supporting service mainly provided by nursing institutions for the aged; community home-based elderly supporting refers to a socialized elderly supporting mode that old people live at home bus supported by community. China is undergoing the first peak season of aging population growth. According to data issued by National Bureau of Statistics, in the end of 2016, the population of 60 years' old and above in China was 230.86 million, accounting for 16.7% of the total population. The population of 65 years' old and above was 150.03 million, taking up 10.8% of the total population^[1]. Due to Chinese aging of population over modernization, there exist defects in elderly supporting services provided by retirement organizations so as not to completely adapt to the development power of population-aging. With downsizing households, and population mobility, traditional family supporting function is in dilemma. Thus "community home-based elderly supporting oriented, organization supporting supplemented" will be a development direction of China's old-age security.

Different with family elderly supporting, community home-based elderly supporting mode is to solve difficulties of family supporting. Although living at home, old people can still be provide professional elderly care services from community focusing on their living demands such as diet assistance, cleaning assistance, bathing assistance, hospitalization assistance, travel assistance, and emergency assistance. Meanwhile, old people's multiple demands can be considered and provided with culture entertaining, learning education, chatting, psychological consultation, purchasing agency and other agency services. View from the content arrangement of services, home-based old people's material life should be the priority and their spiritual demand satisfaction beyond material life should be in the second place.

2 Theoretical basis of government responsibilities

2.1 New public service theory

Duguit believes that “public services refer to behaviors conducted in duty bound to government”, and thus defines a public service as below: “any activity due to inseparable realization and promotion with social unity under the standardization and control of government can be a public serve which has the characteristic of not being guaranteed unless through governmental intervention”^[2]. New public service theory believes that public managers serve and execute work for all people with citizen and public interest as the core, claim that government work should be started and practiced for all people’s common benefits instead of part of people’s interests. According to public service theory, community home-based elderly supporting service is government’s obligation in front of an aging society which shall bear major responsibilities. Community home-based elderly supporting provided by the government is a general demand of the whole society.

2.2 Theory of citizen’s right

Citizen’s right is a concept corresponding to state power. Citizen’s basic rights are confirmed by constitution, “any state power (legislation, administration, and jurisdiction) shall not violate the regulated act or omission of these basic rights”^[3]. Right to live is the first and most important right among all citizen’s rights, which refers to “the right that citizen asks for the country to take all positive measures to protect its rights of enjoying health and cultural life, including two aspects: people with survivability can enjoy the right of material and cultural life, and people deprived of survivability can ask for the country to offer the right of relief for survivability maintenance.”^[4] It is a citizen’s basis right that elderly will be looked after properly, which should be equally enjoyed by every citizen no matter the status, position and fortune. Constitution is the basic law of China stipulating citizen’s rights mainly including right to cultural education and life guarantee right. Meanwhile, it has regulated that government is responsible to help citizens in material aspect. As an important component of human right, elderly supporting should be citizen’s right as well as the responsibility of government and the country. The state has the responsibility to make its people live a dignified and stable life.

2.3 Service-oriented government theory

Service-oriented government is the target selection of Chinese government reform at present. Scholars believe that “it is a historic tendency that government transforms from rule-oriented to management oriented to service oriented, and it is a development process with obvious regularity.” Correspondingly, government administration mode should transform from “ruling administration” to “management administration” and to “service administration”. It is a dynamic changing process with ruling and management, management and service alternating^[5]. “Service oriented government serves for citizens with social and public service as the basic principle of government existence, operation and development”^[6]. Elderly supporting belongs to social public service. It is the most fundamental task of socialism to constantly satisfy people’s ever-increasing material and cultural demands. Government should satisfy old people’s pension service demands.

3 Government responsibility absence in community home-based elderly supporting mode

Community home-based elderly supporting structure and operating system with life care, medical treatment, mental healthcare, culture and entertainment, social participation and right protection as major contents have taken a preliminary shape in China so far. Home-based elderly supporting system has been established in many cities. But there exist defects of government when carrying out community home-based elderly supporting mode as below:

3.1 Ambiguity of power and duties in governmental administrative departments

Although “Constitution” has regulated that the country should provide material support for citizen after aging but no clear regulations of government responsibilities of old people’s spiritual assistance. Newly revised “Rights Guarantee Law for Elderly in People’s Republic of China” has regulated government’s legal responsibilities for elderly population, equipment construction, fund channels, operating contents of home-based elderly support. Without stipulating government’s direct responsibilities,

it guides, encourage, support and help extremely poor elderly from a macroscopic aspect. Due to benefit segmentation in government function departments, there exist buck-passing problem in each department during specific implementation process so as to waste time and energy, reduce working efficiency and fail to truly provide effective elderly supporting services. Although a lot of preferential policies have been formulated by the government, lack of system safeguard makes it hard to implement elderly supporting policies so that a lot of policy programs cannot be executed as planned. For example, old people above 65 years' old in Wuhan can get a free "push-to-talk" cell phone for them to call for household services, rehabilitation nursing, meal assistance and emergency service, spiritual solace and home-based elderly care service. Although the communication expense can be free, but a lot of old people worry about high service fees through "push-to-talk" call, so that many of them don't dare to use. Some old people are not familiar with this service mode so as not to keep using after receiving the cellphone. This has greatly reduced the efficiency of "people-benefit project"^[7].

3.2 Shortage of government financial investment

At present, fund shortage has become the biggest difficulty of home-based elderly supporting service. In addition to poor support from preferential policies such as land and house using, taxation reduction and exemption, and government purchase subsidies, the development of home-based elderly supporting service has been limited. Home-based elderly service such as "home-based elderly supporting center", "elderly day care station", "meal delivery service", "labor time storage record", "push to talk call" and other facilities require capital investment. At present, urban community home-based elderly supporting is from basic level financial subsidies. Some are from social donation and most funds are used for community home-based elderly supporting guiding center construction in each region and software & hardware construction in each road and community service station. Most rural communities are not equipped with fixed home-based elderly supporting places. Concept of community home-based elderly supporting was proposed in recent years so that it has not yet been valued. Capital shortage has prevented the innovative development of service program so as not to provide convenient, fast and thoughtful social service for elderly people.

3.3 Lack of professional personnel cultivation

Most working staffs in community home-based elderly supporting centers are staffs in community residents committee which is responsible for the work assigned by regional government and sub district office, and also responsible for elderly service. Thus, there are few professional management staffs and large workload, so that it is hard to complete relevant tasks of home-based elderly supporting service. Due to the influence of working time, salaries and public opinions, staffs of community home-based elderly supporting centers are from laid-off or low-income families so that they have to take up housekeeping work as their occupation problem cannot be solved. In addition, most service staffs are in a low educational level so that conflicts with old people are easily produced. Volunteer group participating in elderly supporting service is not stable. Insufficient serve and excessive service which means few volunteers at ordinary time but too many volunteers during holidays happen frequently mainly due to lack of guidance and standardization, difficulty to obtain old people and companies' trust. In addition, there is no relevant systems and laws to guarantee volunteers' rights so that it is difficult to make a clear distinction of responsibility of accidents.

3.4 Governments should strengthen service management investment

Government has not carried out a balanced overall information resources of home-based elderly supporting. At present, community home-based elderly information and demand communication are not smooth, with supply and demand not well connected, resource allocation not well implemented. Information between different regions cannot circulate mutually and information localization has weakened the government regulation function. Implementation of home-based elderly service in different communities are different. Currently, home-based elderly supporting mode is in an elementary stage. No uniform standard has been established about how to confirm the classification standard of service target, how to classify the access threshold for service-providing social organizations, how to certify working staffs' qualification and how to formulate the supervision mechanism and punishment measures, etc.

4 Proposals for government responsibility of community home-based elderly supporting

The economy develops rapidly in western countries where social security system is well-established. China can refer to western countries' experience and accelerate urban home-based elderly supporting development in Chinese cities.

4.1 Clarify government role in community home-based elderly supporting service

The Denhardt have provided seven aspect which is of great guiding significance for service oriented administration: 1 service instead of domination; 2 public interest is the target other than the secondary product; 3 think strategically and act democratically; 4 serve citizens instead of customers; 5 responsibility is no single; 6 people oriented rather than productivity oriented; 7 surpass entrepreneurship and pay attention to citizen's right and public service.^[8] In community home-based elderly supporting service system, government does not provide service directly. Instead, policymakers are responsible for perfecting relevant policies, auxiliary policy system, establishing income safeguard system, social security system, and medical insurance system so as to match community home-based elderly supporting system. Government should also be the resource integrator responsible for cultivating the marketization of community home-based elderly supporting service and promoting the formation of volunteer organization mechanism. Government should strengthen policy support, financial subsidy, taxation preference, land and house use preference, loan privilege on the macro level. Government should be an administrator responsible for supervision of community home-based elderly supporting service and guarantee of community elderly's rights.

4.2 Government should enhance financial investment and capital supervision

Currently, community home-based elderly supporting service is from basic level financial subsidies which can be far enough satisfy the demands of community home-based elderly supporting. Thus, it is necessary to learn from western policies, expand found-raising channels, and encourage individuals, companies or units to provide capital support. To attract more social power to participate, government should relax restrictions for access and provide relevant reduction and preferential in taxation, venue leasing, and provide subsidy for elderly supporting product R & D organizations, and home-based elderly supporting institutions according to practical conditions. In addition, to obtain sufficient funds for community home-based elderly supporting, government departments can also issue welfare lotteries for fundraising to support community home-based elderly supporting. After obtaining elderly supporting funds, fund utilization should be transparent. On one hand, government departments should conduct special supervision on this kind of fund utilization, and make regular inspection of fund budgeting and execution so as to guarantee the service efficiency. On the other hand, fund utilization should be under the supervision of the masses.

4.3 Government should strengthen professional talent cultivation

Government should energetically develop non-governmental service organizations for community home-based elderly supporting and get more personnel engaged in community home-based elderly supporting service. Government should encourage folk service organizations to participate in community home-based elderly supporting service in policy measure level and provide convenient conditions for them to introduce communities, confirm service target, and government purchase service, settlement and taxation reduction and exemption. Government can freely provide a certain amount of staffs for professional skill training, and issue certifications after they pass through the training, and provide allowance for qualified working staffs. Government should encourage universities to set up relevant professional courses, accelerate to cultivate professional talents, and formulate laws and regulations for community volunteer service to guarantee volunteers' rights, take various measures to mobilize social volunteers' activity. For example, praise excellent volunteers through different media regularly; establish voluntary workers service stable according to China's voluntary blood donation system, i.e. when volunteers participate in home-based elderly supporting volunteer service, they can be recorded into the service table accumulatively by hour so that when their families or they need help, they can enjoy relevant nursing.

4.4 Government should promote intelligent home-based elderly supporting service

Intelligent home-based elderly supporting service refers to a new model constituted by several

subjects including government, family, elderly supporting institution, by comprehensively using internet and modern information technologies to provide monitoring, healthcare and life service for home-based elderly people, oriented by government, with massive subjects participated, internet and community home-based elderly supporting combined together. Government should guarantee the information networking interconnecting and sharing, resources mutual utilization between different systems. These information include old people's basic information, demand information, and the information offered for social pension service. Establish relation between elderly supporting and healthcare, improve mutual cooperation efficiency, and make a unified assignment, provide detailed information for other services; consummate information platform conditions, help old people's for food ordering, housekeeping, and issue activity information. Old people is isolated with modern information, and afraid of modern technology. Government should consider the practical condition of old people and develop operating platform suitable for old people so that they can operate conveniently. Government should also guarantee the platform design and follow-up service.

4.5 Establish evaluation and risk prevention and control mechanism

It will be hard to evaluate the effect of home-based elderly supporting service and hard to mobilize home-based elderly supporting service providers' activity without a scientific evaluation standard. UK has established an elderly supporting evaluation system and set up elderly supporting supervisor for elderly supporting service evaluation. China can also imitate their experience, set up professional evaluation organizations, and formulate specific evaluation standard. In addition, there exist risks in urban community home-based elderly supporting service such as overinvestment in early stage but long cost recovering period. To reduce or eliminate these risks, it is necessary to establish home-based elderly supporting risk prevention and control mechanism. Government can encourage social forces to establish the third-party risk prevention and control to share risk responsibilities. Conduct inspection on home-based elderly supporting service organizations, and accept insurance from eligible home-based elderly supporting service organizations, so as to reduce risks and share their liability risks, and cope with unstable operating risks in home-based elderly supporting service organizations with the help of reasonable and standardized systems, and to effectively prevent economic risks and political risks for the purpose of realizing social stability and harmonious development.

5 Conclusions

The rising amount of China's aging population has aggravated the burden of social pension insurance and service system. Urban community home-based elderly supporting can organically combine social provision for the aged with family supporting. As a public administrator, the government is responsible for promoting the reform of urban community home-based elderly supporting mode. Through strengthening professional talent team system building, optimizing personnel structure in urban community home-based elderly supporting service, gradually increasing financial investment, encouraging multi-investment, consummate market-oriented and informatization platform construction, facilitating intelligent elderly supporting, standardizing operation procedures and evaluation supervision mechanism, and establishing risk prevention and control mechanism, the quality of urban community home-based elderly supporting service can be effectively improved so as to promote the construction of China's old-age security system.

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“Assimilative Fusion or Pluralistic Integration”: Study on Ethnic Identity and Ethnic Consciousness of Ethnic Minorities in Urban Areas

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Abstract The empirical research shows that, the urban ethnic assimilation is not a one-way process, but a two-way and even multi-dimensional construction process. The minority's willingness for fusion, the exclusion behavior, and the social, cultural and economic environments together contribute to the construction of urban ethnic groups, ethnic sub-structure formation, with the enhanced ethnic group boundary and the clear ethnic identity and consciousness.

Key words Urban ethnic relations, Ethnic identity, Ethnic consciousness

1 Research background

1.1 “Pendulum+ precipitation”: focusing on the types of floating population of ethnic minorities

Since 1980s, China's urbanization process has been gradually accelerating. In multi-ethnic areas, for one hand (on the one hand), the urbanization of urban minority population is a part of the new urbanization, which should be incorporated into the consideration of social change of the whole country; on the other hand, it has unique properties. From the perspective of typology, based on the different types of population flowing into the cities, floating population of Chinese minorities can be roughly divided into three categories: the first category is those flowing into Beijing, Shanghai and Guangzhou. Like the majority of the floating population, they are the “migrant population”; the second is the population flowing into cities like Chengdu and Lanzhou, where the main residents are the Han nationality, but the cities are surrounded by autonomous prefectures and counties of large minorities. The minorities' floating population tends to settle down there. The third is the population flowing into cities like Urumqi and Hohhot, where the main residents are minorities. In a sense, the Han nationality also constitutes a part of the local minorities' floating population (Ma Rong, 2009). They are quite different between the urban fusion of the three types of floating population and the social problems associated with them. In order to simplify the discussion, this study focuses on the second type of floating population of ethnic minorities, and takes C City of S Province as an example.

S province has been China's important “national corridor” since ancient times, and it is one of the core provinces in which ethnic minorities live in concentrated communities. Since this century, the increasing ethnic population have been carrying their children to flow into the big and medium cities of S province, which presents a totally different character and direction from that of the flow pattern of “migratory birds” in the eastern and coastal provinces—the flow pattern of “pendulum” + “precipitation”—they tend to get rooted in the cities and become City migrants and permanent residents.

1.2 Theoretical paradigm: “assimilation and fusion” VS “pluralistic integration”

This study will focus on floating population of urban minorities, and the research content focuses on the observation of the “ethnic consciousness” and “ethnic identity”. This is the issue of ethnic relations with ethnic culture as control variables, involving concepts like ethnic relations, ethnic culture, ethnic consciousness and identity.

In recent years, about the research on issues of ethnic minorities in China, there have been two theoretical paradigms with two views competing with each other and having different influences: one is the American sociologist Gordon's “view of ethnic fusion” that the ethnic groups will inevitably move towards “fusion and assimilation”¹ (Gordon, 1964); the other is the “pluralistic integration” pattern proposed by Mr. Fei Xiao-tong (Fei Xiao-tong, 1989). Professor Ma Rong further elaborated Mr. Fei's “pluralistic integration” as “cultural pluralism and political integration” (Ma Rong, 2009). Under the two theoretical paradigms, ethnic consciousness and ethnic identity of ethnic minorities will

1 In order to facilitate the discussions, the author generalizes Gordon's theory to the idea of “ethnic integration”.

have a trend towards two different results. The former will make ethnic consciousness and ethnic identity develop toward the integration and assimilation of cultural and structural levels with most ethnic groups; while the latter, in the premise of the integration of the Chinese nation, respects ethnic diversity culture. The two research paradigms provide a continuum and measurable index system for the study of ethnic relations because the former is clear about the relationship between ethnic groups. The latter lacks a clear measurable index system for lack of clear direction of continuous significance in many concern variables. At the same time, the theoretical contribution of existing researches to ethnic consciousness and ethnic identity is obviously insufficient, and most of the empirical researchers follow the Gordon's paradigm of ethnic integration in the default and research ideas. The "pluralistic integration" is more manifested in the theoretical debate on the macro level, and it is difficult to direct the empirical research, making it less influential in the empirical research than the concept of ethnic integration.

In Gordon's theory of ethnic relations, specific operations of the assimilation process are changed as seven variables as shown in Table 1: cultural assimilation, structure assimilation, assimilation, marriage identity assimilation, the attitude of accepting each other (without prejudice) and behavior (non-discrimination) (accept each other (Milton M. Gordon, 1964; Ma Rong, 2009), and it is not difficult to see that the seven variables are still more abstract, although contribute to the formation, do not complete a more systematic and operational measurement index system. The author tries to explain and interprets the concrete variables, and the detailed explanation is shown in Table 1.

Table 1 List of ethnic relations measurement system under "ethnic integration view"

Variable(Indicator)	Measurement	Notes
Cultural or behavior assimilation (acculturation)	Language (barrier) Religion (conflict) Social customs and habits	Deep level content is people's value system and behavior norm, which becomes the relation criterion of people's behavior interaction. "Cultural assimilation" implies the mutual recognition of the norms of conduct.
Assimilation of social structures (interpenetration of social structures)	Primary population mobility	Specifically, the ratio of different ethnic groups fuses into each other's "primary group".
Assimilation of marriage (interracial marriage)	The scale of Intermarriage	It is the index, among the seven variables, that is sensitive to any other variables.
Assimilation of identity (ethnic identity)	Citizen VS ethnic group Identity comparison	Social psychological indicator with certain levels
Elimination of ethnic bias in consciousness	Social distance	Social psychological indicators needing to be localized in specific measures
Elimination of discrimination among ethnic groups	Economy, employment and education Discrimination within and outside the system	We can understand it from the perspective of system and life ¹
Assimilation of public affairs	Conflicts and elimination of values and rights distribution	The most abstract index, the operation is difficult, but it is very important

Source: Ma Rong, edited (editor), *Classics of Western Ethnic Sociology*, Peking University Press, 2010

Fortunately, the seven variables proposed by Gordon involve ethnic relations and ethnic assimilation of the more comprehensive content, and have good tips and guidance in level measurement regardless of ethnic integration view or multi-integrated pattern view. There are differences between the two paradigms for the assumption of seven variables:

¹ See the theoretical framework of the system and life perspective put forward by Professor Li You-mei's team in the last two years.

The Gordon assumed that the relationship among the seven variables, “(1) in the process of contact majority and minority groups, will occur first cultural assimilation and cultural adaptation; (2) cultural assimilation may not even be in the assimilation of other types of cases, and this’ alone the cultural assimilation” continued the time may be indefinitely; (3) if the structure of assimilation and cultural assimilation synchronization or occurring in cultural assimilation, so all other types of assimilation will inevitably follow “(Milton M. Gordon, 1964; Ma Rong, 2009). It is obvious that assimilation of culture and structure is the antecedent variable and sufficient condition for the remaining five assimilation options. All seven variables have the meaning of “continuum”, and that is, each group under test, and even each subject, can find its own quantized scale between complete assimilation and complete non assimilation fusion. This is different from the idea of “pluralistic integration”. In view of the pattern of “pluralism” hypothesis, cultural assimilation is not only the precondition of ethnic assimilation, is advocated in the “one” framework and retained the “diversity”, which is more favorable for the formation of harmonious ethnic relations. Therefore, assimilation should not be regarded as a development goal even if cultural assimilation occurs.

In the author’s opinion, Gordon’s view of ethnic integration has strong operational implications, but lacks localized reflection on the relationship between Chinese ethnic groups; and “pluralistic integration” pattern view is more practical in thinking ethnic relations, but lacks a standard design and operational level. Therefore, the author will break their full compliance and dependence of those past researchers on Gordon’s view of ethnic integration at the operational level , and try to integrate the concept of “ethnic integration” and “pluralistic integration”, in order to more accurately grasp the ethnic relations of urban minorities.

2 Sampling plan and data description

2.1 Sampling plan

In view of the fact that it is difficult to grasp the distribution information of urban minority population, according to the data of floating population in C City in 2016, the sample is obtained by the way of multi-stage and non-probabilistic sampling. The whole sampling process is divided into two concrete stages: the first stage: purposive sampling is used to select the 5 areas of the first circle of C City and the 2 areas of the second spheres. The second stage: in the recommendation of the relevant departments of C City, the accidental sampling is used to conduct a questionnaire survey respectively in the communities where the ethnic minorities are relatively concentrated inside the districts. The distribution of final sample is as follows:

2.2 Sample distribution

Sample distribution of minority respondents. In this study, 255 urban minority samples were obtained. Among them, males accounted for 40.1% (102), women accounted for 59.9% (153), and the sample amount of both sexes reached the requirement of group comparison study. Sample distribution of ordinary surveyed citizens. In this study, 311 samples of ordinary citizens were obtained. Compared with ethnic minority compatriots, the investigation difficulty of ordinary community residents is relatively low, including 130 males and 181 females, accounting for 41.8% and 58.2% respectively.

3 Ethnic identity of urban minorities

3.1 Cultural inheritance and cultural assimilation—From the observation of the inheritance of the native language

As mentioned above, in the perspective of Gordon’s theory, cultural assimilation is the basis for the assimilation of minority groups into the main ethnic groups. When cultural assimilation occurs, the rest assimilation will follow; In the perspective of pluralistic integration , culture is exactly the “pluralism” that needs to respect and retain the pattern of “integration”. In any case, to observe ethnic identity of urban minorities, first of all, we need to observe cultural assimilation. The native language is one of the most important elements in culture. In this study, we will use the native language as a cultural indicator for the floating population of the urban minorities.

As shown in Table 2. The sample shows that in the floating population of ethnic minorities in the City of C, those whoever can speak the national language skillfully accounted for 48.6% (124 people),

while those whoever can speak the national language relatively skillfully accounted for 19.6% (50 people), this two accounting for 68.2%. While 9.4% (24) considered their own national language ability is the “general”, 12.2% (31) of the native language ability of self-assessment as “a little” and “not” the proportion accounted for 10.2% (26). The floating population of ethnic minorities in C has been presented in the national language of the ability of differentiation, the phenomenon of population differentiation within the ethnic culture has already occurred, such as whether this Gordon theory implies that, finally realizing the thorough integration of the urban minorities’ culture towards the culture of majority population, still needs further empirical observation.

Table 2 Statistics of native language ability of floating population in C City(unit: number /%)

Can you speak your native language	Frequency	Valid percentage	Cumulative percentage
Very skilled	124	48.6	48.6
Relatively skilled	50	19.6	68.2
Commonly	24	9.4	77.6
Only a little	31	12.2	89.8
Not at all	26	10.2	100.0
Total	255	100.0	

And Table 3 prompts us that although 22.4% of respondents can speak” only a little” or “not at all” the national language, only 4.7% (12 persons) do not pay attention and do not know whether the C City provides opportunities and conditions for themselves or their children to improve their native language. The remaining 95.3% of respondents, no matter who optimistically think there are many opportunities (8.7%) or more opportunities (24.1%),or those who pessimistically think there are less opportunities (38.7%) or no chance (23.7%). Both expressed in attitude and in fact for practical concern about the opportunities for language learning in this group. That is to say, the attitude of recognizing and inheriting the native language is still very strong.

Table 3 Statistics of ethnic language learning conditions of minority floating population in C City(unit: number /%)

Does the City of C have opportunities and conditions for you to learn and improve your native language	Frequency	Valid percentage	Cumulative percentage
Many opportunities	22	8.7	8.7
More opportunities	61	24.1	32.8
Fewer opportunities	98	38.7	71.5
No chance	60	23.7	95.3
Lack of attention or understanding	12	4.7	100.0
Total	253	100.0	

At the same time, among the 65 respondents, minority migrants who are married and have children with entering our survey samples, 21 persons (32.3%) are teaching and inheriting their native language to their children through their ethnic kinship network. 24 persons (36.9%) in the territory of their own home are teaching and inheriting the native language to the children, while 18 respondents (27.7%) think that their children do not have the opportunity to learn their native language.

In any case, although among the minorities’ floating population of C City, the phenomenon of cultural assimilation towards main ethnic groups seems to be in fact happening, we can not ignore the floating population of ethnic minorities has very strong practical concerns about the inheritance of native languages and cultures.

3.2 Social distance of minority groups

Social distance can reflect the different social distances between its belonged group and the measurement group. As shown in Table 4, The overwhelming majority of the investigated minority migrants in the City of C expressed a strong willingness to integrate into the City. Along with the social distance from the near to the distant, up to 89.6% of the respondents are willing to become friends with other nationalities in the City (such as Han nationality), and 91.2% of the respondents are

willing to “be my neighbor”. The proportion of “ordinary intercourse” is as high as 98.3%. Only the nearest choice of social distance, “kinship through marriage”, has a relatively low rate of selection, only 37.4%. However, from the perspective of inter-ethnic marriage, 37.4% of the floating population of ethnic minorities accept inter-ethnic marriages, which shows that a large proportion of minority groups have strong intention of urban integration.

Table 4 Statistics of the social distance of floating population of foreign ethnic minorities in C City for urban residents(unit: number /%)

I would like to flow into the City with the other racial citizens (such as the Han nationality)	Frequency	Valid percentage	Valid cases
Form kinship through marriage	89	37.4	238
Become friends	206	86.6	238
Become my neighbor	217	91.2	238
Ordinary intercourse	234	98.3	238
Living in a City without intercourse	238	100.0	238

3.3 Social interaction and embedded structure

(1) The obvious “hierarchical order” of social networks in floating population of ethnic minorities

The “**hierarchical order**” refers to the individual-centered way of social interaction in the traditional rural society in China. This pattern constructs the structure of rural social network. In our measurements, we explored the first contacts, second contacts and third contacts in the daily lives of floating minority migrants, in order to explore social relation network and social relationships of minority floating population. As shown in Table 5, respondents of ethnic minorities in the C City follow a pattern of communication that is similar to the “**hierarchical order**” pattern. Among the first contacts, 86.5% are the family members and relatives, and 6.4% are fellow countrymen in the City; Among the second contacts, 35.6% are fellow countrymen in the City, 35.2% being colleagues, classmates, teachers in the City, and 12% are friends of the same clan, but not of countrymen; Among the third contacts, the choice of communication is from high to low, colleagues, students and teachers. The local kindred friends of the City, Han Chinese friends in town, fellow countrymen in the City, cognation, but non fellow friends, etc.

Therefore, relatives and countrymen are still the core circle of floating population of foreign ethnic minorities, but colleagues, classmates and teachers in the City become a secondary communication circle, and local friends become the third-grade communication circle. In accordance with their blood, geopolitical and geo-social interaction, the “hierarchical order” of social intercourse unfolds sequentially from the near to the distant.

Table 5 Statistical table of social interaction among floating population of floating population in C City(unit:%)

	First contact	Second contact	Third contact
Family and relatives	86.5	7.7	1.4
Fellow countrymen in the City	6.4	35.6	16.8
Cognition but non fellow friends	0.8	12.0	11.4
Colleagues, classmates, teachers in the City	4.0	35.2	27.3
The City’s local cognation friends met in the City	0.8	5.2	21.4
Han Chinese friends met in the City	0.8	4.3	8.6
Others	0.8	0.0	3.2
Total	100.0	100.0	100.0

(2) The ethnic group has become the “center of resources and rights” in social networks

The minority migrants in the C City are more likely to seek “asylum” from their own organizations (societies). Therefore, minority communities have mastered the “core resources” of the social network

and become the center of the rights of the ethnic groups. As shown in Table 6, The ethnic group has become an important place for the floating population of ethnic minorities to obtain developmental resources, obtain social contacts and seek “asylum”. In the “first choice”, 69% of respondents agree that the community can “make friends”, while 13.5% of respondents agree that the community can “provide useful information”; But in the “second option”, 45% of respondents agree that the community can “provide useful information”, and 15.2% of respondents believe that the community can “solve the difficult life”.

Table 6 Club attitude table of the floating population of foreign ethnic minorities in C City is native or minority(unit: number /%)

What assistance and support do you think our club can provide	First option		Second option	
	Frequency	Valid percent	Frequency	Valid percent
Fund or loan support	8	3.3	0	0.0
Make as many friends as possible	169	69.0	6	4.0
Provide useful information	33	13.5	68	45.0
Obtain employment	10	4.1	13	8.6
Purchase	2	0.8	3	2.0
Rental	2	0.8	3	2.0
Investment	2	0.8	3	2.0
Expanding corporate influence	0	0.0	6	4.0
Solve the difficult life	6	2.4	23	15.2
Schooling of children	3	1.2	9	6.0
Humanitarian support	2	0.8	16	10.6
Other	8	3.3	1	0.7
Total	245	100.0	151	100.0

(3) “Social networks”

As shown in Table 7, In the network of urban social relations, of which is expected by the floating population of ethnic minorities, the top three are: 34.8% of the respondents hope to make “good people” in the City, but 20.4% of the respondents hope to make “people who can help each other” in the City. 19.2% of respondents want to make “knowledgeable people” in the City. The three items have obvious characteristics of Junior Group members. Thus, the primary population has stronger desire to integrate into urban residents.

Table 7 Network expectation table of social relations between floating population of floating population in C City(unit: number /%)

What kind of people would you like to know and associate with in the City	Frequency	Valid percentage
Government officials	11	4.4
Business owners	16	6.4
Wealthy investors	4	1.6
A wide range of people	26	10.4
Man of knowledge	48	19.2
Man of position	3	1.2
People who can open hearts to each other	87	34.8
Mutually helpful people	51	20.4
Others	4	1.6
Total	250	100.0

It is not difficult to see, no matter what it is social contacts, patronage or the organizational attachment, the population structure formed by the family compatriots becomes the main embedded structure of minority floating population, which will deepen the national ethnic identity and ethnic

consciousness. On the other hand, with the strong willingness of the floating population and the urban residents to establish a close social network relationship (primary population), tension and contradiction coexist.

4 The influential factors of ethnic relations' attitudes towards urban floating population

In order to simplify the discussions, this research will take the floating population of ethnic minorities in C City Ethnic Relations Evaluation as the dependent variables. Culture, identity, integration willingness, social interaction, social exclusion and other variables will be taken as independent variables to construct two fractional logistic regressions, in order to observe the the specific impacts of culture and other factors on ethnic relationship.

4.1 Construction of model variables

4.1.1 Dependent variables: the attitudes of urban floating population towards ethnic relations

The relationship between ethnic groups is a complex variable with both facts and attitudes. In this study, we measured the cognitive attitudes of the urban floating population to the ethnic relations in C City through this kind of problem. According to your observation, how about the relationship between different ethnic groups in C City in the past 5 years? Two variables of "1" option mean better City ethnic relations; as the two variables of the "0" option mean the ethnic relations are still in poor or even worse status, become the research model of the dependent variable, and construct two models of fractional logistic regression. In this way, the ratio of the model to the independent variable indicates whether the influence of the dependent variable has changed the attitude of the respondents towards the ethnic relations or not.

In the end, the frequency of model dependent variables in the whole model is divided into: 74 for the good of the ethnic relations, and 107 for the relationship between the ethnic groups.

4.1.2 Independent variables

The independent variables are set as follows:

(1) Underlying variables: the four variables, such as nationality, marriage, education and age are taken as the Underlying variables to be included in the model.

(2) Cultural variables. Will the respondents speak their native language as an observation of cultural heritage and assimilation variables.

(3) Social interaction. "You will encounter difficulties in the City of C who hope to get help and support", "you want more and more new knowledge in the City and what kind of interaction. When you usually contact the main object, the first contact is the three variables such as the measurement of social interaction and social network."

(4) Identity. Whether or not you participate in the organization or activities of your ethnic or ethnic minority associations, you feel that you will not speak or speak good Mandarin or Chengdu dialect, and also will be "non- inconvenience" and other two variables as identity observation.

(5) Willingness to integrate. Questions from social distance scales are used as a measure of willingness to integrate. It should be noted that the index is crossed with identity.

(6) Social exclusion. Take "differential treatment" as a measure of social exclusion. What needs to be confessed is that social exclusion and identity overlap. In the preceding paragraph, differential treatment is discussed as ethnic identity. As a social exclusion, this is a discussion of differential treatment from another perspective.

As shown in Table 8, all categories or sequence variables in the independent variables are treated with dummy variables, with frequency distributions as follows:

Table 8 Demographic variables of ethnic groups, attitudes, influencing factors, model variables, and frequency (unit: person, age)

Types of variable	Specific variables	Dummy variables	Frequency
Underlying variables	Ethnic City	Zang	156
		Yi	31
		Wei	8
		Hui	1
		Qiang	1
	Marriage	Married	70
		Unmarried	103
		Widowed	2
		Divorced	6
	Education	Primary school and below	43
		Middle school	19
		Senior high school, vocational school and technical secondary school	45
		Junior college and undergraduate	64
Master degree and above		10	
Cultural variable	Can you speak your native language?	Mastered	88
		Skilled	33
		Ordinary	20
		A little	27
		Not at all	13
Social interaction and social networks	Who would you like to ask for help and support when you are having troubles in C City?	Government	72
		Ethnic affairs commission	2
		Bureau of religious affairs	3
		Unit leader or a business owner	32
		Families or relatives	40
		Friends, classmates, teachers	20
		Fellow-townsmen	4
		Present colleagues	5
	Others	3	
	What kind of people would you like to know and associate with in the City?	Government officials	11
		Business owner	14
		People with rich resources	18
		Educated people	35
		People of rank	3
		People one can open heart to	61
		Mutually helpful people	35
	Others	4	
	Who is your first contact?	Families and relatives (including boy or girl friends)	156
		Fellow countrymen in the City	11
Colleagues, classmates, teachers in the City		8	
Friends of the same ethnicity made in the City		2	
Friends of Han made in the City		2	
Others		2	
Identity	Have you ever participated in clubs and organizations or events of your own ethnicity or minority?	Yes	75
		No	106
	“Do you think whether it’s not convenient to live in C City without speaking Mandarin well or not?”	Yes	51
		No	130

Types of variable	Specific variables	Dummy variables	Frequency
Social exclusion	Differential treatment	Not allowed to take a taxi	66
		Not allowed to stay at a hotel	22
		Arrears of wage	21
		Refused by the shopping mall	17
		Refused by hospitals	16
		Refused by restaurants	10
		Refused by schools	6
Willingness to integrate	Social distance	Related to citizens of other ethnicities in the City by marriage	89
		Become my friend	206
		Become my neighbor	217
		Regular communication	234
Underlying variables		Age	26.8 (mean value)

4.2 Model conclusion: dynamic “push and pull” in ethnic relations and intensification of ethnic identity

As shown in Table 9, it is ultimately statistically significant, and the independent variables entering the model have the following:

(1) Underlying variables. The floating population of urban minorities with postgraduate education have the lowest level of evaluation on ethnic relations. Compared with post-graduate, floating population of urban minorities with primary school degree and below believing that ethnic relations is getting better is 10.37 times of post-graduates, junior high school learners 80.72 times of post-graduates, high school, vocational school, secondary school and college degree are also 35.10 times and 27.65 times of the post-graduates. In addition to the primary school and its below educational level, the higher the educational background, the lower the evaluation of ethnic relations. In addition, ethnic identity has become an important variable for ethnic relations.

(2) Cultural variables. In terms of the language level of the ethnic group, it is obvious that the floating population of the minorities who cannot speak native language at all will have the highest attitude of evaluation towards ethnic relations. Compared with those language learners whoever cannot speak native language at all, language learners who can speak the native language “very skillfully” will think that the occurrence rate of better ethnic relations only has 0.002 times, almost impossible; if you can “skilled” speak the native language, the native speaker will not speak, think better of ethnic relations occurred more than 0.05 times, and the ratio is quite low; similarly, if the “general” level of native speakers of languages, or “little” speak their native language, the native language will not speak, think better than the ethnic relations were 0.023 and 0.054 times, which means the ratio was very low. In other words, as long as language learners are not entirely unable to speak their own languages, they do not perceive the change in ethnic relations in their attitudes’ judgment.

(3) Identity and embedded structure. This is mainly reflected through societies or community activities that their own races or ethnic minorities have participated, if respondents have participated in the activities of the ethnic minority community or community, sharing the family or ethnic social capital, so the organization form attached with respect to did not participate in the activities of society or the family of ethnic minorities respondents have more intense ethnic relations is not good cognitive (odds ratio is only 0.008).

(4) Social exclusion. In social exclusion, the difference in behavior is only the default wage entry model. The ratio is 0.007; that is, if respondents have been in arrears with wages, then they are more willing to agree that ethnic relations are not good enough.

The model research suggests that it is a dynamic process that the floating population of urban minorities enter the City, which is not a single dimensional continuum, but the dynamic process of multi-power system and structural construction. In this study, we see their strong willingness of minority floating population into the City and social exclusion from main urban ethnic groups, all of

which form the “push and pull” tension toward the construction of ethnic relations. And this process also constantly strengthens the boundaries of ethnic groups in the City, so that ethnic consciousness of ethnic groups is formed rather than eliminated. Just as the City of C began to appear in the WHC area of W District, the living division and living isolation between Tibetan P.R.China and the subject Han nationality were common. All these will continue to strengthen the ethnic consciousness and our ethnic identity.

Table 9 Two logistic regression models of ethnic relations attitudes among urban floating population

Independent variables		Equation coefficient	Standard error	Wald test	Degree of freedom	P value	Odds ratio
Degree of education Benchmark variables: post-graduates and above				13.328	4	0.010	
Degree of education	Primary school and below	9.247	2.873	10.359	1	0.001	10.37
	Junior high school	11.299	3.714	9.257	1	0.002	80.72
	Senior high school, vocational school and technical secondary school	10.471	2.932	12.751	1	0.000	35.10
	Junior college and undergraduate	10.207	3.032	11.334	1	0.001	27.65
The degree of native language Benchmark variable: not at all				9.499	4	0.050	
Degree of the native language	Mastered	-5.178	1.707	9.200	1	0.002	0.006
	Skilled	-3.420	1.746	3.835	1	0.050	0.033
	Ordinary	-6.244	2.738	5.201	1	0.023	0.002
	A little	-3.620	1.878	3.717	1	0.054	0.027
Have participated in the activities of the local community		-4.848	1.600	9.183	1	0.002	0.008
Have experienced arrears of wages		-4.988	2.361	4.463	1	0.035	0.007
Zang		-2.617	1.313	3.969	1	0.046	0.073
Yi		-.774	1.480	0.274	1	0.061	0.461
Uyghur		8.272	3.840	4.640	1	0.031	3911.39
Constant		-20.136	55753.293	0.000	1	1.000	0.000

Observation value: 181; model chi square test value =163.77, p=0.000; -2LL1=81.104; Cox & Snell R square =59.6%; Nagelkerke R square =80.3%

5 Summary and Discussion: the ethnic identity and the pattern of ethnic differentiation in the process of dynamic construction

In Gordon’s theory, cultural assimilation and structural assimilation occur in advance, and other assimilation will follow by the assimilation of culture and structure. Assimilation will weaken ethnic consciousness and ethnic identity of ethnic minorities. However, our survey shows that assimilation is not a one-dimensional continuum, but the bi-directional, even multi-dimensional construction process. In the formation of sub-structure, such as the willingness to integrate with the ethnic minorities, the

exclusion from cities, as well as domestic society, culture, economy, environment and so on, construct City minority groups together, and the ethnic boundaries will be strengthened and ethnic identity and ethnic consciousness become clear. Therefore, “pluralism” will be a long-term objective state in the process of urbanization. “Unity” is the goal, and the “pluralism” in “unity” is an objective reality. How to achieve “unity” requires to “go to the ethnic boundaries” rather than to strengthen the ethnic boundaries, which requires the development of ethnic groups as the goal.

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On the Influence of the Government Response to Public Appeal upon Public Trust—An Investigation into a City in Western China *

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Abstract Nowadays, China is in an important stage of comprehensive deepening reform, and various social contradictions are unceasingly emerging. In the past, the Chinese government's sole attention lay in the economic construction and has ignored various kinds of problems along with social changes, leading to the government's lack of full response to the interests of the social multi-subjects. On the one hand, there was no urgent need to motivate the government to establish communications with the public and to understand their political needs; On the other hand, under the current institutional mechanism, it is difficult for the public to adequately and effectively express their own benefit appeals. In fact, the contradiction between the need for public expression and clogged expression channels has caused a decline of public confidence in the government. This empirical research shows that there is a significant difference between the government's response speed and response quality to different types and channels of public appeal. In the process of government response to public appeal, public trust is remarkably influenced by government authority, promptness and proactivity of information disclosure, response speed and response quality.

Key words Public trust, Government response, Public appeal, Good governance

1 Introduction

In order to improve the relationship between the public and the government as well as to enhance the former's trust level towards the latter, western countries have been continually seeking for a brand new governance mode, in the meantime, an emphasis on more effective government response aiming at promoting public trust appeared. While compared with western countries, governance in China is much more complicated. China is a socialist country where "people are the masters" and all power of the state belongs to the people. However, people who live in the grassroots have few channels to freely express their individual political willingness except for exercise of the representative right through the People's Congress in reality. On the one side, the government has no urgent "willingness" to establish a channel to communicate with the public and learn their political appeal. On the other side, it is hard for the public to effectively express their willingness and interest appeal under the present system and mechanism. The contradiction between the need of public expression and the ineffective expression channel leads to the decrease of the public's trust towards the government. In the case of non-confidence of the public to the government, any response from the government will be strongly questioned.

On September 2013, Premier Li Ke-qiang emphasized at the executive meeting of the state council that "we should take corresponding measures and strengthen the construction of relative systems as well as platforms to make government policies and power execution not only transparent to the public, but also seen, understood and trusted by the public; we should initiatively respond to public concerns, incorporate public expectation into the government's decision and work and endeavor to enhance public trust towards the government as well as the soft power of social cohesion."^[1] At present, phenomena of negative attitude and time-delay towards information disclosure and of non-response to public concerns do exist in certain local governments and departments. Therefore, the government image must be improved to win public trust. One of the most important goals of China's government reform is to establish an administrative governance mode that matches with the socialist marketing economy. This kind of governance model requires transformation from regulatory-oriented to service-oriented and response-oriented, where public opinions and suggestions should be attached high

*Financed by Natural Science Foundation, Project Title: The Measurement of E-government Responsiveness and An Empirical Study on Its Influencing Factors (Project No.: 71573204)

importance in public administration activities and communications among the public, society and the government should be further strengthened. A positive interactive mechanism to respond to public appeal should be developed gradually.

After the 18th National Congress of CPC, the government at all levels have emphasized more on response to the public which is fully demonstrated by the government work report. The concept of “response” was never mentioned in the central government work report before 2012. However, since 2013, the government work reports have highlighted on “responding to public concerns without delay” for four consecutive years, showing that the Chinese government has come to realize the necessity and urgency to communicate with the public positively. *Third party assessment report on the disclosure of government information* released by the Chinese Academy of Social Sciences at the end of March 2015 has evaluated subjects of 56 departments of state council, 31 provincial governments and 5 municipal governments with independent planning status. The report has revealed that the government response performance showed high response rate (81%) and low success rate (44%). The high response rate shows the government’s willingness to resolve issues of public concern while the low success rate manifests that the government should pinpoint the focus of public appeals in order to gradually enhance response quality. In addition, prominent problems of stereotype and unsubstantial response raised more doubts and distrust rather than having positive effects, which as a result damaged credibility of the government.^[2]This paper, centered on general communication between the government and the public, focuses on the definiteness of the government’s response to public appeals influencing public trust. Standing on the current situation of the local government response to public appeals, the paper settles down at whether or not the first mentioned will affect public trust.

2 How the government’s response affects public trust

The concept of government response was put forward with the emergence of the new public management movement in the 1980s. Grover Starling thinks that response is the process during which the government organization responds rapidly to public requirements and “sometimes, response may refer to the plan made by the government initiatively at the first place or even to firstly decide the nature of the problem” which emphasizes the proactivity of response.^[3] One of the basic philosophies of public management responsibility is response, meaning that the government organization should respond timely to public appeals of policy changes. Along the development of public management theories, the government response concept has been further improved and become a government governance mode commonly recognized by governments worldwide at present.^[4]

In the west, the government response mainly refers to a value orientation, namely, responsiveness, an important concept and value pursuit in modern public management.^[5] While in China, “government response is regarded as the process during which the government makes prompt and accurate reaction and response to public appeals and concerns in public management”.^[6] The previous response procedure follows the process of “the public→ government departments→ the public”, in which questions firstly raised by the public were referred to corresponding departments to yield feedbacks. During this process, the government usually simply “respond” to the public without paying attention to the public response to the feedbacks, i.e. whether the public are satisfied with the response. As the rise of the idea of service-oriented administration, the public’s satisfaction degree has become center of public administration, which means that the government should also take the public’s attitude seriously in addition to effectiveness and efficiency. Performance standard was no longer evaluated by the government itself but also by the public.

Public appeal is a behavior in which the public express their intentions and expectations to the government through all possible channels. More often than not, it can be the pushing hand to facilitate policy making and problem solving. The public chooses different channels to express their appeals according to distinct appeal types. Channels like telephone, the Internet and face-to-face communication are often employed in the case of general affairs, while for intense appeals, particular ways such as petitioning, sit-in and protest march may be resorted to.

One of the requirements for building a service-oriented government in China is to ensure effectiveness of the public expressing their appeals. It is unequivocal for such an architecture to

provide public service for the public and social organizations in an open and transparent way. The service-oriented government is actually one that is democratic, services the people, holds responsibility for the people and accepts oversight of the general public. However, according to the public choice theory, all governments are self-interested and not self-conscious to service the public. Therefore, a kind of external force is called for to push the transformation of the governments' administrative thinking and methods, referring to the public.^[7] The public can spur and remind the government of its administrative behaviors through political participation. The public's political participation is demonstrated in the form of public appeals, in the other way around, clear expressions of public appeals and effective response from the government are of great significance for the building a service-oriented government. The function of public appeal for local governments holds higher priority compared to that for the central government. The reason is that public appeals for central government are often considered in general, systematic and long term beneficial manner, therefore, far from daily lives, while public appeals for local governments are more specific, "down to earth" as well as close to daily lives. Thus, this paper concentrates on the ways of local governments responding to general appeals put forward by the public.

In terms of research on trust, Simmel, a German scholar, firstly opened the door to study trust in modern sociology. He believes that the logic foundation for trust theory is "interaction" and it is the interaction among people that forms the complicated interpersonal relations and further the society. In traditional studies, political scholars pay more attention to the public trust towards the government. Mille and Listhaug hold that government trust is a general evaluation made by the public on the government responsiveness and good governance. A demonstration of the trust relationship between the public and the government lies in the alignment of the public's expectation of the government and the government's performance, the closer the government's performance accords with the public's expectation, the higher the public's trust towards the government will be.^[8] Citrin and Muste thinks that public trust is manifested by the public's confidence in the government and the extent of their support to the government decision makers as well as political systems.^[9] The author has explored the relationship between the use of e-government and public trust, drawing a conclusion that the implementation of e-government can effectively contribute to the reform of government organizations, strengthen the transparency of government departments, shorten the distance between the public and the government, enhance the government's efficiency, open up ways for the public's political participation and improve the public's satisfaction level with the government work. To sum up, the establishment of e-government solution can improve the relationship between the public and the government and therefore enhance the public's trust in the government.^[10] Researches by Owen, Bowler, Donovan have all shown evidence of decrease of the public's trust as a result of ceased positive responding to public appeals.^[11,12] And therefore, the conclusion can be arrived at as follows, the more promptly and accurately the government can respond to public appeals, the more the public will trust in the government.

Government response is a whole process which includes five fundamental factors, namely, response subject, response object, response target, response channel and response feedback. In this paper, the response subject is the government, the response target is the public and the response object is public appeals.

As the response subject, the credibility of the responding information is subject to that of itself. In other words, the more trustworthy the government organizations are, the more likely that their released information will be recognized by the public. The credibility refers to two factors: one is the credit of the information releaser, including honesty, objectiveness and fairness; another is the authority of the information releaser, meaning the status shall be unquestionable when the government responds to public appeals. According to the empirical results of Hovland^[13,14] and other scholars, the more trustworthy the information releaser are, the more convincing the information will be and vice versa. Based on this finding, this paper believes that enhancing the government's authority is conducive to the building of public trust. It is not unique that Xu Guo-liang defines government authority as the influencing power of the government's legitimate political power, as well as the public's obedience and acknowledgement towards this kind of influencing power. He holds that the greater of its authority and

improvement of its public influence lead to better recognition and trust from the public.^[15]

Based on this, hypothesis No. 1 is put forward as follows,

H1: The government's authority has significant positive influence on public trust.

As the response subject, the self-interest of the government will also influence public trust. Li Wei-quan holds that the self-interest of the government is likely to estrange the government from the public, make their relationship more intense, decrease the legitimate foundation of the government and finally lead to the public's trust crisis towards the government. The public choice theory has in-depth and detailed elaboration of the government's self-interest. Buchanan points out that whether in the market or in political life, individuals are instinctive to pursue maximization of their behavioral utility and promote their self-interests until they are encountered with restrictions.^[16] Mueller has also said that "Shall power be granted to a group of people known as representatives, if necessary, they, like anyone else, will take advantage of it for personal gains rather than for benefits of the public."^[17] This paper believes that the more the public can feel the self-interested nature of the government, the less they will trust the government.

Based on this, hypothesis No. 2 is put forward as follows,

H2: The government's self-interest has significant negative influence on public trust.

As the response subject, information disclosure will influence public trust. Boram Hong points out that the government's information exposure is the key to public trust^[18]. Ao Xiang thinks that proactive information disclosure of the government can resolve contradictions with the public quickly and effectively, to the benefit of a more harmonious relationship. The public will increasingly trust, rely on and support the government.^[19] He Zi-ying has made a research on the promptness of information disclosure as well as public trust, and reached a conclusion that if the government promptly release the information to the public, namely, the government information disclosure at the earliest opportunity can reflect the government's rapid response capability, and therefore considerably promote the public's trust towards the government.^[20] This paper holds that the more promptly and proactive the act on information disclosure, the more trustworthy the public sees the government.

Based on this, the following two hypotheses No. 3 and No. 4 are put forward,

H3: The promptness of government information disclosure has significantly positive influence on public trust.

H4: The proactivity of government information disclosure has significantly positive influence on public trust.

In addition, the government should respond to the public appeals rapidly and accurately. Therefore, the influencing factors of government response should also include the response speed and quality. Response speed refers to the timeliness of the government response to public appeals while response quality measures accountability of its content. At the beginning point of the government response process, public appeals play an important role in government response. In general, public appeals can be divided into three dimensions such as appeal channel, appeal type and appeal quality. Since appeal quality is influenced by multiple factors such as public quality, sensibility to problems and so on, which aren't the key points of this research. Therefore, this paper only incorporates variables of appeal type and appeal channel into the research model, with the exception of appeal quality.

Based on this, two hypotheses No. 5 and No. 6 are put forward as follows,

H5: The government response speed has significantly positive influence on public trust.

H6: The government response quality has significantly positive influence on public trust.

According to the relationship between government response and public trust, this paper has formulated a "government response-public trust" model where the government's response to public appeal serves as an independent variable while the public trust towards the government is the dependent variable. The model is shown as Figure1.

3 Empirical analysis

The data in this paper was collected from questionnaires and field interviews targeted at the public in a city of western China. From December 2015 to July 2016, the author delivered questionnaires in

the city’s residential areas, enterprises and public institutions as well as universities, questionnaires were also released on the Internet to increase the diversity of sample sources. 1000 questionnaires of 600 online questionnaires and 400 paper questionnaires on the field were released in total. 943 questionnaires were recollected, with 94.3% of the response rate. After the selection according to the filed contents, 895 questionnaires were valid. The questionnaire recovery situation was good. The correspondents were those who have expressed their appeal to the government.

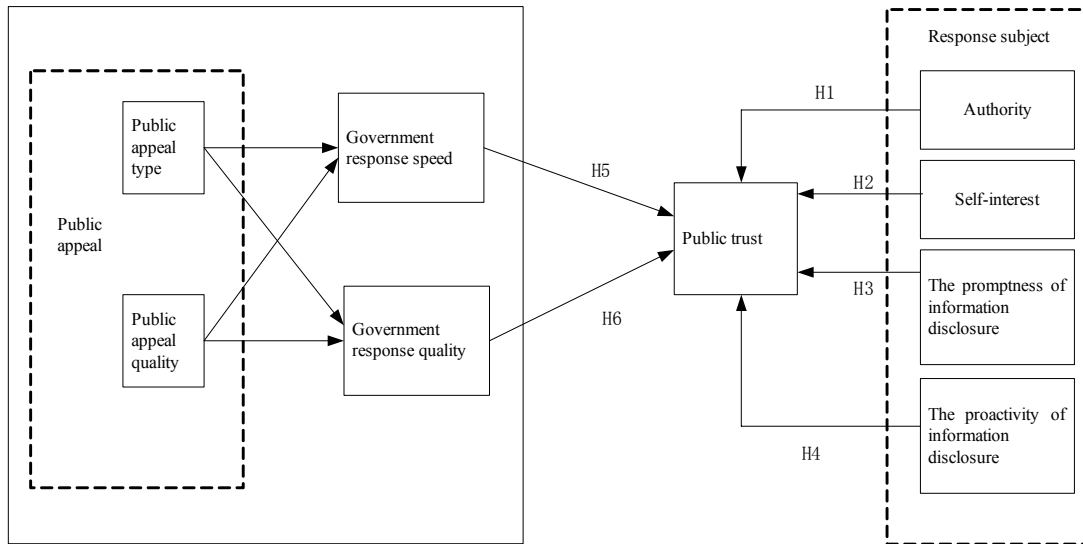


Figure 1 The “government response-public trust” model

The relationship between the government response and public trust is founded on local governments’ response to public appeals and therefore, Table 1 shows the main appeal types and appeal channels the public employed.

Table 1 Main types and channels of the public’s appeals towards local governments

Appeal types	Appeal channels
Consultancy(C)	Face-to-face communication(F)
Business handling(B)	Government website(G)
Complaint(R)	E-mails(E)
Suggestions(S)	Department Telephone(T)
	Public Opinion Box(O)
	Hotline of officials(H)
	Official Weibo(Weibo、 WeChat) (W)

Note: self made by the author.

3.1 Current situation of public appeals to the government

The questionnaire includes four appeal types which are closely related with public life, namely, consultancy, business handling, complaints and suggestions. According to the recollected questionnaires, appeal types such as business handling and consultancy are dominant while complaints and suggestions are much less. More details are shown in Table 2.

Table 2 Questionnaire on public appeal types

Appeal types	Number of participators	Percentage
C	329	48.81%
B	509	75.52%
R	204	30.27%
S	157	23.29%

Note: In some cases, interviewees may come up with multiple appeal types.

The public will employ various channels when expressing their appeals. At present, common seven channels provided by the government are face-to-face communication, government website, e-mails, department telephones, public opinion box, hotline of officials as well as official Weibo (Weibo and WeChat). Through analysis on the sampled data, it can be found that face-to-face communication is the most-commonly used channel (875 times), followed by calling department phones (516 times) and the government website (371 times), calling the hotline comes the last (85 times). The detailed statistical result is as shown in Table 3. In addition, the research has also found that with the establishment of instant communication platforms such as official Weibo and WeChat, more and more people have resorted to this kind of channel to communicate with the government.

Table 3 Questionnaire on public appeal channels

Appeal channels	Frequency	Percentage
F	875	38.5%
G	371	16.3%
E	156	6.9%
T	516	22.7%
O	132	5.8%
H	85	3.8%
W	135	5.9%
Total	2270	100%

Note: In some cases, interviewees have used several appeal channels.

3.2 The influence of appeal type and channel upon government responsiveness

During the research, this paper has found that the government's response speed and quality vary with the public appeal types. Through descriptive statistical analysis on the government responsiveness, it can be found that the average of government response speed and response quality differ from each other. (See in Table 4,5)

Table 4 Descriptive statistical analysis on the response speed and quality to different appeal types

Appeal types	Response speed		Response quality	
	Average	Standard deviation	Average	Standard average
C	3.38	1.105	3.34	1.064
B	3.26	0.979	3.39	1.004
R	2.87	1.108	2.68	1.141
S	2.97	0.888	2.52	0.995

In order to further analyze the government response difference to various appeal types, this paper has applied one-factor analysis of variance (ANVOA), marking appeal type as independent variable, response speed and quality as dependent variables. The overall test value of F is 27.270($p=0.000<0.05$) and 91.283($p=0.000<0.05$), revealing significant results. This shows that the government response speed and quality vary greatly in terms of public appeal types.

Table 5 Variance analysis of appeal types-response speed and quality

		Quadratic sum	df	Mean square	F	Significance
Response speed	Inter-group	86.512	3	28.837	27.270	.000
	Intra-group	2396.230	2266	1.057		
	Sum	2482.742	2269			
Response quality	Inter-group	299.744	3	99.915	91.283	.000
	Intra-group	2480.280	2266	1.095		
	Sum	2780.025	2269			

Note: $p<.05$

Likewise, this paper has analyzed the differences of government response among various public appeal channels. The detailed results are shown in Table 6 and Table 7. Setting appeal channel as

independent variable, response speed and quality as dependent variables to get the variance analysis, the overall test value of F is 42.406($p=0.000<0.05$) and 54.738($p=0.000<0.05$), revealing significant results. The result shows that the government response speed and quality vary considerably with different public appeal channels.

Table 6 Descriptive statistics of response speed and quality to different appeal channels

Appeal channels	Response speed		Response quality	
	Average	Standard deviation	Average	Standard deviation
F	3.48	0.959	3.53	0.972
G	2.88	1.000	2.81	1.116
E	2.71	0.937	2.68	1.066
T	3.33	1.103	3.16	1.081
O	2.44	0.975	2.45	0.991
H	2.82	0.848	2.42	1.039
W	2.92	1.046	2.61	1.037

Table 7 Variance analysis on appeal channel-response speed and quality

		Quadratic sum	df	Mean square	F	Significance
Response speed	Inter-group	250.928	6	41.821	42.406	.000
	Intra-group	2231.814	2263	.986		
	Sum	2482.742	2269			
Response quality	Inter-group	352.331	6	58.722	54.738	.000
	Intra-group	2427.693	2263	1.073		
	sum	2780.025	2269			

Note: $p<0.05$

3.3 The relationship between government response and public trust

In this paper, the public's perception of the government includes the measure of government response and subjectivity, among which, the responsiveness perception involves the government response speed and quality, while the perception of subjectivity consists of the authority of the government, the self interest, the promptness and proactivity of information disclosure and the public trust level. The detailed result is shown in Table 8. The government response speed and quality average stand at 3.2060 and 3.2293 respectively in the measure of government responsiveness, which reflects that the public's perception of the government's response to their appeals is "barely satisfactory", meaning local governments generally fail to respond to public appeals promptly and accurately.

With government being the response subject, it has been found that the public's perception of the government's authority and the promptness and proactivity of information disclosure is "average", the perception of government's self-interest is below "average" (2.8291), while the trust towards the government is above "average"(3.3517). The result manifests that the public to a larger degree trust the government, and does not consider it as "self-interested".

Table 8 The public's perception of the government

	Average	Standard deviation	Variance
Response speed	3.2060	0.78118	0.610
Response quality	3.2293	0.84855	0.720
The government's authority	3.0701	0.77276	0.597
The promptness of information disclosure	3.0218	0.75684	0.573
The proactivity of information disclosure	3.0414	0.79364	0.630
The government's self interest	2.8291	0.70553	0.498
Public trust	3.3517	0.63701	0.406

In order to find out how other factors influence public trust, this paper has employed Pearson correlation analysis to examine the correlative relationship between factors of the government's authority, the government's self interest, information exposure, response speed, response quality and

public trust.

(1) The correlation analysis between the government’s authority and public trust

According to the research hypothesis H1: the government’s authority has significantly positive influence on public trust. In other words, public trust level increases along with better acknowledgment of the government authority. Table 9 shows that the government’s authority and public trust are significantly positive correlated in terms of Pearson correlation, which is in line with the research hypothesis. The empirical analysis result of this research shows that both of them accord with the expected assumption, demonstrating low-level correlation and has reached the significance level of statistical test.

Table 9 Correlation analysis

	Public trust		
	Pearson Correlation Coefficient	Significance	Number of samples
The government’s authority	.304**	.000	895
The promptness of information disclosure	.330**	.000	895
The proactivity of information disclosure	.431**	.000	895
The government’s self interest	-.020	.610	895
Response speed	.372**	.000	895
Response quality	.442**	.000	895

Note: ** Significantly correlative with .01 (on both sides)

(2) Correlation analysis on information disclosure and public trust

The promptness and proactivity of the government’s information disclosure will influence the public trust towards the government. That is to say,

H2: The promptness of the government’s information disclosure has significantly positive influence on public trust. In other words, the more quickly the government discloses information, the more the public will trust it.

H3: The proactivity of the government’s information disclosure has significantly positive influence on public trust. In other words, the more proactive the acts are, the more the public will trust it.

As it can be seen from table 9, the Pearson correlation test of the government’s information exposure promptness and initiative with public trust are significantly positive, with correlation coefficient being $r=0.431$ and $r=0.330$ respectively. The test result is in accordance with the expectation.

(3) Correlation analysis on the government’s self interest and public trust

The more self-interested the government is, the less the public will trust it. And therefore, hypothesis H4 is put forward as follows: the self interest of the government has significantly negative influence on public trust. As Table 9 has shown that the correlation coefficient between the government’s self interest and public trust is $r=0.020$, which is negatively correlative while the Pearson correlation test is $p=0.610>0.01$, reflecting that the correlation coefficient between the government’s self interest and public is not statistically significant. In a word, the empirical analysis result deviates from the research hypothesis.

(4) Correlation analysis on response speed and public trust

Based on the research hypothesis H5: the government’s response speed has significant positive influence e on public trust. As shown in Table 9, the Pearson correlation coefficient test result between the government’s response speed and public trust is significant and moderately correlative. The empirical result is in line with the research hypothesis and the government’s response speed is positively correlative with public trust, namely, the more quickly the government responds, the more the public will trust the government.

(5) Correlation analysis on response quality and public trust

Based on the research hypothesis H6: The government’s response quality has significantly positive influence on public trust.

Table 9 has shown that the government’s response quality and public trust are positively correlative in terms of details and usefulness of its content, with the correlation coefficient being

$r=0.442$ and $r=0.378$ respectively. The empirical analysis result is in accordance with the expected hypothesis.

It should be noticed in particular that when studying the relationship between the government's self interest and public trust, Li Wei-quan thinks that "the more self-interested the government is, the less the public will trust the government", namely, public trust is negatively correlative with the government's self interest. While in this paper, based on the empirical result, the correlation coefficient of the government's self interest and public trust is $r=-0.20$, showing negatively correlative relation, while the value of significance test p is 0.610, much larger than 0.05 and therefore, the correlation coefficient is not significant. In order to find out the reasons, firstly, the source of the government's self interest shall be explicated. In views of Chen Guo-quan and Li Yuan-lin^[21], the government's self interest can be divided into that of government officials, government organizations and the government on a whole. Since the 18th National Congress of the CPC, the fifth leading collective headed by President Xi Jin-ping have cracked down on corruption and a craft of corrupt officials have been punished. This has played a positive role in purifying the environment within the party and made the public really feel the government's determination and confidence in anti-corruption. Since government officials dare not corrupt and take bribes any more, the public naturally thinks the government is good. In recent years, local governments have also improved their management thinking, and vigorously promoted the construction of people's livelihood, which has won the support from majority of the people. Since the public's perception of the government's self interest is not strong, the correlation of the government's self interest and the public trust failed the test.

Table 10 is the data collected from several important events related to public opinions in *Annual report of public opinions in China*^[22]. From the table, conclusion is that public trust level maintains higher upon greater extent of information disclosure, including factors of response timeliness (response speed) and effect (response quality) of public appeals. Besides, involvement of authorities or important leaders such as experts and mayors will also positively influence the public trust in the government response, which indirectly corroborates this research.

Table 10 The relationship between government response and public trust

Event	Response subject	Response timeliness	Response times(times)	Information exposure degree	Response effect	Public trust
Shishou group events	Shishou municipal government spokesman and the procuratorial organ	2d	7	-1.64	-2.65	-0.82
Thousands of people kneeling-down event	Dalian municipal party committee and government	8d	2	4.9	10.50	-2.5
Hangzhou drag racing case	Mayer of Hangzhou, the municipal government, public security bureau and party secretary	18h	9	3.91	16.74	3.45
"Hide-and-see" event	The propaganda department, the public security bureau, the procuratorate and the high court of Yunnan Province	17h	8	4.74	17.40	4.68
Deng Yu-jiao case	The public security bureau, the government spokesman and the court of Badong county	8h	5	0.36	10.47	2.29

Data source: *Annual report on public opinion in China*

4 Conclusions

This paper firstly conducts a theoretical analyzes on the influence of the government response to public appeal upon public trust, and then establishes a "government response-public trust" research

model. Based on this, six research hypotheses are put forward and examined by empirical analysis. This research finally has obtained the following three findings:

(1) Public appeals towards the government are largely in forms of consultancy and business handling, with the main channels of face-to-face communication and telephone consultancy. The government's response speed and quality to public appeals are at "average" level. It should be noticed that with the popularity and application of official Weibo and WeChat, the public are paying more attention to them, hence the emerging trend of consultation, complain and suggestions through these channels.

(2) The variance analysis result of public appeals and government response has shown that the government's response speed and quality vary significantly with different public appeal types; meanwhile, the government's response speed and quality will also differ significantly to distinct public appeal channels.

(3) The correlation analysis on the governments' response and public trust has reflected factors of government's authority, information disclosure, response speed and response quality are positively correlative with public trust. Although the government's self interest is negatively correlative with public trust, it is not significant.

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Research on Partner Selection Mechanism and Method of PPP Project*

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Abstract As the major mode of the cooperation between public and private sectors, PPP project is an effective way to promote the transformation of government function and dispatch resources appropriately. To find a rational mechanism in partner selection is the key to a successful PPP project. With the reference to the related literature and three-stage partner selection model in international projects, this paper takes the PPP project partner selection problem as the subject of research, constructs PPP partner selection index system, uses SEM to verify the rationality and determine the weight of the index system combines the bidirectional projection method to determine the ranking of the alternative partners, and after multi-round negotiation, the best partner can be found by public sector.

Key words PPP project, Bidirectional projection method, Partner, Negotiation, Prequalification

1 Introduction

On May 30, 2016, Ministry of Finance of the People's Republic of China and Development and Reform Commission of issued a Notice on the *Further Working Together to do a Good Job in Government and Social Capital Cooperation (PPP)*, and pointed out that it would enhance the cooperation of PPP projects. PPP project can provide a kind of public goods and services for society, based on the concession agreement, the government and enterprises form partnership, and through signing the contract to clarify the rights and obligations of both parties that ensure the smooth cooperation completion, ultimately the cooperation has resulted in a more favorable outcome than the expected individual action. PPP project has become the major mode of cooperation between government and enterprises, PPP project introduction social capital into government, to ease the government's financial pressure and provide better services and public goods for the society. PPP projects includes SC, OMC, BOOT, TOT and other forms of cooperation, PPP project has been applied to a number of areas, and selection the right partner is the premise of taking advantage of PPP projects. The private sector has undertaken a large number of project construction tasks, and private sector is the backbone of the projects construction, the selection of partners directly related to the success of the PPP project. Due to the international bidding mode and the relevant provisions of Ministry of Finance of the People's Republic of China, this paper puts forward the PPP partner selection mechanism, constructs the PPP partner selection index system, determines the index weight, and puts forward the corresponding algorithm. Taking the PPP project of XX sewage treatment plant as an example to verify the validity of the PPP partner selection mechanism and provide theoretical support for public selection partners in the PPP project, making up the defect in PPP project partner selection process.¹

2 Literature review

PPP project is the major mode that government attracts social capital, it's not only alleviate the problem of insufficient government funds, but also create development space for social capital. Different scholars and institutions define the concept from different angles (Liu Wei, 2015)^[1], so far there is no uniform definition, but we can extract three features of PPP project, partners, they are benefit sharing, risk Sharing. As for classify cation of the PPP project, the US government accounting office^[2], PPP National Committee^[3], the World Bank and other institutions based on different division criteria, the PPP project is divided into different types^[4]. On this basis, the academic community also formed other categories, there are a number of representative scholars. Wang Hao (2004) according to the ownership of the infrastructure project china, combined with the characteristics of China's

*Financed by Scientific Research Fund for Central Universities (Project No.: HEUCFW170909).

infrastructure, the PPP project is divided into three categories: outsourcing, franchising and privatization^[5]. Yang Hua-shan (2014) combines the owners' equity and operating distribution rights, the PPP project divided into 15 categories^[6].

PPP project as a main model of cooperation between the public sector and the private sector, how to correctly choose the private sector is the key of the PPP project success. For the selection of alternative partners, foreign scholars around the project tender to conduct in-depth study. Chong (2006) analyzes the impact of PPP partnership on PPP efficiency^[7]; Zitron (2006) analyzes the decision-making mechanism of different private partners involved in PPP projects and their differences in project risk assessment^[8]; Zhang (2015) review the PPP infrastructure applications in China's, raising the existing problems and recommendations^[9]. For the choice of PPP private partners, domestic research results are not many in China, Song Bo(2011) introduced the iterative algorithm into the PPP partner selection process and putted forward the decision-making and selection of partners^[10]. Gao Xu-kuo (2013) from enterprise credit status, enterprise scale, enterprise financial situation, technical level, management level, risk management level, the level of risk commitment six aspects constructs the evaluation index system to choose the partner^[11], He Shou-kui (2016) analyze the partner selection and incentive mechanism, discusses incentive contract design in operation period^[12], Yi Xin (2016) has constructed the three-stage selection mechanism of PPP rail transit project partner^[13]. Through the literature review, it can be seen that the research about PPP project is plenty, but the research about PPP project selection partners are not that much, and the domestic scholars are focusing on the traditional engineering bidding model, few scholars take partner quit and change problems into account, and some partner selection methods are limited in practice.

3 PPP partner selection theory analysis

Project bidding as one of the common patterns of private sector take participate in public infrastructure construction, the tender price is the main basis for selecting partners. Low-cost bidding may have the risk of reducing the quality of public goods or services. And Project bidding don't consider the problem that partners change or exit. The partner selection mechanism is incomplete, selection partner with the engineering bidding mode may cause the bidder do not meet the requirements of PPP project. In order to select the appropriate private sector, this paper absorbs the advantages of the original project bidding and relevant provisions of the Ministry of Finance of the People's Republic of China, so this paper proposed PPP partner selection mechanism to ensure the smooth progress of PPP project.

This paper proposed the PPP partner selection mechanism mainly includes three stages. The process is shown in Figure 1. The stage one is the prequalification stage of alternative partner. The government announces the project subject that includes the qualification requirements and the purchasing demand, etc. Through first stage government select three or more enterprises to participate in the choice of follow-up partners. Second-stage of PPP partners selection is similar to the traditional project bidding model, but this stage only identify the ranking of alternative partners, rather than directly select partners, change the previous price-oriented selection mechanism. Third stage of partner selection, public and private sector need to discuss the specific details of the PPP project, but cannot change the project's core terms, under this premise, if the private sector reaches an agreement with the public sector, the private sector is ultimate partner.

4 PPP partner selection mechanism

4.1 Alternative partner prequalification

Before the implementation of the PPP project, the project implementation agencies should develop prequalification documents, invite social capital and cooperative financial institutions to participate in prequalification, verify whether the project can obtain social capital response and achieve full competition. According to the relevant guidance of the Ministry of Finance, when more than three social capital through prequalification, PPP project can continue to execution, if it doesn't satisfy with this condition, the project implementation agencies should adjust the program, perform prequalification again. The PPP project has the characteristics of long cycle, high risk, limited profitability and

diversified operation mode. Prequalification ensure that the selected partners have the ability to meet the requirements of the project and have the will of cooperation. The prequalification mainly includes financial review and legal review and other aspects.

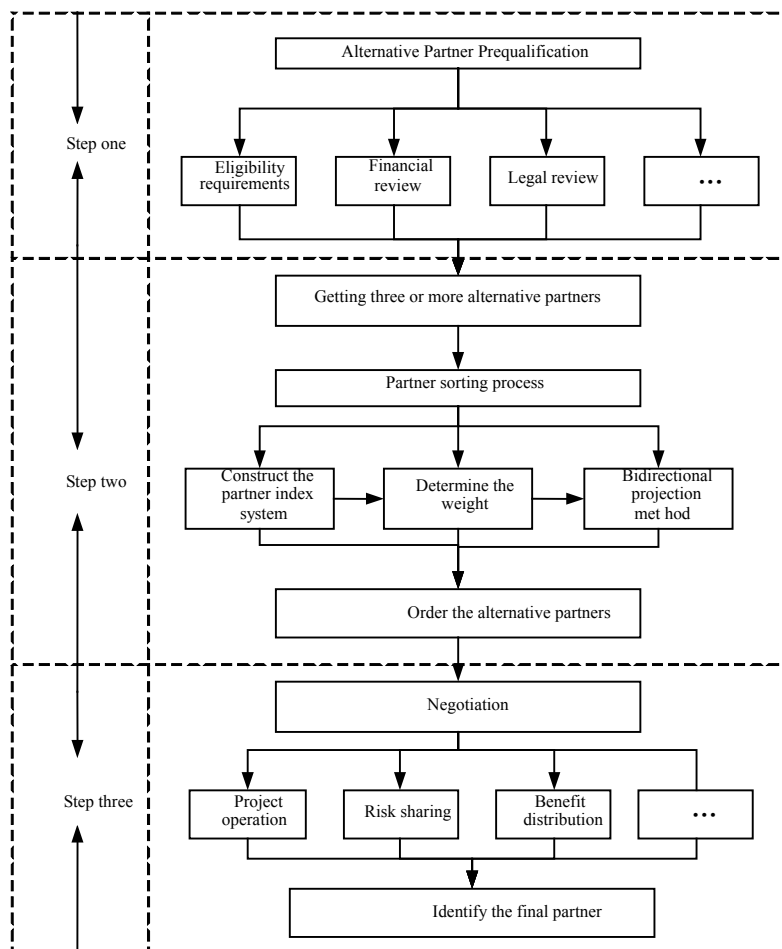


Figure 1 Partner selection process

The prequalification stage is the initial stage of selection partners, screen potential partners who have will of cooperation to participate in the bidding project, and maximally mobilize the partners to dig the potential and improve the competitive effect. Prequalification can exclude the alternative partners that obviously not meet the request of PPP project, reduce the evaluation of the workload, improve the efficiency of the tender work. Prequalification prevent some enterprises from participating in competition, to a certain extent, reduce the risk of PPP project, ensure the competitive efficiency of the bidding activities.

4.2 Order the alternative partners

As the second phase of the selection of partners, ordering the alternative partners mainly includes three processes. They are respectively the construction of the index system, determining the weight of indicators, and using the bidirectional projection method to determine the ranking of alternative partners.

4.2.1 Construct the partner index system

The private partner is the primary performer and the bearer of the project. As a result, the choice of the partner directly relates to the success of the PPP project. In the PPP project partner selection process, due to the existence of information asymmetry between the two sides, it is difficult to protect

the success of selection PPP project optimization partners to sort the advantages and disadvantages, project sponsor need to build the index system, and use appropriate algorithms to ensure the effectiveness of sorting. And this has been a lot of scholars from different areas construct the index system and put forward algorithm of the partners selection^[14-16], these index systems mainly select partners from three aspects, these aspects include the ability of enterprises apply for the project, the performance of enterprises in the project, the ability of enterprises. By drawing on the existing research results, this paper constructs the PPP partner selection index system, and the index system consists of six secondary indicators and twenty-two three-level indicators.

Table 1 Construction of the index system of PPP partner evaluation

Alternative partner selection index system	The size of alternative partner	Total assets
		Number of Staff
		Total sales
	Alternative partner financial status	Cash flow
		Total liabilities
		Total revenue
		Business Structure
	Alternative partner management capabilities	Management system
		Enterprise communication skills
		The quality of management
		The total amount of technical personnel
	The technical level of alternative partner	Equipment
		Similar project experience and performance
		Commercial credit
	The credit status of alternative partner	Social credit
		Guarantee or insurance measures
		Pricing
	The project execution capability of alternative partner	Financing capacity
		The program of project design
		The program of project construction
		Operating time length
		The ability of taking the risk

(1) The size of Alternative partner: This indicator mainly includes the total assets of the alternative partners, number of Staff and total sales. Experience has shown that the larger enterprises have a strong ability to implement the PPP project and take risks, alternative partner size is an important factor of choose the partners.

(2) Alternative partner financial status: one of the main objectives of the PPP project is introducing social capital, a good financial partner can prevent from running out of funds in the process of PPP project.

(3) Alternative partner management capabilities: PPP project has some characteristics of long cycle and complex, so public sector requires partners to possess strong management capabilities. The Beijing Olympics case has shown that the management system is necessary for PPP project operation.

(4) The technical level of alternative partner: The private partner is the primary performer of the PPP project; high level of technology can guarantee the smooth implementation of the project. The total amount of technical personnel, equipment, similar project experience and performance can show the technical level of alternative partners.

(5) The credit status of alternative partner: Most PPP projects can provide basic services or public products, public sector select partner that have good credit to guarantee the normal supply of products and services, increase the credibility of the government and authority.

(6) The project execution capability of alternative partner: it means that public and private sector how to cooperate and get funding in the process of the PPP project. Project performance ability is one of the important ability of alternative partners.

4.2.2 Weight assignment of the index system of PPP project partner

Different weights are given to different indicators, which can fully reflect the differences of each index, and the accuracy of each index weight assignment is directly related to the evaluation result. In the process of weight assignment, the SEM determine the weights of evaluation index system on the basic of retaining the original evaluation information, so SEM is the most suitable method. The SEM can't only determine the weight of each index, but also verify the rationality of evaluation index system^[17,18].

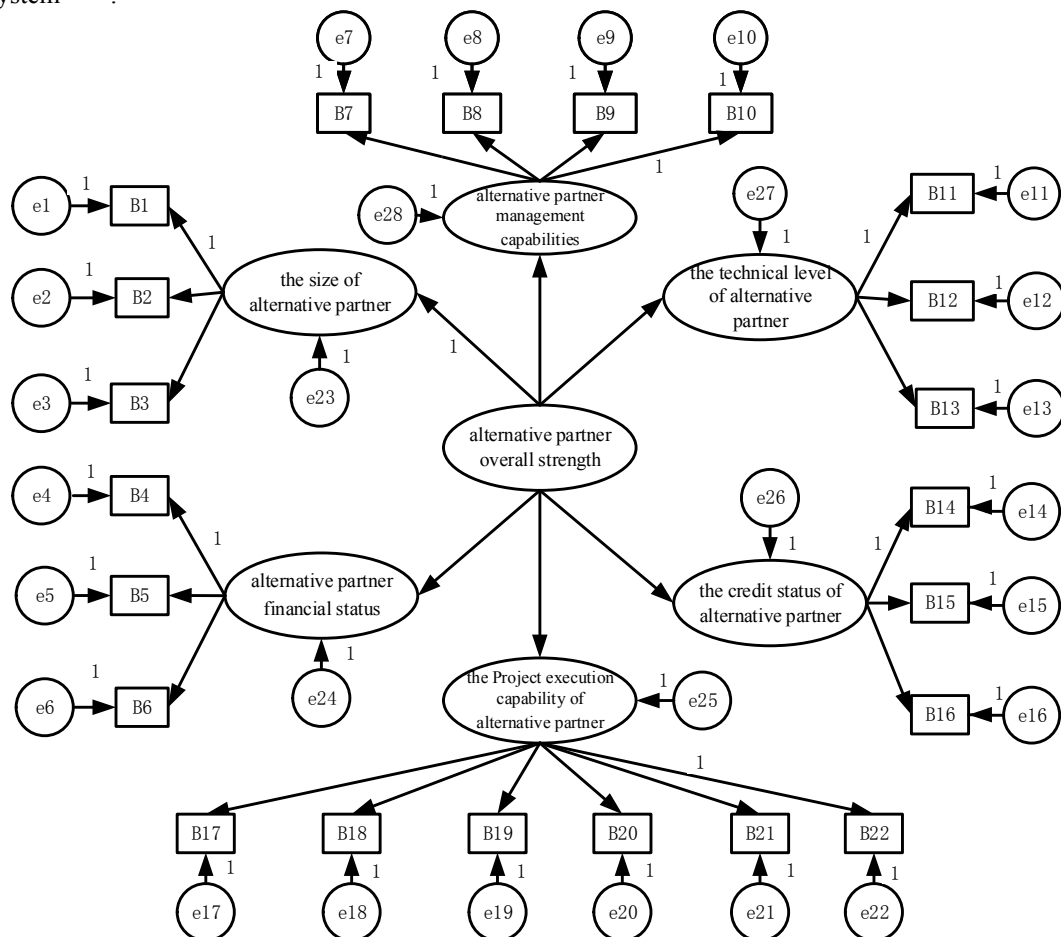


Figure 2 Alternative partner SEM

The SEM consists of the measurement equation and the structural equation, and the SEM analysis process mainly includes five steps: model setting, identification, estimation, evaluation and revision. According to the PPP project evaluation index system, the SEM is drawn with amos 22.0 software, and the indicators X1 to X3 are metrics of the enterprise size. the X4 to X6 are metrics of alternative partner financial status, the X7 to X9 are metrics of alternative partner management capabilities, the X10 to X12 are metrics of the technical level of alternative partner, the X13 to X15 are metrics of the credit status of alternative partner, the X16 to X21 are metrics of the project execution capability of alternative partner, the e1 to e22 are measurement error term of SEM. The model is shown in Figure 3.

This paper uses the questionnaire to obtain data, the questionnaire was divided into two parts, a total of 28 items. The questionnaire was conducted by means of online payment and on-the-spot investigation. Then, 200 questionnaires were distributed by internet, we get 175 valid questionnaires. 100 questionnaires were distributed on the spot, and we get 88 valid questionnaires. Finally, we get 263 valid questionnaires, accounting for 87.7% of all questionnaires. The reliability and validity of the

questionnaire were calculated by SPSS software. The reliability of the questionnaire was 0.973 and the validity was 0.974, which indicated that the data reliability and effectiveness of the questionnaire was higher. The data were introduced into the SEM, and the standardized coefficients of each factor were obtained by confirmatory factor analysis (CFA). Each factor load is greater than 0.8, which indicated that the scale had good validity. IFI, CFI, etc. are above 0.9, SRMR=0.074, SRMR is under 0.08, but the GFI is under 0.9. The model needs to be modified, this paper increases the connection among the items e15 and e16, e16 and e17. Running the model again, the model fitting index is shown in Table 2, and each indicator meets the requirements, indicating that the model is valid.

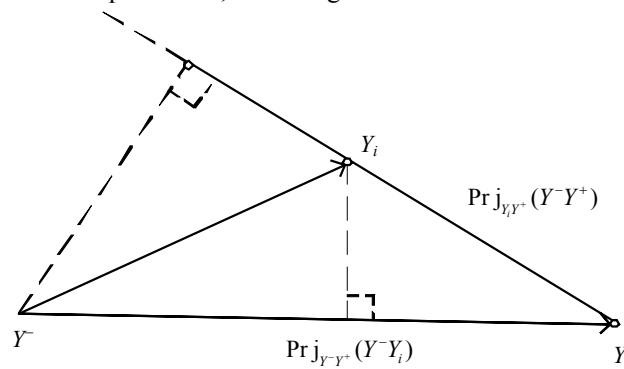


Figure 3 Schematic diagram of bidirectional projection method

Table 2 Model fitting indicators

Indicator	χ^2 / df	RMSEA	GFI	NFI	TLI	IFI	CFI
Variables							
Alternative partner model fit	1.85	0.055	0.903	0.939	0.965	0.971	0.971
Index evaluation standard value	<3	<0.08	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9

the influence coefficient of the six latent variables were 0.94,0.91,0.98,0.97,0.99,0.98. corresponding P value reach significant level that is less than 0.01. The results show that the size of alternative partner, alternative partner financial status, alternative partner management capabilities, the technical level of alternative partner, the credit status of alternative partner, the Project execution capability of alternative partner that these six indicators can significantly reflect the overall strength of alternative partners. Similarly, third grade indicators can also be an effective measure of secondary indicators.

In addition, this paper uses the SEM model to determine the weight of the index system. According to the path coefficient of SEM, this paper uses the formulas (1) and (2) to calculate the weight of the indicator:

$$W = \eta_i / \sum_{i=1}^6 \eta_i \quad (1)$$

$$\theta_i = \alpha_i / \sum_{i=1}^k \alpha_i \quad (2)$$

η_i is factor loading of latent variables, α_i is factor loading of observed variables, According to the formula (1) and (2), getting the weight of indicator, it is shown in Table 3:

Table 3 The weight of indicators

Indicator	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Weight	0.052	0.055	0.057	0.057	0.056	0.061	0.037	0.040	0.040	0.042	0.057
Indicator	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
Weight	0.057	0.054	0.061	0.057	0.056	0.026	0.028	0.027	0.026	0.027	0.026

4.2.3 the order of Alternative Partner

Bidirectional projection method is one of the methods of multi-attribute decision making. Compared with traditional projection method and orthogonal projection method, bidirectional projection method overcomes the problem that the scheme projection is equal and cannot judge. In addition, bidirectional projection method compared with other types of multi-attribute decision-making methods, bidirectional projection method determines the order of cooperation partners, rather than directly select partners. So that the government more likely to find the right partner in the process of the partner selection.

Bidirectional projection method takes into account multiple projection values. The projection idea is shown in Fig.4, Bidirectional projection method learn from close degree formula of TOPSIS. According to the close value, getting the order of alternative partner

The bidirectional projection method has the following steps [19,20].

(1) define the program set, attribute set, weight set, with $A = \{A_1, A_2, A_3, \dots, A_n\}$, $B = \{B_1, B_2, B_3, \dots, B_n\}$, $W = \{W_1, W_2, W_3, \dots, W_n\}$, and $\sum_{i=1}^n W_i = 1$. The contribution value of scheme A to program B is recorded as $X_{ij} (i = 1, 2, \dots, n; j = 1, 2, \dots, m)$, the matrix $X = (X_{ij})_{n \times m}$ table shows the program set A for the degree of satisfaction of the attribute set B, and the matrix $X = (X_{ij})_{n \times m}$ known as the “decision matrix.” The set of B represent for the index system, the set of A represent for the alternative partner .X matrix constituted by the evaluation value of alternative partner, and the weight set is composed of the evaluation index system weight

(2) Using nondimensionalization deal with each index, eliminate the impact which different dimensions cause different results. The matrix $X = (X_{ij})_{n \times m}$ is dimensionless, we get $Y = (Y_{ij})_{n \times m}$. According to the type of evaluation index, the methods of nondimensionalization are different. For the benefit of indicators, using formula (3);

$$Y_{ij} = \frac{X_{ij} - X_i^{\min}}{X_j^{\max} - X_j^{\min}}, \quad i=1, 2, 3, \dots, n \quad (3)$$

among them X_j^{\max} and X_j^{\min} , represents the maximum and minimum values of indicator. For cost-based indicators:

$$Y_{ij} = \frac{X_i^{\max} - X_{ij}}{X_j^{\max} - X_j^{\min}}, \quad i=1, 2, 3, \dots, n \quad (4)$$

among them X_j^{\max} and X_j^{\min} , represents the maximum and minimum values of indicator. After processing, getting the normalized matrix, making $Y^+ = (r_1^+, r_2^+, \dots, r_n^+)$ and $Y^- = (r_1^-, r_2^-, \dots, r_n^-)$ indicate the vector of the positive ideal and negative ideal points of the decision matrix respectively. And $r_j^+ = \max_{1 \leq i \leq m} \{r_{ij}^+\}$, $r_j^- = \min_{1 \leq i \leq m} \{r_{ij}^-\}$, the positive and negative ideal schemes and the vectors of positive ideal points and schemes are represented as follows:

$$Y^- Y^+ = \{r_1^+ - r_1^-, r_2^+ - r_2^-, \dots, r_n^+ - r_n^-\} \quad (5)$$

$$Y_i Y^+ = \{r_1^+ - r_{i1}, r_2^+ - r_{i2}, \dots, r_n^+ - r_{in}\} \quad (6)$$

When the weight set is introduced, this paper can get length of the vector, as shown in the formula (7), (8), (9):

$$|Y^- Y^+|_w = \sqrt{\sum_{j=1}^n (w_j |r_j^+ - r_j^-|)^2} \quad (7)$$

$$|Y_i Y^+|_w = \sqrt{\sum_{j=1}^n (w_j |r_j^+ - r_{ij}|)^2} \quad (8)$$

$$|Y^- Y^i|_w = \sqrt{\sum_{j=1}^n (w_j |r_{ij}^- - r_j^-|)^2} \quad (9)$$

The cosine of a vector is calculated as follow formula (10), (11):

$$\cos(Y_i Y^+, Y^- Y^+) = \frac{\sum_{j=1}^n W_j^2 (r_j^+ - r_{ij}^-)(r_j^+ - r_j^+)}{|Y^- Y^+|_w |Y_i Y^+|_w} \quad (10)$$

$$\cos(Y_i Y^-, Y^- Y^+) = \frac{\sum_{j=1}^n W_j^2 (r_{ij}^- - r_j^-)(r_j^+ - r_j^-)}{|Y^- Y^+|_w |Y_i Y^-|_w} \quad (11)$$

The calculation results of the formula are expressed the cosine value.

(3) Defining the projection value $\text{Pr } j_{Y^- Y^+}(Y^- Y_i)$ and $\text{Pr } j_{Y_i Y^+}(Y^- Y^+)$, Which represent the projection value of the vector formed by the scheme and the negative ideal point on the positive and negative ideal point vector, and the projection value of the positive and negative ideal point vector at the scheme and the ideal point:

$$\text{Pr } j_{Y^- Y^+}(Y^- Y_i) = |Y^- Y_i|_w \cos(Y^- Y_i, Y^- Y^+) \quad (12)$$

$$\text{Pr } j_{Y_i Y^+}(Y^- Y^+) = |Y^- Y^+|_w \cos(Y^- Y^+, Y_i Y^+) \quad (13)$$

The larger the value of $\text{Pr } j_{Y^- Y^+}(Y^- Y_i)$, show that nearer the scheme is from the ideal point, otherwise farther away from the ideal point; the larger the value of $\text{Pr } j_{Y_i Y^+}(Y^- Y^+)$, show that nearer the scheme is from the negative point, otherwise farther away from the negative point; In order to get the best scheme,

construction closeness degree formula:

$$C(Y_i)_w = \frac{\text{Pr } j_{Y^- Y^+}(Y^- Y_i)_w}{\text{Pr } j_{Y^- Y^+}(Y^- Y_i)_w + \text{Pr } j_{Y_i Y^+}(Y^- Y^+)_w} \quad (14)$$

Calculating the final proximity value, according to the proximity value, this paper gets the order of alternative partner.

4.3 Negotiation stage of alternative partner

PPP project has some characteristic of complex and long cycle. the PPP project requires a lot of money, and the PPP project will face many uncertainties factor in the future. Before the PPP project is implemented, the public sector and the private sector need to negotiate about the detail of PPP project. Until the public sector and the private sector reach a consensus to solve some problems in the future and ensure the PPP project development smoothly. The final stage of PPP partner selection is the public sector negotiating with the private sector. Negotiation order according to the rank of the partners. If the public sector reaches an agreement with the first partner, public and private sector can sign the relevant cooperation, otherwise the public sector need to negotiations with another alternative partner until public sector find the right partner. the negotiations focus on project transfer, project operation, partner change, partner exit, project risk sharing, benefit distribution etc.

5 Empirical analysis

China's certain province sewage plant PPP project as the province's first sewage treatment facilities PPP project that is a relatively successful case of PPP project. But as first PPP project of province, the sponsor lack relevant experience, fund shortage. So, the government cannot just rely on price to choose the partner. Secondly, although the Ministry of Finance of the People's Republic of China has announced partnership Operations Guide, but the guide lack specific details. In this paper, partner selection mechanism include some specific details of partner selection, this paper takes into account a variety of factors and constructs evaluation system, gets rid of the standard that price is the

only factor in the process of selection partner. Using SEM proving the rationality of the evaluation index system, combining SEM with bidirectional projection method, it is scientific and reasonable to determine the order of the alternative partner.

Provincial housing urban and rural construction department decided to use the PPP project, the government publishes tender documents and notice. And then, there are seven companies submitted the application, after prequalified, a total of five partners meet the requirements, five alternative partners are named A1, A2, A3, A4, A5. And the government needs to consider the attributes of alternative partners. To this end, the government specifically invited China investment consulting firm as consultant, and set up a decision group to choose the private partner. The quantitative data of the five alternative partners are shown in Table 4.

Table 4 The quantitative data of alternative partner

	A1	A2	A3	A4	A5
Total assets(yuan)	19108515044	36125200242.78	27721345000	13744795169.14	18388772124.91
Number of staff(ren)	3740	7886	2000	2244	492
Total sales(yuan)	4609714389	7061493505.98	23728402000	631913845.18	5214260272.86
cash flow(yuan)	1935078037	1006725265.73	9598020000	652832992.85	1359223496.52
Total liabilities(yuan)	11274940954	2998391620	17073557900	3019398294.77	228900000
Total revenue(yuan)	847753662	375796890.4	604757400	870624515.25	1147058005
time length (year)	30	30	30	30	30

Decision group use the scoring form to determine qualitative data of the alternative partners, this paper integrating and process the qualitative data of the alternative partners, this paper gets decision matrix that is shown in Table 5.

Table 5 Decision matrix of alternative partner

Index	A1	A2	A3	A4	A5	Weights	index	A1	A2	A3	A4	A5	Weights
B7	7.6	7.52	7.46	7.48	7.54	0.037	B15	7.56	7.44	7.48	7.44	7.38	0.057
B8	7.56	7.3	7.42	7.54	7.26	0.04	B16	7.5	7.56	7.68	7.66	7.6	0.056
B9	7.48	7.4	7.44	7.44	7.44	0.04	B17	7.46	7.3	7.64	7.54	7.42	0.026
B10	7.78	7.66	7.52	7.38	7.5	0.042	B18	7.34	7.32	7.4	7.2	7.38	0.028
B11	7.4	7.34	7.5	7.56	7.38	0.057	B19	7.44	7.6	7.2	7.56	7.4	0.027
B12	7.52	7.68	7.66	7.52	7.48	0.057	B20	7.66	7.38	7.38	7.56	7.68	0.026
B13	7.38	7.56	7.56	7.28	7.58	0.054	B22	7.54	7.48	7.8	7.36	7.54	0.026
B14	7.5	7.58	7.42	7.56	7.66	0.061							

By processing the qualitative data and quantitative data, getting the decision matrix, according to the calculation steps of bidirectional projection method, getting the projection value and closeness coefficient of alternative partner, it's shown in Table 6:

Table 6 Calculation results of bidirectional projection method

	A1	A2	A3	A4	A5
$Pr j_{Y^-Y_i}$ (Y^-Y_i)	0.9643	0.7720	0.7835	0.8505	0.8218
$Pr j_{Y_iY^+}$ (Y^-Y^+)	0.8218	0.7733	0.8182	0.7112	0.7155
$C(Y_i)_w$	0.7165	0.4989	0.4698	0.6151	0.5847

We can get the closeness coefficient of the five programs are 0.7105, 0.4929, 0.4648, 0.6365, 0.5802, so $A1 > A4 > A5 > A2 > A3$. Determining the order of alternative partner. Next, government and partners conduct multi-round negotiations about the project operation mode, risk sharing, profit sharing, partner changes, as well as the form of PPP project transfer. Finally, public sector chooses A1 as the ultimate partner, A1 has a strong capacity for sewage treatment. The government cooperates with A1 reduce the provincial government's financial pressure and strengthened infrastructure

construction.

6 Conclusions

By analyzing the existing problems of partner selection in traditional PPP model, this paper proposes the mechanism of three-stage PPP mode partner selection. Taking the PPP project of XX sewage treatment plant as an example, this paper verifies the rationality and validity of the three-stage partner selection mechanism and comes to the following conclusions:

The PPP project has long cycle and complex process, so the choosing of the appropriate partner should considering the enterprise scale, financial condition, business management ability, technical level, credit status, project execution ability and so on to observe the partner candidates comprehensively; since the private sector is the executor of the project, project implementation capacity is one of the key indicators for selecting partners; the method of index weight determination has been improved by combining the structural equation with the hesitant fuzzy bidirectional projection method. In addition, in consideration of the relation between the scheme and the positive and negative ideal points, the paper determines the superior order and provides the scientific way to select the appropriate cooperative partner; Taking the partnership alteration, the quilt of partners and the risk sharing into consideration will have great significance to select suitable partner for PPP projects.

7 Acknowledgement

This paper is funded by the International Exchange Program of Harbin Engineering University for Innovation-oriented Talents Cultivation.

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The Investigation and Reflection on the Construction and Operation Status of Public Bicycle System in Hohhot, China *

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Abstract The construction and use of public bicycle system is an important measure to insist on the concept of ecological development and promote green commuting. Since 2013, Hohhot has been promoting the improvement and development of the public bicycle system. Based on the investigation on the construction and current operating status of public bicycle system in Hohhot, it analyzes the construction, operating problems and its reasons existing in the two phases in this paper. Besides, it analyzes the development of public bicycle system in Hohhot, using the SWOT theory, and gives corresponding countermeasures and suggestions from the perspective of public administration based on the multiple subjects' co-governance mode, in order to provide the reference of reasonable operation on public bicycle system in Hohhot and other cities.

Key words Public governance, Public bicycle, Site layout, Multiple subjects co-governance mode, Hohhot

With the continuous development of economic society and the strike root of ecological view of nature, green environmental protection and low-carbon travel have become an important goal of urban development. At the same time, the development of low-carbon transport has been an efficient measure to ease traffic congestion and other city diseases in large cities at home and abroad. At abroad, as long ago as 1965, Amsterdam was the first city which entered the era of public bicycle^[1]. Later, other cities such as Paris, London, also led the world public bicycle intelligent system development trend. In our country, public bicycle operating system has gradually got the high praise in such cities as Beijing and Shanghai^[4], ever since Hangzhou used public bicycle service system firstly^[2-3]. Nowadays, orange body, beautiful modeling, economic, convenient and environmentally friendly public bicycle has become the new scenery on the streets of Hohhot^[5]. The fifth Plenary Session of the 18th CPC Central Committee has pointed out the development philosophy of “innovation, coordination, green, open, sharing”, so the construction and improvement of public bicycle systems in Hohhot is the low-carbon transport route choice both for economic convenience to the people and green environmental protection to the society.

However, as the newly developed construction of operating system, there still exists many difficulties, such as the construction and its maintenance of the system, the daily quality supervision of operation, the universality of system covering, comfort and convenience, damage prevention, the combination and complementary with bus system and so on. Therefore, the construction and operation process of the Hohhot public bicycle systems will be studied, and the corresponding suggestions from the perspective of public administration will be put forward, so as to give more reasonable operation reference to Hohhot and other cities' public bicycle system.

1 The development and operation model of public bicycle system in Hohhot

1.1 The development stages of public bicycle systems in Hohhot

On October 22, 2013, Hohhot public bicycle system was formally put into use. It facilitates people's daily life. After more than three years development, with the principle of “government leading, enterprise managing, people benefiting”, the quality of public bicycle system in Hohhot is constantly

*Financed by National Natural Science Foundation in China: Spatial Layout Optimization of Rural Residential Areas based on Multi-objective Ant Colony Algorithm. (Project No.: 41301188); and by Inner Mongolia Natural Science Foundation, Project Title: Spatial Layout Optimization of Rural Residential Areas in the Farming-pastoral Ecotone under the Ten Full Coverage Policy. (Project No.: 2016MS0401)

improved, the coverage of network is expanded, the quantity is increased, the service radius is optimized, and the opening of self-service system brings more convenience. By the end of August 2015, the total rental IC cards were handled nearly 80,000 copies, each public bicycle was rent about 8.5 times daily, even the public bicycle utilization rate can reach up to 80,000¹ every day.

Table 1 The construction phases of public bicycle systems in Hohhot²

Construction phases	Time	Number of service stations	Number of bicycles	Coverage area	Note
The first phase	2013.10 - 2014.04	120	5100	East from the municipal government of Hohhot, west to the second vocational school, south to autonomous region bureau of industry and commerce, north to Hutie community	At present, the main points are laid out in the center of the civil services, large public sites, tourist areas and around the schools
The second phase	2014.04 - 2015.12	210	5040	East from Tenfei road, west to Bayinnaoer road, south from the south second ring road, north to Genghis Khan street	
End stage	2016-	500	20000	All over the city	

1.2 The status of Public bicycle sites layout

In accordance with the layout principles of “transfer convenience, natural density, board area” in Hohhot, public bicycle sites are mainly laid at bus stations, in residential areas, leisure resorts and schools. After the second phase of construction, the coverage of bicycle site become broader and service radius shorter, from the original 500-800 m (or 1000 meters) to 300-500m³. In the sight of regional scale, most sites are laid within the Second Ring Road. In first phase, it was mainly constructed in Saihan District; in the second phase, it gradually paid attention to Yuquan area and Huimin area. In general, the bicycle sites are distributed mainly in Saihan District, and less in Yuquan area; more in main urban area, and less outside of the Second Ring Road.

1.3 The operating mode of public bicycle system in Hohhot

The establishment of the public bicycle system fully followed the principle of “government leading, enterprise managing, and people benefiting”. As early as 2013, the Research Center of Inner Mongolia Autonomous Region had proposed to draw lessons from Zhuzhou in Hunan Province for its experience of public bicycle system^[6]. Later, Zhao Yun-ping, director of China Democratic League in Hohhot, firstly made a constructive suggestion of public bicycle system construction. Then, guided by the municipal department and entrusting tendered by Public Resources Trading Center, the concrete construction and operation of public bicycle system was charged by the Hohhot City Environment and Sanitation Development LTD (E&S.LTD). And E&S.LTD commissioned the Public Resources Trading Center to purchase public bicycle systems with the method of competitive negotiation under the rules of “no syndicated bid”, eventually Hangzhou Jintong Public Bicycle Technology Development LTD. won the bid as a single supplier. Under the government financial subsidy, the company provides convenient and economic services for the public, which is an effective form of government purchase of public services.

After the construction of the public bicycle system, the public can enter into the public bicycle service system through registration and mark card or out of the using the system by card refunded. In the concrete operating process, E&S.LTD is responsible for scheduling and maintenance of bicycles, at the same time, it accepts the supervision and guidance from government and other organizations and handles with the complaints and advices from citizens. The schedule is shown below:

1 Hohhot public bicycle phase II released 102 point[N]. Source: Hohhot city tour DE public website, 2015-08-03

2 Data source: <http://www.northnews.cn/2014/0916/1730937.shtml>

3 Hohhot increases 80 public bike new sites, is there near your house? Source: the northern network, 2014-09-16, <http://www.northnews.cn/2014/0916/1730937.shtml>

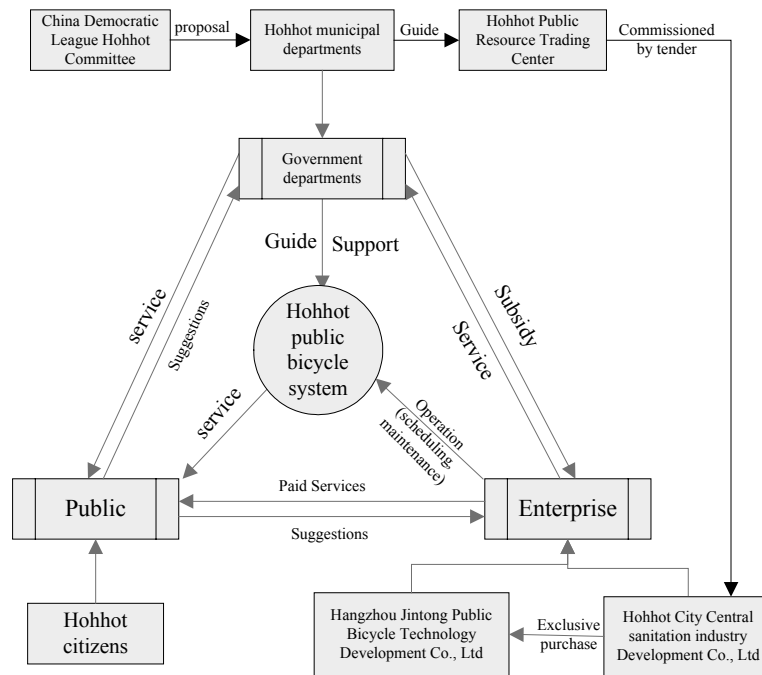


Figure 1 The diagram of operating mode of public bicycle system in Hohhot

2 The status and problems of using public bicycle system

Hohhot public bicycle system is still in the construction phase and the experience is relatively insufficient, so it still faces many problems in the process of construction and operation. Therefore, this paper did the research in some parts of the public bicycle sites in Xincheng District, Yuquan area and Saihan District which are the main three districts of Hohhot by giving out a total of 200 questionnaires and the valid 183 questionnaires, so the effective rate was 91.5%. In addition, we also interviewed the related staff of E&S.LTD, bicycle repair shops and market stalls, etc. Generally speaking, the main problems of the public bicycle system in the two stages are as follows.

2.1 Problems in the stage of construction

2.1.1 Difficulties of sites construction and selection

Despite the location of public bicycle sites was decided after the scientific measurement and the negotiation and discussion with the related departments like gardens, municipal and traffic. The decision and construction of public bicycle sites are still the most troubling questions in the process of system construction due to the strong and weak electricity, shops along the streets, the schools and many other factors. Besides, it conducted the comprehensive consideration upon the dimensions of sites, the convenience and its impacts on the city. Staff in E&S.LTD mentioned that citizens often discouraged them from sites construction. The survey of surrounding people and shops shows that the main causes lie that some of the bicycle sites occupied the pavements, the entrances and exits of the shops and public space which can be used as temporary parking spaces for private cars. That had affected people's daily life and the interests of the shops. When the dispute occurred, the hysteresis of coordination from municipal and building apartments was always seriously lagging behind, coupled with limited financial resources, some of bicycle sites had to be shelved.

2.1.2 Shortage of construction funds

The workers interviewed in E&S.LTD said the top issue in public bicycle system construction is the question of funds. Concerned with the public bicycle project itself, non-profit project means low-income, while bicycle purchase, transport, installation, maintenance and other costs can get the government support at the initial stage, but with the project gradually in full swing, the capital

consumption and technical demand will increase dramatically, government subsidies will not be strong enough to support it. What's worse, as the staff mentioned, the government has reduced its support in later construction stages, which resulted in the lager shortfall in funding.

2.1.3 Lack of staffs

In fact, the operating persons in charge in the project of E&S.LTD are only about 20. For the financial reason, the staff has to work more apart from their own duties, which has also constrained the improvement of their service level. In addition, it is very difficult to recruit new maintenance staffs for the public bicycle system. When it comes to this, 20 bicycle repair stalls on the market were interviewed randomly, and all of them said they would not apply for the position. The reasons are as follows: the private income is more substantial, with less workload and more free time, etc. E&S.LTD has only one service station which has to repair hundreds of bicycles transported by 4 car haulers.

2.1.4 Poor management regulations

Although the public bicycle system in Hohhot is constructed in the advanced experience of Hangzhou, Taiyuan and other cities^[7], the use of the public bicycle will inevitably affected by the special weather of snow and freezing in winter here. While the control, service, monitoring and responding of the bicycle use have not been taken into consideration and handled with. The staffs also made it clear that E&S.LTD haven't published relevant regulations to stop using public bicycle in such weather as snow and freezing, or explained the damage this kind of weather could do to public bicycle even proposed corresponding solving measures, etc.

2.2 Problems at the stage of operation

2.2.1 Imperfect public bicycle maintenance facilities

As usually used means of transportation, the safety performance is one of the important factors people considered. More than 80% of the respondents worried about its safety. At present, each public bicycle site is equipped with a volume of about 30 to 60 bicycles, but with no construction sheds and other protective facilities. Such facilities have not been taken into account. For the special climate with snow and rain erosion, the cycling performance is seriously threatened. In addition, the public bicycle will inevitably face conditions in the process, such as rust, broken lock, flaking paint, etc, which need good repair. But before May 2017, there was only one maintenance station which could not guarantee the repair in time (After May 2017, 20 public bike repair points were enabled).

What's more, the determination of authority and responsibility in the process of bicycling, when traffic accidents happened, is another problem. And there are no specific regulations and measures to stipulate the subject of legal responsibility in crash, conflicts and other personal injuries.

2.2.2 Malicious damages on public bicycle

In the process of bicycling, bicycle users have many uncivilized behaviors, for instance, they may smash the public bicycles, or use a knife to cut seat pad and others. Some people even think the urban infrastructure as frustrated tool, destructing the public bicycles without fear of retribution. According to what the People's Network reported in April 2016 , the damage rate had reached up to 65% in more than 10,000 vehicles. The following table lists some relevant public bicycle malicious damage incidents media reported over the past several years:

Table 2 Man-made destruction event to public bicycle in Hohhot

Time	Place	Event
2014/2/4 20:00	East gate of Hailiang plaza	The owner in a black Landrover driven over bikes
2014/5/20 04:00	Site of Wuzigongyingzhan community in Aimin street	Three drunken men malicious damaged the equipment cabinet and bikes
2015/6/15 12:00	The Altai Playground	Students carved display screen
2015/11/18 01:00-03:00	Xinhua street, north site	The owner in a BMW crashed bikes into pieces
2015/11/19 20:00	Wulanchabu east street, Zhanlanguan east road	A woman lacerate seats with a knife, and more than three hundred bikes are destroyed

From the table, malicious damage behavior tends to occur at night, and adults did this more frequently. These wanton destructions, not only increased the public bicycle' repair and replacement costs, but also brought severe damage on the public interest.

2.2.3 Untimely bicycle dispatch

Due to the difference of traffic demand and the lack of sites investigation before construction, the supply and demand of different sites are seriously unbalanced. In rush hours, parts of the sites face the situation without a bike available, while the other parts of the sites have no space to park. At present, the vehicle scheduling service among 330 public bicycle sites relies on only 4 dispatching cars, and each repairman should manage 7-8 bicycle sites. The shortage of dispatching repairmen, equipments leads to its lack of instantaneity.

2.2.4 Insufficient media promotion

With regard to the question that how citizens learn about information on public bicycle, more than 50% of respondents said they heard on the street. The survey shows that citizens get relevant information through three ways: newspapers, friends' introductions and initiative consultation, the proportions are respectively 20%, 30% and 50%, which reflects the insufficient media promotion. In the question of "Do you know the public website of LTD?" more than 90% of people said "I don't know" except a few students who have ever involved in related social researches. Under the background of development of network and governments' advocacy of internet, governments at all levels should realize the importance of network to promote the development of public bicycle.

2.2.5 Poor system stability

According to the information published in the public website, from April to November in 2015, there are 107 pieces of news released totally, a third of which are about emergency notification for power failure or network failure notification. However few people know the existence of public website, so people can hardly get the messages in time. Even if people can learn, such a high frequency of system failure will still greatly disrupt citizens' travel plans, and bring travel inconvenience to them.

2.3 SWOT analysis on the development of public bicycle system

Public bicycle system is a major livelihood project in Hohhot, comforting to the idea of people-oriented service. In addition, green and economical way to travel adapts to the idea of ecological development. During the two years of operation, public bicycle systems received broad attention and high praise from the masses. Even if the public bicycle systems are still imperfect in construction and also facing even malicious man-made destruction, these can all be improved by follow-up adjustment and continuously optimizing regulation. In general, the construction and development of public bicycle systems hold more advantages, less disadvantages and face more opportunities, less challenges. The development of public bicycle systems not only meets the need of times' development, but also accords with the actual situation of Hohhot to create convenience and benefits to citizens.

Table 3 SWOT analysis on the development of public bicycle system

Internal conditions	Strengths	(1) Convenient, economic and applicable, money-saving and less trouble (2) Low carbon, environmental protection (3) Supplement and perfect the public transport system ^[8] (4) Exercise convenience (5) Benefit low-income groups, improve the efficiency of resource use
	Weaknesses	(1) Incremental investment construction stage, the system of malfunctions (2) Imbalance on part of the network supply, integrating manufacturing, operation and maintenance of system planning is not perfect enough
External conditions	Opportunities	(1) For most climate conditions appropriate (2) Flat landform (3) The finance support from capital (4) Successful experience for reference (5) Policies to guide
	Challenges	(1) Winter utilization rate is low, high maintenance cost (2) Man-made destruction seriously (3) Location difficult

3 Some countermeasures and suggestions

As a substitute for public transport system, taxis and private cars, it's particularly important to perfect the construction and operation of public bicycle systems, to improve the capacity of coordinating and cohesion under the guidance of the concept of green travel, low carbon environmental development. Relevant government departments, the operating enterprise, the public and other social forces should be actively involved in the system maintenance and improvement work, truly practice the principle of “government leading, enterprise managing, public participating and social supporting”.

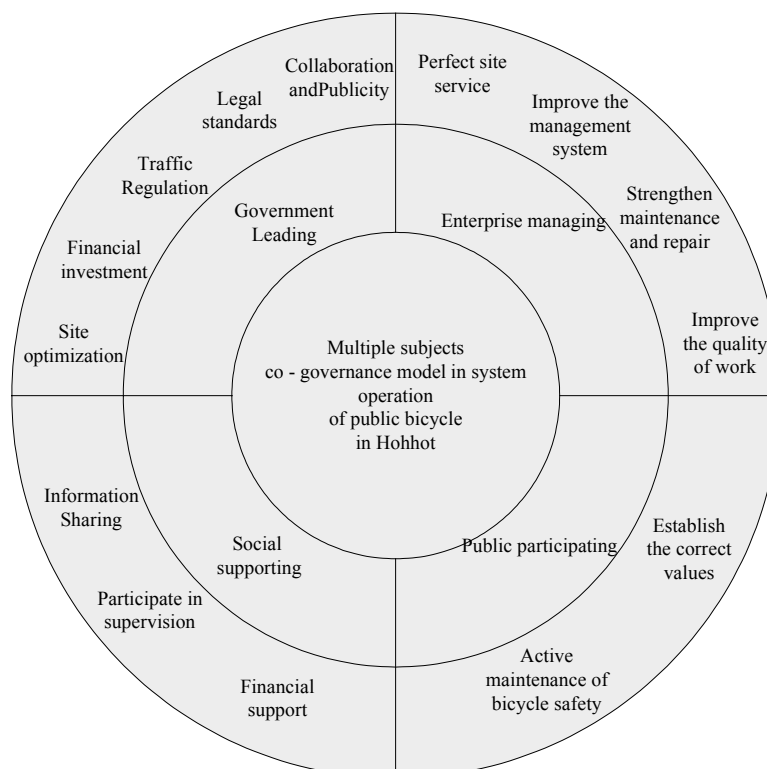


Figure 2 The multiple subjects co-governance mode of public bicycle system operating in Hohhot

3.1 The functions of the government departments

3.1.1 Urban Construction Bureaus (UCB): site planning and optimizing

First of all, UCB should strictly coordinate LTD to increase the number of public bicycle sites and improve the site spacing in accordance with the idea of “scale expanding, people benefiting, bus matching”. The distance among the sites should be decreased gradually from the residential area to the downtown, making it fit the characteristics of flow distribution. Moreover, it should make each site has a higher efficiency and avoid the situation of the “waste”, then gradually achieve whole coverage from the city center to the edge of the city, fully meeting the transport needs of public; Secondly, UCB needs to coordinate relevant departments to strengthen the construction of the site planning and promote public bicycle into schools, communities, public places and main traffic arteries, and take the hubs, commercial street, residential area and schools as the base to spread through network and make services more perfect. Furthermore, UCB also needs to coordinate with related planning, such as the layout of subway site to form a relationship of complementary cooperative development, to avoid repeated construction.

3.1.2 Financial departments: continue to increase in capital spending

As the basic public service in the city, the construction of public bicycle system obtained two

levels of support from the public financial departments. Both in the initial construction and its later operation, public financial support is necessary. At the same time, the financial department should do a good job in financial supervision and regulation, avoid the waste of public money and embezzlement and ensure fiscal funds run smoothly.

3.1.3 The traffic departments: strengthen the management of road planning

It's necessary to shape the relative rules to guarantee the operation. As a law-enforcing department on road safety, the traffic departments should not only cooperate LTD to formulate public bicycle system's rules and guidelines, but also strength the management of road safety. Moreover, it should attach great importance to the bicycle lanes of planning and construction and punish the illegal appropriation of bike lanes in time to ensure the safety of biking. In roads planning, traffic departments need to ensure public transport's priority to form the road network for bicycles.

3.1.4 Legal departments: formulate safety standards for bicycle production and use

For the consideration of bicycle security problems, legal department should formulate corresponding public bicycle production standards, including the strength standards, safety standards and operating cycle standards of public bicycle bodies, accessories and related equipments to make public rental bicycles have the higher durability and safety, the lower cost of safety and improve the bicycle anti-theft ability. In view of the external security threats, legal departments should draft public bicycle rental rules and penalties for illegally parking and man-made destructions.

3.1.5 Multiple departments: cooperative propaganda

Public bicycle, green and environmental, low carbon and healthy, can ease traffic pressure. For the new commuting choice, government departments should strengthen the horizontal propaganda work between departments, including the urban construction, transportation, environmental protection, development and reform commission. The multiple departments should cooperate with each other in collaborative governance using Medias such as Internet, television, mobile communication to achieve comprehensive publicity and guidance; at the same time, it uses the leader's celebrity charm to call for people to travel by bike, raises public awareness of bicycle and low carbon travel.

3.2 The operating enterprises

3.2.1 Perfect the public bicycle site service

At the beginning of system operation, there were only 3 service stations for handling card, namely, south crossing in Tengfei Road, western gate of Inner Mongolia Agricultural University, Christian church in Zhaowuda Road. Each of these three points had only a window and a staff to undertake a variety of business, including handling card and prepaid, which resulted in heavy workload and low service efficiency. It also led to great inconvenience for the public. If the enterprise can increase the number of service sites and servicers in concentrated areas, such as residential areas, commercial districts, schools and so on, it will greatly improve office efficiency, and also can provide citizens with more efficient service.

3.2.2 Improve public bicycle management system

Perfecting new intelligent public bicycle management system can achieve the service of online and mobile phone payment, which can alleviate the pressure of the service work, and make it more convenient to save time and effort; Public bicycle system should be brought into the public transport system for overall arrangement of city traffic system, and integrating the advantages of all kinds of traffic to solve the problem of "the last kilometer" travel difficult, creating a "one card in Qingcheng" situation.

3.2.3 Strengthen the public bicycle repair maintenance

With the use of public bicycle increasing, the workload of public bicycle maintenance has also risen. To reduce body damage, carport and other facilities should be constructed in the sites, so as to reduce the damage from the bad weather. At the same time, the enterprise should increase public bicycle repair stalls equipped with professional management persons to avoid public resources waste problems caused by failure repair of public bicycles.

3.2.4 Improve the quality of the staffs

It is necessary to strengthen the management of staffs in public bicycle sites. Investigation showed that parts of the sites staffs' service attitude is very bad, with distant faces and indifferent words, which

caused a negative impact in the recognition of citizens on the project. Therefore, it is necessary to improve staffs' quality and the service attitude, enhance their dedication and persuade them carefully recording the response from people, feedback upward whatever happened in time and try best to create a harmonious and orderly operating environment for cycling system.

3.3 Citizens

3.3.1 Set up the correct values

Survey shows that some people are reluctant to use public bicycles because they think it's humiliated and choose to face the heavy traffic jam. Under the background of low-carbon development, the public bicycle travel becomes an inevitable choice to ease congestion, and conforms to the historical trend and social development concept. The masses should abandon the concept of "face" and set up the new concept of "decent travel", and justice the concept of low carbon environmental protection to ride bikes instead of taking private cars. Bicycle is not just walking tools for the poor; it is a green and healthy form of exercise, the best transportation choice in short-range travel and environmental protection.

3.3.2 Active maintenance for public bicycle safety

As the direct beneficiaries of public services, citizens' participation in the service is essential. Firstly, as the user of the system, the public should strictly conform to relevant rules; Secondly, as a member of the community, the public should maintain, monitor and provide advices to fulfill the social mission at any time. For some users and individuals in the society who do malicious destruction to a bicycle, the public need to actively participate in the supervision to make those people receive punishment and education. At the same time, the public also need to improve the personal accomplishment, take good care of public bicycle system, actively participate in the supervision, feedback problems timely, and assist relevant staff guarding the healthy operation of public bicycle system in Hohhot.

3.4 Social forces

With the progress of marketization in our country, the government administrative system is experiencing changes from administration to service innovation. The public administration in the new period emphasized the introduction of market elements in public affairs to improve the efficiency of management and enhance the service quality of public service at the same time. In light of this structure, the enterprises will undertake the unprecedented social responsibility and play a more and more important role in social life. Public bicycle is beneficial to the society and needs the participation of social enterprises and social organizations. First, encouraging the enterprises to gather social capital to set up public bicycle special fund, to make up for financial short board, and to ensure the healthy operation of the people's livelihood project; second, encouraging social organizations to participate in the operation regulation of public bicycle system to form a good situation of full mobilization. For example, widely encouraging social voluntary organizations involved in the process of project operation, maintenance and supervision, and actively mobilizing social community subjects to participate in; finally, the government should play a main role of good connection between secondary and tertiary sector to share information and the implementation, in order to ensure the sustainable operation in the process of establishment, operation, scheduling, maintenance of public bicycle.

Overall, public bicycle system is a convenient and environmental protection public transport projects. The social forces may not only improve the efficiency of public services, but also win more opportunity costs for the public sectors. The multi-subject participating public operation mode is the inevitable choice to supply the continuous and efficient public service.

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How Can Party Organizations' Boundary-spanning Behaviors Shape the Production Regimes in SOEs? A Case Study on a State-owned Enterprise in China

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Abstract The production regime of state-owned enterprises (SOEs) is shaped by the Party organizations' boundary-spanning behaviors (PBSB) in labor-relation management during the economic and social transition period of China, while there are few studies focusing on this point. Based on a case study about a SOE (hereinafter referred to as CH), this paper uses the boundary-spanning theory and the theory of production politics to explore how these behaviors shape production regimes of SOEs. The study indicates that the Party organizations' boundary-spanning behaviors which can promote the transformation of SOEs' production regime exist in labor-relation management in SOEs.

Key words Party organizations, State-owned enterprises, Boundary-spanning behaviors, Production regimes

1 Introduction

At the 2011 national sharing session about experience of constructing harmonious labor relations, President Xi Jin-ping explicitly claimed that the combination of powers of the Party and government, mass organizations, and enterprises were needed to promote "the establishment of harmonious labor relations"^[1]. Party organizations play a key role in SOEs^[2], however, few scholars have explored the management behaviors and revealed how these behaviors shape SOEs' production regimes. Based on a case study in a SOE named CH, this paper uses boundary-spanning theory and the theory of production politics to explore how Party organizations' boundary-spanning behaviors shape SOEs' production regimes.

2 Theoretical relationship between PBSB and production regimes

2.1 Party organizations' boundary-spanning behaviors in labor-relation management

"China now manages labor relations by combining the dominance of the Party[...] with the participation of both labor and capital"^[3]. This phenomenon tends to be more evident in SOEs^[4, 5]. In other words, Party organizations' management behaviors are characterized by the boundary spanning. Accordingly, their actions and outcomes can be explained by the boundary-spanning theory. Boundary-spanning behaviors are defined as "behaviors that aim at establishing relationships and interactions with external actors in order to enable the team to meet its overall goals"^[6]. Early studies mainly focused on information communication^[7-14] and then gradually was extended to coordination^[15] and lobbying^[16, 17]. The study made by Ancona and Caldwell^[18] paved the way for later studies by classifying boundary-spanning behaviors into three categories: ambassador, task coordination and scouting. Based on it, Chinese scholars Wang Yong-li and Zheng Wan-yu classified labor unions' boundary-spanning behaviors^[19]. This paper defines the Party organizations' boundary-spanning behaviors (PBSB) in enterprises' labor-relation management as the behaviors that Party organizations establish relationships and maintain interactions with external actors for the purpose of constructing harmonious labor relations. PBSB can be classified into three categories: ambassador, task coordination and scouting. Ambassador refers to the Party organizations' persuading and lobbying to upper-level management departments and institutions for external support and resources in enterprises. Task coordination refers to the coordination and sharing between Party organizations and lateral or lower levels. Scouting refers to Party organizations' scouting and supervising of external ideas and information. PBSB tends to be more obvious in SOEs. Thus, the first proposition is raised. Proposition 1: Party organizations' boundary-spanning behaviors exist in labor-relation management of SOEs,

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which can be classified into ambassador, task coordination and scouting.

2.2 PBSB shapes production regimes of SOEs

During the marketization transformation of labor relations, PBSB has an impact on the production politics in SOEs. Wang Shi-kai explains the production politics as “the authority structure and patterns of behaviors in the area of production”^[20]. And the production regime is “the political and ideological mechanism of production to regulate relations in production”^[21, 22]. Burawoy points out that the production regime is the combination of coercion and consent. Coercion prevails in a despotism regime, while consent prevails in a hegemony regime. A hegemonic despotism is a mixture of both a despotism and hegemony regime^[23, 24]. Two opinions contradict each other regarding the production regime of SOEs in China. After restructuring, Lee Jingjun argues that SOEs have been experiencing “disorganized despotism”^[25] while Li Er-jing argues that SOEs are still under the traditional authority structure^[26]. To explore SOEs’ production regimes, it is necessary to analyze not only the strength of coercion and consent, but also the factors behind them. Burawoy points out four factors—state power, reproduction of labor force, market forces and labor process—that can influence the production regime^[23]. Among which the state power is the most important one, for “state is not only the key to tame the despotism, but also the basis to ensure workers’ rights”^[27]. Considering the regional segmentation in China^[28], state power is often manifested by local governments^[27]. Xu Shi-yong *et al.* point out that there is a mandate relationship between the local Party committee and the local government in labor-relation management^[29]. Furthermore, Party organizations in SOEs established by the local Party committees are their representatives in basic units. By taking these together, this paper considers that PBSB manifests as state power at the level of enterprises to shape the production regime of SOEs. Thus, the second proposition is raised. Proposition 2: PBSB in SOEs’ labor-relation management can shape the production regime in SOEs by adjusting the strength of coercion and consent.

3 Research methods

This paper uses a single-case design to elaborate PBSB and the evolution of the production regime in the SOE. Two reasons are prominent in selecting CH as the object investigated of the case. First, observing PBSB was considered easy in CH, because workers’ collective protest in 2005 caused to more intervention from the Party organizations. Second, collecting data is convenient in CH. From 2014 to 2017, the researchers went to CH five times for investigations. Data were collected through interviews, official correspondences, statistic reports and medium publications. By reviewing the newspaper and the official correspondences systematically, the researchers are able to arrange labor-relation incidents that happened in 2005 and create a time-line accordingly. Researchers mainly focus on CH’s newspapers in 2005 for two reasons. First, newspapers automatically sort incidents in a chronological format, which facilitates the longitudinal analysis. Second, newspapers usually report significant events, which facilitates the recognition of important events relevant to labor relations.

4 Case background

CH is a resourced-based SOE in eastern China whose resources ran out gradually in the late 1990s. Accompanying the wave of restructuring SOEs, CH began its labor-relation transformation after 2000. The restructuring policies broke the “iron rice bowl” of workers and led CH to sink into instability. In August 2005, workers’ collective protest broke out because of their dissatisfaction on policies about labor-relation changing. Taking the protest as a dividing line, this paper elaborates on CH’s PBSB and the production regime from January to July (phase 1) and from August to December (phase 2) respectively. As previously mentioned, the factors of a production regime include the reproduction pattern of labor force, market forces, labor process and state power. In 2005, workers at CH had no alternative way to earn a living except for working in CH; hence, the reproduction pattern of labor force remained invariable; The market forces of CH can be seen as invariable, as it is a unique resource-oriented and state-owned enterprise that supplies a type of resource in the local area; the labor process can be seen also invariable, as production technology can only be changed in the far-long term from the view of labor economics^[30]; in August, a workers’ collective protest broke out at CH. PBSB,

being the manifestation of state power, changed significantly before and after the incident. Due to the reproduction pattern of labor force, market forces and labor process remained invariable, such that exploring how PBSB (state power) shaped the production regime became the study's focus.

5 Verification of proposition 1 in phase 1 (January–July): analysis of PBSB

Through analyses of archival data of CH, labor-relation activities were classified into eight types: ideological education, official visits, unions' development, political network establishment, democratic communication, material compensation, support seeking and workers' collective protest. Researchers made the time-line from January to July. And the extracted activities closely related to labor-relation management of Party organizations were used to refine PBSB (see Table 1).

Table 1 Time-line of PBSB (January–July 2005)

Date	PBSB	Activities	Newspaper headline	Active parties and passive parties(direction of arrow)
03/01	Task coordination	Ideological education	<i>CH held ideology and politics seminar</i>	Party organizations ↔ management departments
03/01	Task coordination	Ideological education	<i>CH aimed to strengthen the construction of the "clean and honest" image of the Party during Spring Festival</i>	Management departments ↔ Party organizations
21/02	Task coordination, scouting	Official visits	<i>Engineering Construction Company was committed to stability safeguarding</i>	Party organizations & management departments → workers
07/03	Task coordination	Ideological education	<i>CH gave award to outstanding units of workplaces and workers in 2004</i>	Party organizations & management departments → workers
07/03	Scouting	Political network establishment	<i>No. 6 workplace and Big West workplace withdrew from the administrative system; life-management department to be built.</i>	Party organizations → workers
07/03	Scouting	Political network establishment	<i>Networks for collecting thoughts and information from the masses were established in power plants.</i>	Party organizations → workers
16/03	Task coordination	Ideological education	<i>CH encourages anti-corruption activities in Party organizations</i>	Management departments → Party organizations
04/07	Task coordination	Ideological education	<i>CH's Party committee gave award to outstanding Party organizations and members in 2004.</i>	Party organizations → workers
11/07	Task coordination	Ideological education	<i>CH initiated educations for the improvement of Party members on the topic of reform & development</i>	Party organizations → workers

5.1 Ideological education in phase 1 (task coordination)

Activities related to ideological education happened mainly in January, March and July. Charmaz advises that researchers should pay more attention to unexpected opinions taken for granted by respondents^[31]. When asked, "What is the key to promoting successful reforms in resource-oriented and state-owned enterprises?", Tong, the president of CH's newspaper office, answered: "I feel that the construction of the Party's culture with incorruptibility and cleanness is very important." Considering that the local government spent much money on supporting CH's labor-relation transformation, researchers thought that the answer would be "material compensations to interest-loss workers supplied by the local government" on the basis of investigations. Tong's answer went beyond researchers' expectation. Party organizations have been repeatedly referred to as the key in many other interviews, which made the researchers focus on them. On July 4, CH held a conference to give awards to outstanding communists. A report said: "Giving awards to outstanding Party organizations and communists is significant for the improvement and strengthening of solidarity of Party organizations^[32]."

This thesis believes that the ideological education aims to strengthen cohesion of Party organizations to build a better image of the Party for the masses. Therefore, ideological educations of Party organizations are classified as one behavior of task coordination of PBSB.

5.2 Official visits in phase 1 (task coordination and scouting)

Activities pertaining to official visits happened in January and February. On February 21, one report revealed the aim of this activity: “Leaders of Party organizations and the management visit workers. The company has appointed a secretary of Party organizations as a messenger of the thoughts of workers”^[33]. This thesis holds the view that the official visits conducted by Party organizations manifest the leaders’ caring about the masses while it also aims to understand (scout for) workers’ thoughts. Therefore, the official visits are classified as behaviors of task coordination and scouting of PBSB.

5.3 Political network establishment in phase 1 (scouting)

Activities of political network establishment happened in March. Many subsidiaries gradually established political networks in workplaces. On March 7, a report in CH’s newspaper said: “The power plant[a subsidiary of CH] has established a thought and information network, which takes Party branches as strongholds. All Party branches should go deep among the masses”^[34]. Party organizations also established political networks in non-workplaces. Another report said: “The Corporation[referring to CH] states that the administrative system in the No. 6 workplace and Big West workplace[both are subsidiaries of CH] have been revoked, and life-management departments[in which Party organizations have been set up] will be built there to take charge of living issues and the safety of state-owned property following this revocation”^[35]. Heberer and Schubert pointed out that Chinese Party organizations established political networks in residential areas to go deep into the daily lives of the masses^[36]. Party organizations in this area mainly receive retired or unemployed communists to understand the thoughts of the masses for cultivating new loyalty from the public. From this view, activities that establish the Party’s branches into the life-management department in closed and bankrupt workplaces play the same roles as understanding the thoughts of the masses. One file which is stored as manual political documents in CH, confirms the speculation in the thesis: “[We should] make full use of Party organizations. They cannot collapse, and the work of the Party cannot stop, even in closed or bankrupt workplaces. Party committees and Party organizations at all levels shall play a core role in politics for the purpose of promoting reform and development and maintaining stability”^[37]. Therefore, the activities of political network establishment conducive to the Party’s mastering of workers’ thoughts, were classified as scouting of PBSB.

5.4 Summary of PBSB in phase 1 (January–July)

To sum up, proposition 1 of phase 1 has been verified, which means that there exists Party organizations’ boundary-spanning behaviors in labor-relation management of SOEs. Specifically, PBSB in CH included task coordination and scouting in this phase. Task coordination is embodied in activities regarding ideological education and official visits, and scouting is embodied in activities pertaining to official visits and political network establishment.

6 Verification of proposition 2 in phase 1 (January–July): PBSB’s outcomes in shaping the production regime of SOEs

6.1 Lack of democratic space

In the “active parties and passive parties” of Table 1, it can be seen that from January to July of 2005, workers always took actions passively in major activities relating to labor-relation management, lacking access to democratic communication. For example, Qian, the captain of the rescue team at CH, said: “There is no [democratic space] before 2005. All people[referring to workers] do not know these issues[referring to reform plans].” Tong said: “Before the collective protest, workers’ feedback could not be sent up to the top.” Chen, the director of the security department at CH, said: “The plan for restructuring is opaque.” The lack of communication leads to a lack of democratic space. Therefore, the plan for restructuring turned out to be impractical.

6.2 Single reproduction pattern of labor force

Before 2005, because workers enjoyed the “iron rice bowl” for a long time, their reproduction

pattern of labor force was single, as Zhao, the president of the workplace union in CH, said: “Workers are complete proletarians, for they have no land or houses at all”. During the labor-relation transformation, the iron rice bowl was broken, but no reemployment and social security system bridged the gap. Therefore, the workers’ collective protest broke out in August 2005.

6.3 Summary of production regime in phase 1 (January–July)

To sum up, proposition 2 for phase 1 was verified, which means that PBSB in labor-relation management can shape the production regime in SOEs. Specifically, the state power, manifested by the PBSB, did not provide workers access to democratic communication, and workers’ reproduction of labor force fully relied on CH. The power of coercion overrode the power of consent in the labor-relation management. The production regime of CH was despotic regime in phase 1.

7 Verification of proposition 1 in phase 2 (August–December): analysis of PBSB

By extracting items from labor-relation activities conducted by researchers, the time-line of PBSB from August to December 2005 was refined (see Table 2).

Table 2 Time-line of PBSB (August–December 2005)

Date	PBSB	Activities	Newspaper headline	Active and passive parties of activities
15/08	Task coordination	Ideological education	<i>No Peace, No Premise for Transformation & Development</i>	Party organizations+ management departments→workers
15/08	Task coordination	Democratic communication	<i>A letter to all staff</i>	Party organizations+ management departments→workers
22/08	Ambassador, task coordination	Support seeking, material compensation	<i>Let workers get compensation as soon as possible</i>	Party organizations+ management departments↔local party committee and government; local Party committee and government + management departments →workers
29/08	Task coordination	Ideological education	<i>CH held activities about supervision and examination regarding the “clean and honest” image of the Party</i>	Local party committee and government ↔ management departments
05/09	Ambassador, scouting	Political network establishment	<i>Provincial supervisory team visited CH to supervise and guide the advanced education for communists</i>	Party organizations+ management departments↔local party committee and government
19/09	Scouting	Political network establishment	<i>Three cadres of provincial SASAC were appointed to leading positions to our company</i>	Local party committee and government →Party organizations+ management departments
19/09	Task coordination	Ideological education	<i>CH provided education about current situation and tasks</i>	Management departments→party organizations+workers
26/09	Task coordination	Democratic communication	<i>The company held conference about advanced education for communists</i>	Party organizations ↔ management departments↔workers
26/09	Ambassador; scouting	Political network establishment	<i>Provincial supervisory team visited CH to examine the effects of advanced education for communists</i>	local party committee and government →party organizations
07/11	Task coordination	Ideological education	<i>CH held conference to evaluate the outcomes of advanced education</i>	Party organizations ↔ management departments

7.1 Ideological education (task coordination) in phase 2

After the workers' collective protest in August 2005, Party organizations strengthened the ideological education to ensure stability. Zhao, the union president, said: "The most important mission[after the protest] is to maintain the peace." CH carried out special supervision activities in mid- to late August 2005 to establish the Party's "clean and honest" image. Tong believed that the Party's ideological education was very important for stable labor relations: "Workers have to follow Party organizations' orders. We all follow this rules without any doubts, no matter communists, cadres, or workers." One typical example that demonstrated the cohesion under the ideological education was the windproofing mission that took place after August 2005. Chen said: "The performance of Party organizations is positive.[...] The typhoon came after the incident[referring to workers' collective protest], and all workers still devoted themselves to the windproofing mission together[because of the Party organizations' ideological education]." Some scholars stated that during transformation, "experienced individual traditionalism" still had an effect on Chinese SOEs^[26, 38]. This effect can be illustrated by the leaders' management style, which is full of personal emotion and ideological education, and by workers' traditional loyalty for workplaces. Party organizations within CH took advantage of "experienced individual traditionalism" to maintain peace in labor relations through activities of ideological education.

7.2 Political network establishment (scouting) in phase 2

After the workers' collective protest, Party organizations also strove to establish political networks. The government set up a supervisory group, who visited CH twice in September and November to collect workers' thoughts and opinions. In addition, the government directly appointed provincial cadres as delegates to CH. A report revealed that this appointment aimed at strengthening the leadership of the Party's organizations:

Welcome the leaders, Hu (sent by provincial SASAC and one of the communists of the provincial Development and Reform Commission), Zhong and Ye (the secretary of the Party in the county) are to come to CH. We must strengthen the construction of the Party^[39].

This group, composed of three provincial cadres, worked at CH for two years. After the workers' collective protest, activities of political network establishment, as one of the methods for scouting, were more frequent than before. In addition, Party organizations initiated some new activities that, previously, had not been paid much attention, including democratic communication, support seeking and material compensation.

7.3 Democratic communication (task coordination) in phase 2

In September, Party organizations held a democratic dialogue with the masses. As one report stated: "[Party organizations] need to collect suggestions and carry out heart-to-heart talks with the masses to promote the democracy and unify the masses"^[40]. Because of these activities, the democratic communication between Party organizations and the masses was opened. Another report described the heated dialogue at CH in this way: "All units of workplaces use various methods, such as talking individually, issuing questionnaires, holding symposiums, or providing an employee suggestion box, to collect advice and opinions from communists, workers and others about communists and executives. The number of communists participating in this discussion was 1,676, and the number of the general workers was 443"^[41]. In the era of the planned economy, political activities conducted by Party organizations not only provided the chance for workers to express their opinions, but strengthened workers' political attachment to the Party^[42]. Although things are different today, the "experienced individual traditionalism" still functions^[38]. Therefore, Party organizations can also provide an access to democratic communication. It is important to note that democratic communication strengthens the authority of Party organizations, as the field in which the communication occurs is still operated by Party organizations. After channels for democratic communication have been established, the management of CH had a better understanding of workers' thoughts and opinions and turned to the local Party committee and government for support.

7.4 Support seeking (ambassador) and material compensation (task coordination) in phase 2

Support seeking means that CH asked the local Party committee and government for preferential policies to compensate workers' lost benefits in the transformation process. Before 2005, however, CH

also asked the government for support. But why did this activity become more obvious after August 2005? Several respondents revealed in their interviews that *guanxi* (the network of patron–client relations) played a key role. For example, Tong says: “The provincial Party committee has organized a working group,[...] which consists of cadres coming from provincial departments, including members from provincial government, General Office, provincial Economical and Trade Commission and SASAC” Qian says: “Zhong and Hu function like a bridge. For example,[...] simply put you are a subordinate of Zhong or Hu. Imagine that you then become a director[in the government]. Then, if Zhong or Hu[who have been sent to CH from local government] ask you for help to take care of CH corporation where they work. How could you ignore their lobbying? In China, it is natural in social interaction that all people consider *guanxi*.” Levesque and Murray point out that one key factor that impacts a group’s power is its network embeddedness^[43]. The local Party committee, to safeguard stability, sent cadres of the local government to CH after the workers’ collective protest. Due to the *guanxi* among cadres who were appointed to CH and the people who stayed in the local government, the network embeddedness between the local government and CH was strengthened, which was conducive for the success of CH’s support seeking. Support seeking and material compensation all come along with Party organizations, so there are PBSB in these activities. Among them, support seeking belongs to the behavior of ambassador, and material compensation belongs to the behavior of task coordination.

7.5 Summary of PBSB in phase 2 (August–December 2005)

To sum up, proposition 1 in phase 2 was verified, which means that PBSB exists in the labor relations management of SOEs. Specifically, PBSB includes ambassador, task coordination, and scouting. Among which, ambassador is embodied in activities of support seeking. Task coordination is embodied in activities of ideological education, democratic communication and material compensation. Scouting is embodied in activities of establishing political networks.

8 Verification of proposition 2 in phase 2 (August–December 2005): PBSB’s outcomes in shaping the production regime of SOEs

8.1 The emerging democratic space

In the column “active and passive parties” in Table 2, it can be seen that from August to December 2005, workers initiated many activities. They were able to interact with Party organizations and the management effectively. Party organizations at CH integrated the realistic demand of reform and restructuring with activities of Party organizations. This strategy built space for democratic communication with the masses while strengthening the authority of the Party. Therefore, PBSB added both coercion and consent to the management of labor relations at the same time.

8.2 The bottleneck of the reproduction pattern of labor force

CH put forward policies for compensating workers. In addition, CH took measures to change reproduction dependence of labor force on the corporation. First, CH supplied free training to workers. Tong said: “In 2005, we supplied free training for welders many times.” Second, CH tried to change workers’ traditional ideas and encourage them to give up their “iron rice bowl”. One file issued by the reemployment office of CH on November 10 demonstrates this: “The companies have to promote propaganda about reemployment policies and reemploying stars to change laid-off workers’ minds further.” Unlike material compensations, learning about skills and changes in mind cannot happen overnight. Accordingly, the workers’ reproduction dependence on CH could also not be essentially changed in 2005.

8.3 Summary of Production regime in phase 2 (August–December)

State power, manifested specifically as PBSB, created a democratic space for workers. The economic foundation of despotic production regime is still unshakable for the restrictions because of workers’ reproduction dependence on CH. Therefore, from August to December 2005, the production regime of CH was a hegemonic regime based on despotism, referred to as a hegemonic despotic regime. To sum up, proposition 2 in phase 2 was verified, which means that PBSB in labor-relation management can shape the production regime in SOEs. Specifically, under the premise that workers’ reproduction fully depend on CH, the state power, manifested as PBSB, can create democratic space

for more consent in workers (even though it is still based on coercion) to promote the production regime transformation from a despotic regime to a hegemonic despotic regime.

9 Conclusions

9.1 Conclusion 1: PBSB in labor-relation management and its classification

PBSB, being the manifestation of state power at the SOE level, has great effects on the evolution of the production regime, which means that PBSB exists in labor-relation management all the time. PBSB can be classified into the behavior of ambassador, task coordination and scouting. The behavior of an ambassador is embodied in support seeking. The behavior of task coordination is embodied in ideological education, official visits, democratic communication and material compensation. The behavior of scouting is embodied in official visits and political network establishment. Therefore, the proposition 1 has been verified. Namely, PBSB exists in the labor-relation management of SOEs, which can be classified into ambassador, task coordination and scouting.

9.2 Conclusion 2: PBSB’s outcomes in shaping the production regime of SOEs

In phase 1 (January–July 2005), only one reproduction pattern of labor force was present, and the market competition and labor process remained unchanged. At the same time, PBSB, being the manifestation of state power, failed to bring more consent for workers. Accordingly, the production regime in phase 1 was a despotic regime. In phase 2 (August–December 2005), the workers’ collective protest pushed Party organizations to enhance their interaction with workers. The Party organizations at CH provided channels to democratic communication for workers. The authority of party organizations was strengthened for their activities in which democratic communication occurred. Both coercion and consent grew in this phase. In addition, even though CH provided some reemployment policies for workers, which will take time to come into effect. Accordingly, the dependence of workers’ reproduction of labor force on CH could not be changed over a short period. Therefore, the production regime in phase 2 was a mixture of a despotic regime and hegemonic regime—thus, a hegemonic despotic regime.

Throughout the evolution of the production regime, the change of boundary-spanning behaviors conducted by Party organizations increased the proportion of consent in the production regime. Therefore, proposition 2 of the thesis has been verified. In other words, PBSB in SOEs’ labor-relation management can shape production regimes in SOEs by adjusting the strength of coercion and consent.

The main conclusions of this study are shown in Figure 2.

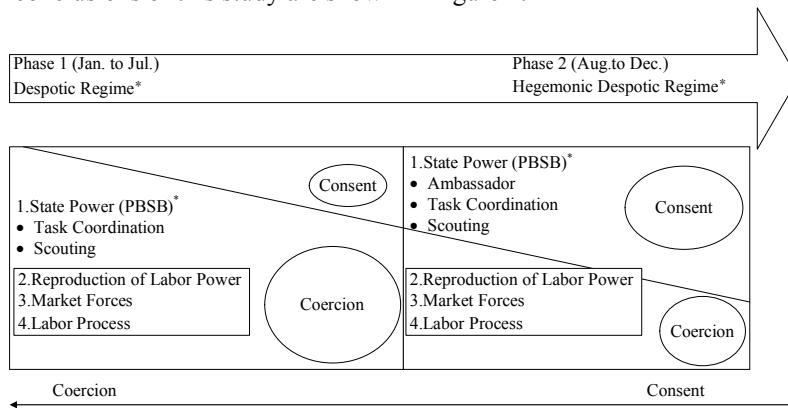


Figure 2 Evolution of the production regime at CH

Note: PBSB* and production regime* relate to the propositions in this paper. Factors within the box (e.g., “reproduction of labor force”) can be seen as invariable, and the factors outside of the box (e.g., “state power”) can be seen as variable.

10 Possible contributions and limitations

10.1 Possible contributions in theory

First, the essential distinction between unions in Western countries and China is the relationship

between unions and the Party^[44]. However, there are few studies that focus on Party organizations' roles and behaviors in labor-relation management. Hence, this paper introduces Party organizations as an actor in the labor-relation system based on Chinese circumstances to enrich the theory of labor relations. Second, from the view of composition within the production regime, this study found that there exists differences between Western countries and China. The hegemonic despotic regime in Western countries is based on a hegemonic regime because of the relatively stronger capital caused by economic globalization, but the hegemonic despotic regime in the process of reforms in Chinese SOEs is based on a despotic regime because of the weakness caused by the marketizing transformation of labor force.

10.2 Limitations and research expectation

There are some limitations in this study. For example, the data in this study were collected only from one SOE. However, PBSB and evolution of the production regime can highlight the different characteristics in each phase throughout the changing of labor relations. Therefore, the typicality of this case allows the conclusions in this thesis to be generalized.

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Study on Cross-border Haze Collaborative Governance from Perspective of Prevention and Control in Risk Society *

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Abstract In recent years, as China's economy and society develops forward and strives for transformation, unprecedented wide-spread and long-lasting haze weather has appeared as a social risk and its tackling is an increasing urgent subject with realistic significance. The haze does not only impose negative effects on people's mental fitness, hinder social progress, but also pose a credibility issue on governments. Governments at all levels have taken various controlling and treatment measures and have achieved some results. However, the haze weather still develops to affect wider regions and areas, linger longer and bring about even more adverse and serious influences to society and above all, it impairs the society with a series of risks. Based on roles of different organizations and regions in the collaborative governance of haze weather, this paper mainly dedicates to analysis of haze weather's potential risks, results and problems in collaborative governance of haze weather. Furthermore, this paper also proposes some strategies and suggestions for collaborative governance of haze among different organizations from different regions.

Key words Social risks, Haze governance, Cross-border haze, Collaborative governance

1 Introduction

Since the year of 2013, continuous and serious fog and haze weather have landed on many cities repeatedly of China which seriously affects mental and physical health of Chinese people, strongly impairs China's economic and social development and severely challenges credibility of China's governments. With the pressure from public opinion and the media, accelerating smog control and treatment becomes increasingly necessary and urgent. To follow and achieve environmental protection goals of the "Thirteenth Five Year Plan" and stick to the path of green growth, this paper approaches the haze governance from the perspective of risk control. The countermeasures featuring cross-border collaborative governance proposed in this paper for haze treatment boasts practical significance. Scientific and appropriate handling of collaborative relations between different entities is of essential importance for soundly governance of social risks.^[1] Cross-border haze collaborative governance stresses setting-up of a self-organized network and establishment of a crisscross interrelated governance network mechanism characterized by joint construction and sharing by means of universal involvement of different entities, collaboration and coordination as well as setting of common goals. Through this way, we can better satisfy the requirements of the new-type relationship between government and enterprises, between government and society, between government and people and achieve collaboration among various organizations and different regions in haze governance, thus establishing a new-type community of common interests. Practically, both governments and enterprises are faced by certain difficulties. Given that haze itself is featured by "spillover effect" and "borderless", resolving of conflicts brought about by cross-border collaboration and streamlining of the cross-border collaborative governance mechanism are the best way to achieve borderless supply of public good, enhance effectiveness of collaborative governance, deal with administrative redundancy, and transform from separate management to integrated governance. Thereby, demands from different entities of public goods and public services can be better satisfied.

*Financed by the National Social Science Foundation, titled "Cooperative Governance Model Study of Environmental Massive Incidents in China" (Project No.: 16BZZ044); by the Sichuan Provincial Soft Science Plan Project, titled "Research on Public Participation in the 'Not in My Back Yard' Conflicts Settlement" (Project No.: 2016ZR0169)

2 Categorized potential risks analysis of haze

Haze refers to a phenomenon featuring poor visibility. The mobility, openness and trans-regional features of atmosphere determine that haze-induced social risks are highly ecologically interrelated. Haze governance demands for coordination and collaboration. Haze governance of one administrative division is far from enough to change the ecological situation as a whole. So the haze governance is of inalienability which means it demands for cooperation because once one region suffers from haze pollution, other regions will no doubt be subjected to pollution and this is where a series of social risks and issue arouse. These risks and issues mainly include as follows:

2.1 Risks imposed on the public

At present, as the haze weather lasts longer and longer, concerns about the air quality is shared by the public and the demand for haze governance becomes louder and louder. According to formulation mechanism of smog, one of its element-haze, an airborne dirt article is composed of nitrogen oxide, sulfur dioxide, PM10 and others. Among all the components of haze, PM2.5, a kind of micrometer suspended particle can impose great risk on and do severe harm to people's physical health. Long time exposure to haze can lead to such diseases as tracheae, bronchial asthma, pneumonia even lung cancer. The haze weather can cause great harm to physical health of the public. It damages the heart system, the respiratory system and the neural system, affects the normal function of lung, and impairs the immune system of body.^[2] In addition, haze may also trigger such common acute respiratory diseases as emphysema, bronchial asthma, bronchitis, rhinitis, upper and lower respiratory tract infection.^[3]

2.2 Risks imposed on economic development

Haze governance constitutes one category of air pollution prevention and control. Haze governance is a necessary step for us to address social risks and strive for economic development. Thanks to relevant policies and regulations, we have achieved some progress in this respect, however, the road ahead remains as long as arduous. The appearance of smog is not just a simple natural phenomenon but a compound result of economic activities. The unreasonable energy consumption structure, relatively low rate of industrial integration and technological utilization results to irrational economic operation pattern. Green economy, circular economy and low carbon economy will become unsustainable, social and economic development in the future will be subject to various risks and problems if we keep sticking to the current operation pattern. Taking an example, the haze weather has greatly deterred China from attracting international tour visit, international migration and foreign investment.^[4] The current conventional haze governance pattern is incapable of solving problems existed in the economic development.

2.3 Risks imposed on governance costs

China at present is at the critical stage of social transformation and upgrading. The haze pollution has brought about relevant challenges on social transformation and governance. Its characteristics of "spillover" and "borderless" determine that the haze governance can never be independently finished by "one city, one region or one government". Almost every country has adopted the discharge permit system to regulate and restrict pollution emission companies thus to control air pollution.^[5] However, many regulations and rules still subject to localized management principle, governments at all levels practice things in their own ways which pose corresponding practical blocks in pollution treatment and increase potential costs of social governance as well. Following the existed management measures and patterns in the long term can only lead to increasing cost of haze governance. It will bring about adverse effects and risks on the whole society and increase the cost of and add difficult to social governance shall the haze governance measures and patterns are unable to deliver long-term results.

2.4 Risk imposed on global ecosphere

Haze governance is an important effort to achieve positive operation of global ecosphere while air pollution prevention and treatment constitutes an essential part of global ecological environmental protection. Haze pollutants can spread and diffuse across borders.^[6] According to study results released by Beijing Municipal Environmental Monitoring Center, external diffusible pollutants account for 25% of all the air pollutants of Beijing Municipality.^[7] As the global economic integration upsurges, China's economy becomes increasingly integrated with the global economic system. In order to achieve the environmental goals of the "Thirteenth Five Year Plan", China must hold firmly to the green growth

road, integrate deeply with the global economic developmental system. Furthermore, China also needs to fully realize that many pollution's are brought about by industrialization, urbanization and above all the unreasonable economic development pattern.

3 Effects of cross-border haze collaborative governance and current problems analysis

We have to admit the reality and embrace the challenge that haze does bring about risks whether we view from the perspective of risk itself or from the term of the public opinion. With the striding forward of industrialization, urbanization, democratization and globalization, "risk governance" has gradually turned from a concept into a common thought demanding for practical action. Cross-border collaboration appears to be a realistic way for government to conduct haze governance which features long-term heavy investment and slow result delivery. After a due consideration is given to the current situation of cross-border haze governance, it is found that there still exists some problems despite progress achieved in establishing legal administration and administrative accountability system concerning haze governance.

3.1 Effect analysis of cross-border haze collaborative governance

3.1.1 Gradual perfection laws and regulations of cross-border haze collaborative governance

Protecting the environment is a basic state policy of China. As early as on 15th December of 2011, the "Twelfth Five-Year Plan" of the Ministry of Environmental Protection released by the State Council of the PRC expressly pointed out that we should control the regional air pollution by adopting the air pollution joint prevention and control system, thereby pinning down the corresponding guiding principles for practical implementation of joint prevention and control measures. In May 2013, the Ministry of Environmental Protection released the Guidelines on the Formulation of Contingency Plan for Urban Heavy Air Pollution.^[8] After that, governments at all regions began to prepare specific and localized contingency plans and major cities relevant air pollution contingency plans. In the Air Pollution Prevention and Management Action Plan, issued and enacted by the State Council of the PRC in September 2013, the government further indicated that we should form a new air pollution prevention and management mechanism featuring government-leading, enterprise-acting, market-driving and public involvement, and establish a cross-region cooperative mechanism to coordinate regional environmental governance. The revised Environmental Protection Act enacted on January 1st 2015 clearly specified "zero tolerance" towards environmental pollution and was highlighted by the media as the "harshest-ever environmental protection law". Under the rules and legal systems of current environmental protection and relevant social governance regulations, the current practice is that government at lower levels works out local regulations in light of its actual situation conforming to the general haze governance goal set by superior competent departments. For example, the Implementation Plan on Haze Pollution Prevention and Treatment of Sichuan Province, and the Implementation Plan on Air Pollution Prevention and Treatment of Shanxi Province and some others not only clarify prevention and treatment works including pollutant emission mitigation and pollution sources controlling of representative regions, but also specify that local enterprises and companies shall be subjected to corresponding administrative regulations and instructions. In general, China is improving and transforming step by step the haze governance legal systems both at center level and at local level to ones that boasts maturity of not only regulations but also laws.

3.1.2 Gradual improvement of administrative accountability system for cross-border haze collaborative governance

The improvement of administrative accountability systems plays a key role in haze governance. In China, the administrative accountability can be divided into four categories. They are, political responsibility which requires sound decision-making of officials, moral responsibility which demands officials to behave in according to moral rules, administrative responsibility which restricts wrong-doings of officials and legal responsibility which defines and assesses illegal behaviors of officials. In the practice of haze governance, the Ministry of Environmental Protection has set up an air pollution responsibility investigation and liability-fixing system by means of assessment and elevation, and result publicity. The main pattern of China's haze management is to shift from an accountability

mechanism affixing mainly singular administrative responsibility to one that affixing four-in-one responsibilities, namely political, moral, administrative and legal responsibility, through taking the general layout of ecological civilization construction into consideration, which enhances the realistic possibilities of cross-region and cross-government collaborative governance. For instance, Beijing, Tianjin and Hebei Province, in the premise of securing economic growth and guaranteeing environmental protection, have cooperated and coordinated to take some measure in air pollution and haze pollution prevention and treatment, and have practically addressed the haze-induced problems in traffic safety and economic development. Their efforts have delivered sound results.

3.2 Problems existed in cross-border haze collaborative governance

3.2.1 Inadequacy of diversity of governance body in cross-border haze collaborative governance

Compared with the traditional society, one of important features of risk society is the leading role and increase of public risk.^[9] The high uncertainty and complexity of risk bring even greater challenge for governance bodies to improve governance proficiency. Furthermore, appropriate settlement of haze-induced social risks and issues requires synergy achieved by collaborative governance of diversified governance bodies. Sound cross-organizational collaboration, establishment of cross-region cooperation platform, as well as formulation and perfection of relevant mechanisms help settle haze incidents among different departments, boost the haze-response capabilities to a large extent, thereby enhancing governmental transparency and credibility. However, technical speaking, subjects of environmental pollution liability and responsibility remain vague and obscure for centuries^[10]. The governance body still fights alone against the haze pollution. On the one hand, enterprises, the main supervision and administration objects of governments, are forced rather than takes the initiative to participate in management and governance. On the other, there is much room for improvement to increase the public enthusiasm and initiative of environmental management. The above mentioned two aspects demonstrate that haze management requires more universal involvement, longer time and more radical measures. Haze's characteristics of "spillover" and "borderless" determine that haze governance can never be independently finished by "one city, one region or one government". Generally speaking, the more obscure the governance body is, the more possible the appearance of conflicts becomes. The obscurity of responsible subjects leads to absence and negligence of actual responsible subjects.

3.2.2 Simplicity of management content of the cross-border haze collaborative governance

There are mainly three governance and management patterns, namely government governance, market governance and public governance categorized by light of different governance bodies existed in current society. Of which, public governance plays a major role in striving for coordinative synergy. The extent of certainty and emphasis, governance bodies under three different governance and management patterns hold for the governance object is of vital importance. Now, governance aiming at air pollution sources and inducing haze pollution is relatively simple and its involved entity is few with the major role played by the governments. Governments tend to regard the industries pollution sources as the main governance content, industries dust pollution and sulfur dioxide pollution as major governance subjects, and pay relatively less attention to governance of fine articles and NO_x. They put much emphasis on industrial pollution's, and are relatively wanting in management of such new transmissible pollution sources as raise dust and automobile exhaust. Given that, governments leave the monitoring work of main components of haze incomplete. Management of air pollution never stops, however, the haze pollution becomes even more serious because of the lack of comprehensive consideration of diversifying haze management and governance bodies.

3.2.3 Imperfection of cross-border haze collaborative governance mechanism

Cross-border haze collaborative governance mechanism is a necessity to establish new-type cross-organization and cross-border cooperation relations and develop new-type community of common interests. Practically, haze governance remains localized and lacks coordination, even against the backdrop that haze pollution's characteristics of regionalizing and compounding become increasingly distinct. Different entities from different regions need to further integrate haze governance-and-management-relating policies. Cross-entity collaborative governance and management demands for efforts at two levels. Firstly and internationally, it asks for global action, say, the setting up of global

collaborative governance mechanism and constraint mechanism. But, different nations deliver different performances concerning haze governance collaboration and coordination due to different economic developmental states they are in. Relevant environmental rules and regulation in the International Law and agreements concerning energy saving and emission reduction in the Kyoto Protocol and other green regulations do not give their full play, leading to inappropriate development of the global haze governance mechanism of joint management and sharing, and mutual studying and exchange. Secondly and domestically, it requires cross-region cooperation. The formulation of horizontal cooperation between geographically adjacent governments is lack of corresponding institutional arrangements and policy support. Instead of cooperation and coordination, different regions and cities choose to fight separately against the air pollution, resulting to overall pollution of the region.^[11] Furthermore, enterprises' lack of impetus enterprise, insufficient involvement of the public are also reasons why cross-organization and cross-region haze management mechanism cannot be developed soundly.

3.2.4 Lagging-behind of technological and technical development in the cross-border haze collaborative governance

Government plays the major role in the formulation of environmental management policies all the time. On the premises of gradual perfecting of administrative accountability system, relevant departments have set up air quality control standard, improved concerning monitoring and forewarning indicators, and intensified efforts to collect and analyze atmospheric data of haze weather. Besides, our capability of employing technology in data collection is still inadequate. As the economy develops and environmental changes speed up, governments gradually lag behind the changing of environmental problems in aspects of inspection indicator, inspection method and management and governance focus. It has become a technological difficulty for us in the process of haze prevention and control. On the one hand, environmental departments of governments at different levels update air quality indicators and data concerning haze pollution on their network platforms in a slow and untimely manner. On the other hand, collected date aiming at improving air quality by employing inspection technologies is improperly utilized, platforms to guide and regulate enterprises' actions and behaviors are poorly established. Policies and measures aiming at haze governance and management fall behind the pace of haze management practices. Confronted with the situation in which haze pollution affects social development in a wider and more serious manner, we need to continue to improve relevant inspection and forewarning platforms.

4 Prevention and treatment strategies analysis of the cross-border haze collaborative governance

Practical and efficient governance of risk society requires to take feasible and preventative actions consciously and institutionalize these actions to overcome various side effects. Since the cross-border haze collaborative governance is characterized by involvement of multi organizations from different regions, we need to improve efficiency of cross-border haze collaborative governance from the following aspects:

4.1 Improving the collaborative governance environment featuring joint establishment and mutual management

Haze governance and management is a cross-department cause. Fragmented management and governance pattern will pale the importance of and disassemble collective and overall interests, leading to interest protection of single department instead of safeguarding of public interests.^[12] Successfully tackling of haze pollution as an environmental issue, is a process in which social consensus and involvement are necessary.^[13] Streamlining of relations between governments of different municipalities and provinces, between component departments of government, restoring relationship between government and enterprises, between government and society, between government and people, shift from separate prevention and control to integrated planning and coordinated management, development and improvement of coordinated management environment featuring joint establishment and mutual management, encouragement of non-governmental organizations' participation constitute the rational road for haze management. "Cross-border collaborative management" is a new-type strategic thought

pattern featuring involvement of multi organizations from different regions, midwifed by current industrial transformation and reforming of government organizations. It aims at abolishing such drawbacks and malpractice as fragmentation and isolation in the public governance. To achieve the goal, we have to take actions to perfect management systems and improve management environment.

4.2 Integration of localized management and interconnected management

The mobility, openness and trans-regional characteristics of atmosphere determine that haze-induced social risks are highly ecologically interrelated. Therefore, haze prevention and treatment demand for collaboration and coordination. Haze governance and management of one administrative division is far from enough to change the ecological situation as a whole and once one region suffers from smog pollution, other regions are naturally subjected to pollution. The haze governance is of inalienability which means it demands for cooperation and it should be an action with concerted efforts from different organizations and regions. Discarding of the traditional development pattern characterized by treatment after pollution, establishing of a resource-saving, environment-friendly society, efficiently tackling of smog pollution, require proper combination of localized management and interconnected management. The conformity of long-term interests and goal of haze governance and management makes cooperation of different regions and different organizations possible. As haze pollution becomes more increasingly serious and alarming, management mechanisms boasting quicker and better response are needed. The cross-region haze pollution can never be addressed by a single local government. Leading departments and organizations taking charge of cross-border cooperation affairs and going beyond authority of separate local governments shall be imitated and established by more powerful governments at higher level to help overcome side effects and social issues induced by smog. It is imperative to implement the joint-prevention and controlling haze pollution system featuring integration of localized management and interconnected management to form synergy with participation of different organizations from various regions.

4.3 Establishment of a collaborative platform featuring universal involvement

Risk society governance is greatly affected by the extent to which risks are handled with preparations and coordination by a community. It is a major approach to build a whole-process and fully participating mechanism with joint prevention and control to manage environmental risks. The main structure of collaborative governance of cross-border haze can be established at the global level, inter-governmental level, government-to-society level and government-to-people level.

(1) Cross-border collaboration at the global level. Being in the risk society in the age of globalization, in order to govern these risks efficiently, it is a must for human beings to cope with them globally, which requires the diversification of risk-governing subject and the interaction of risk governing mechanism.^[14] The protection of atmospheric environment and the fight against haze concern the sustainable development. On the one hand, the economies and sovereignties can formulate a joint agreement on addressing smog, making the measures of energy conservation and emission reduction fully implemented. On the other hand, international communities can construct a communication and cooperation platform to cope with smog and in this way to further share and exchange the experience of addressing smog.

(2) Cross-border collaboration at the intergovernmental level. Regional joint prevention and control of haze require all sides in the region to provide regional public goods.^[15] As the fight against haze is the regulation of atmospheric flow, it is especially necessary to establish the regional joint prevention and control mechanism. Governments of regions can, on the basis of the differences in industrial structural layout, economic and social development, and management standards, build a policy and law system of atmospheric environmental management and set an emission standard of air pollutants through mutual negotiation. They can also improve the assessment indicator system and the assessment data system of the regional air quality to realize the comprehensive exchange and sharing of information, thereby achieving mutual benefits and win-win outcomes. The cooperation among the regional governments is impossible without the central government's support. Therefore, we should set up a long-acting policy supporting system of economic development.

(3) Cross-border collaboration at the government-to-society level. Cross-border collaboration at the government-to-society level can be achieved by three ways. First, relevant policies and measures

shall be formulated and taken. The governments should actively guide enterprises to adjust their industrial structure and energy structure. We also need to compress excess capacity and eliminate outdated capacity to optimize the industrial distribution. The second is to focus on the key enterprises. We should pay some heavy pollution enterprises with special attention. Efforts should be made to compress industrial coal usage, and strengthen the governance and transformation of heavy polluting enterprises. According to the standards of air pollution prevention and control, measures such as “closing”, “stopping” and “limiting” should be implemented when the corresponding warning line is reached. Emergency measures for pollution control shall be taken in extreme weather conditions. Thirdly, we should introduce related and relevant market mechanism. The government should guide the enterprises and research institutions to make new breakthroughs in the field of clean energy and technology with the help of bidding fees, and apply them into practice.

(4) Cross-border collaboration at the government-to-people level. Improvement of the governance mechanism of public participation is one of the key problems that need to be solved under the guidance of the multi-border collaboration theory. Since the haze governance is closely interrelated to the public life, the governments should formulate relevant policies and carry out extensive promotion and education activities. The scope of responsible parties in the haze governance should be expanded in order to facilitate the practice and involvement of surrounding people. On the one hand, the related monitoring and reporting system should be improved to meet the public’s right to inquiry and participate in. A unified hotline should be developed and released. For those who conceal, delay and falsify information, they should be severely punished according to relevant laws and regulations. For example, on December 8, 2016, the Chengdu Municipal Environmental Protection Bureau invited the public to join in as supervisors on pollution emissions. Once they found illegal pollution emission behavior, they can call 12345 to make a report. On the other hand, we should advocate “green travelling”, and strengthen the management of motor vehicles and promote the public awareness of energy saving and emission reduction.

4.4 Strengthening of the application of haze collaborative governance technology

An air quality monitoring and warning system should be established and optimized. In addition, a comprehensive and systematic report of the actual conditions of air quality should be shown to satisfy the public’s right of inquiry. Thus we can further reduce the impact of haze on the public health. Governments at all levels should establish an information technology platform for haze alarm, establish and improve the relevant database, and provide basic data support for the effective simulation of haze events. The governments should establish a normal mechanism for haze risk assessment and investigation. By investigating potential risk sources and risky areas and conducting vertical and horizontal assessments, a dynamic monitoring network for haze can be established. Each hidden risk must be resolutely investigated and rectified. The rectification responsibilities, measures and deadlines should be well implemented. According to the weakness in the management and governance work, we should make a scientific evaluation and properly adjust the work focus.

5 Conclusions

In recent years, the haze has wreaked havoc on people’s physical and mental health and also on social and economic development. Besides, it can also be the source of social risks. Under the supervision of the media and the public, the voice calling for the governments to accelerate the pace of haze governance, to enhance the effectiveness of haze governance and to create a favorable livable environment gets louder and louder. Cross-border collaborative governance is a new strategic mode of inter-organizational and multi-regional development spawned under the current industrial transformation, which is at the same time one of the practical and feasible ways to control haze pollution. From the existing cross-border haze collaborative governance, we can find that certain achievements have been made in the construction of legal system and administrative accountability mechanisms. But there are still some problems. Since the haze itself is “borderless” and can “spillover”, the prevention and control of haze must undergo the path of inter-organizational and multi-regional collaborative governance. Viewing from the perspective of governance, the adjustment of industry and energy structure appears to be the fundamental way to control haze. To achieve satisfactory effects in

the collaborative governance of cross-regional haze, we should continue to optimize the collaborative governance environment, reform the traditional ways of governance, strengthen and deepen the cross-organizational and cross-regional collaborations, and increase and optimize utilization of technology for haze governance.

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Improvement of Environmental Complaint System under the Background of Informatization *

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Abstract With Chinese economic development, environmental pollution has become increasingly serious and environmental disputes have increased year by year. As an administrative dispute resolution method, environmental complaint is of great importance for environmental dispute resolution. With development of information technology, environmental complaint has showed new forms. Under the background of informatization, environmental complaint is confronted with many new problems no matter in legislation or in practice. Based on the data of environmental complaint from the Ministry of Environmental Protection (MEP) and the Environmental Protection Bureau (EPB) of Chengdu City, Sichuan Province, the paper analyzes the operational circumstances and existing problems of environmental complaint under the background of informatization, and put forward the improvement measures including updating the ideas of environmental complaint, completing relevant legislation and operating mechanism, and promoting the networking of complaint platform and improving information discourse.

Key words Environmental complaint, Informatization, Dispute resolution, Pollution control

1 Introduction

With the development of Chinese social economy, the conflict between human beings and environment is increasingly serious and environmental disputes increases year by year. Mass disputes due to environmental problems have a rapid increase with an annual average of 29%^[1], and by 2015, the number of environmental complaints accepted by various Environmental Protection Bureaus (EPBs) of China have reached to 2 million. With the continuous development of modern information technology, environmental complaint by internet has appeared. As a new type of environmental complaint method, it is not regulated in Measures for Environmental Complaint and Environment Protection Law from the perspective of legislation; further, there are many new problems of environmental complaint by internet in practice and corresponding solutions are still in the process of research. Under the background of informatization, it is of importance to improve environmental complaint system to protect the public's environment rights.

As a vital part of the complaint system, environmental complaint is a unique and common appealing way, and of great importance for dispute resolution. Environmental complaint is an administrative dispute resolution mechanism essentially, which is an administrative relief. It is a procedure for settlement of non-lawsuit disputes set or attached to the state's administrative organs or quasi administrative organs^[2], and it can be also interpreted as a rights' relief way through administrative organs^[3]. Environmental complaint by internet is a new form under the background of informatization. In the era of "internet +", environmental complaint by internet is widely used due to its characteristics of convenience, high speed and flexibility. EPBs set e-mail boxes and addresses for the convenience of the public to express their environmental complaints through internet. For example, the EPB of Sichuan Province sets an on-line complaint channel "I want to complain" on its official website to realize environmental complaints by internet. In addition, the public can also express their environmental complaints through WeChat. For example, the EPB of Xiaoyi City, Shanxi Province launched the function of "environmental complaint" on its official WeChat account to provide a convenient complaining way for the public. However, the current legislation of environmental

*Financed by Key Base of Social Science Research in Sichuan Province "Dispute Resolution and Judicial Reform Research Center", Project Title: Research on Environmental Mass Dispute and Its Settlement Mechanism. (Project No.: 2015DJKT21) and Social Science Fund of Sichuan Province, Project Title: Research on Improvement of Environmental Complaint System under the Background of Informatization (Project No.: SC15E018).

complaint has not regulated environmental complaints by internet. Thus, we should think about its regulations.

2 Theoretical basis and methods

The theories of social conflicts, dispute resolution and social management are the major theoretical basis of environmental complaint. The relatively representative theory of the theories of social conflicts is the “social safety valve” by Lewis Coser^[4]. Environmental complaint can resolve dispute and express rages, and eject violently hostile emotions out of the society to avoid social instability due to “conflict steams”. Environmental dispute is a generated and externalized conflict between the polluter and victim due to pollutants’ discharging by the polluter. And the environmental complaint is an administrative dispute resolution method which provides right relief way to the complainer through advisory opinions or dispute resolution provided by EPBs. Complaint is also a social management tool of China’s characteristics. EPBs can resolve environmental dispute and coordinate social relations through environmental complaint to realize social management in the field of environmental protection.

The paper mainly uses empirical approach, discipline-crossing method and countermeasure research method to understand the operational situation and shortcomings of environmental complaint under the background of informatization. It is focused on putting forward specific measures and suggestions to promote the adjustment and reform of environmental complaint, resolve environmental disputes effectively, realize the objectives of environmental complaint and protect environmental rights of the public

3 Operation of environmental complaint

3.1 General procedure of environmental complaint

As a special complaint form, environmental complaint is not wholly same as relevant procedure of complaints. According to the Measures for Environmental Complaint, the procedure of environmental complaint can be generally divided into two types: general complaint procedure, and major and urgent environmental complaint procedure. Since the differences of two types are not obvious, they are not distinguished on purpose in this paper. The procedure of environmental complaint mainly includes registration, acceptance, assignment/handover, settlement and reply, and hearing, review and recheck under special circumstances. The work sector of environmental complaints responsible for handling environmental complaints. In practice, it often exists in forms such as Complaint Office or Complaint Division. The EPB of Chengdu sets Division of Environmental Emergency and Complaint to settle environmental complaints. The complainer complains to EPB to seek for relief. As for the environmental complaints submitted by complainers through various channels, the work sector of environmental complaint would first register and accept the complaints conform to the acceptance conditions stipulated by the Measures for Environmental Complaint; otherwise they would be rejected. After accepting the complaints, the work sector of environmental complaint would transfer or submit them to relevant internal organizations, units or lower EPBs. Then the complaints would be settled by the above special departments which would also submit settlement reports. In the end, the work sector of environmental complaint would give reply to the complainer.

3.2 Handling methods of environmental complaint

The handling methods of environmental complaint include two types: enforcement methods and mediation. According to the natures of environmental complaints, appeals of complainers, EPB’s workload and focus, EPB will select different handling methods. The enforcement methods mainly include ordering to correction, stopping illegal acts, relocation with limited period and ordering to stop production or operation, among which ordering to correction and stopping illegal acts have the widest application. As shown in table 1, the methods of ordering to correction and stopping illegal acts held a proportion of 47.45% of all enforcement methods according to the data of settled complaints from July 2016 to November 2016 published by MEP, and 41.86% of the replies on environmental complaints published by EPB of Chengdu, respectively. Thus, we can assume that ordering to correction and stopping illegal acts are common methods to settle environmental complaints. The method of

controlling pollution with limited period is the second used method only to ordering to correction and stopping illegal acts. The use of controlling pollution with limited period often requires EPB to issue a rectification notice and the procedure is relatively complex. Generally, the method of relocation with limited period does not only require decisions of the local level of government but also costs a lot of time and money, thus it is used prudently in practice. The method of ordering to stop production or operation is a typical administrative penalty and has obvious influence on the rights and obligations of polluters, thus it is also used prudently in practice. As Table 1 shows, it accounted for a proportion of 6.12% of all enforcement methods according to the data published by MEP and 2.33% by EPB of Chengdu, respectively.

Table 1 Handling methods of environmental complaints by MEP and EPB of Chengdu

Handling methods	MEP July 2016-November 2016		EPB of Chengdu 2014-2017	
	Amount	Percentage (%)	Amount	Percentage (%)
No settlement	83	21.17	12	27.91
Stopping illegal acts and ordering to correction	186	47.45	18	41.86
Controlling pollution with limited period	45	11.48	11	25.58
Ordering to stop production	24	6.12	1	2.33
Relocation	11	3.06	0	0
Removal	31	7.91	0	0
Others	12	3.06	1	2.33
Total	392	-	43	-

Source: The data center of the MEP in China, <http://datacenter.mep.gov.cn/index>

Mediation refers that the staff of administrative organ or its dispute resolution organ mediate the dispute between disputing parties. The mediation procedure is started only when the mediation requirement is put forward by both complainers and pollutants, and the mediation is often used to solve tough and difficult environmental complaints. According to the explanation of Law Committee of NPC Standing Committee, the mediation mainly focuses on liability for damages and amount of compensation^[5]. In practice, the staffs are not willing to mediate, because they are worried once they involve in the money compensation between complainers and pollutants, they would lose justice in the disputing parties' mind eyes. However, it runs in opposite directions of the initial intention of setting mediation procedure.

3.3 Effects of environmental complaint

The environmental complaints of China show a tendency of progressive increase. In 2011, the total amount of environmental complaints broke through 1 million and the corresponding settlement amount also reached to 1 million. The settlement amount increases gradually with the rise of amount of environmental complaints. As it shows in Table 2, the settlement rate of environmental complaints nationwide maintains above 98%, and the settlement rate of environmental complaints by telephone and internet is above 97%. Although the high settlement rate cannot exclude frauds due to department performance, it can still reflect the effective implementation of environmental complaints to a certain degree. Besides, the amount of environmental complaints in some local areas has a decline. For example, environmental complaints in Beijing reduced by 7% in 2016. Thus, we can speculate that the public have realized the purpose of safeguarding their legal environmental rights to some extent through environmental complaints. It is noteworthy that although the amount of environmental complains of some areas has a decline, the increasing tendency of environmental complaints nationwide has not been changed and the work of environmental complaints at local levels should be further improved.

Table 2 Acceptance and settlement of environmental complaints by EPB at all levels during 2011to 2015

Year	Amount of complaints	Settlement amount of complaints	Settlement rate (%)	Amount of complaints by telephone and internet	Settlement amount of complaints by telephone and internet	Settlement rate of complaints by telephone and internet(%)
2011	1107836	1086195	98.08	852700	834588	97.88
2012	1052973	1048119	99.54	892348	888836	99.61
2013	1262110	1250190	99.06	1112172	1098555	98.78
2014	1675892	1644168	98.11	1511872	1491731	98.67
2015	1816177	1772259	97.58	1646705	1611007	97.83

Source: Annual Report of Environmental Statistics of the MEP (2011-2015) and China Environmental Statistics Report(2011-2015) ,http://www.zhb.gov.cn/gzfw_13107/hjtj/hjtjnb/.

4 Defects of environmental complaint under the background of informatization

The operation of environmental complaints is currently confronted with some defects. The most obvious defect is the work sector of environmental complaint neglects of effects on pollution prevention through environmental complaint handling while pursuing for maximum efficiency. In addition, the ideas of environmental complaint lag behind; the new complaining way through internet cannot be stipulated by legislation; the environmental complaint operational system is not complete; and the construction internet complaint platform and information disclosure are not complete.

4.1 Old ideas of environmental complaint

As for the settlement of environmental complaint, the work sector of environmental complaint is mainly focused on economic development and social stability. Local EPBs are concerned with how to seek for economic development while maintaining the balance of various social forces. The public ask pollutants to stop infringements and compensate losses through environmental complaints or expose pollution problems through complaints, which would undoubtedly threaten local economic development. However, if environmental complaints remain unsettled, they would probably cause unexpected mass incidents and affect social safety and stability. Only when EPBs first consider economic development and social stability can they then concern environmental rights of the public, which violates the basic ideas of human rights protection.

4.2 Legislative blankness of environmental complaint

The Measure for Environmental Complaint directly regulates environmental complaints, but its legal status as a department rule is not in consistent with the actual demands in practice. Moreover, the contents of the Measure for Environmental Complaint are not complete. It does not include substantial or procedural stipulations related to environmental complaints by internet, thus it cannot meet requirements of environmental complaints by internet in practice. Besides, the stipulations pertinent to environmental complaint in Environmental Protection Law, Marine Environmental Protection Law and Water Pollution Prevention and Control Law are scattered, simple and rough. The legislative blankness makes the settlement of environmental complaint uncertain which is unfavorable to environmental dispute resolution, since a system of dispute resolution procedure with predefined stipulations, no matter formal or informal, will be more likely to generate a method which will make disputes settled easier than that without predefined stipulations^[6].

4.3 Incomplete environmental complaint operational mechanism

The first problem is the independence of work sector of environmental complaint. The Environmental Supervision Organ is mainly responsible for handling environmental pollution as well as environmental complaints additionally. The organ which is not specialized in settlement of environmental complaint probably cannot settle environmental dispute substantially, and even deteriorate the conflict and affect social stability. Second, the handling method of environmental complaint is single and the handling procedure is not open. The enforcement methods are mainly used for the settlement of environmental complaints while the administrative mediation is seldom used. Moreover, the current handling procedure is too simplified and closed, thus the complainant cannot involve in dispute resolution. Third, the monitoring obligation of EPB is not clear. The staff of

Environmental Supervision Organ seldom instructs its monitoring station to monitor the pollution resulting in environmental dispute, and they make judgments of the existence of pollutants and pollution level without monitoring results, which is not the convincing evidence for environmental complaint. Thus, it is an important reason of skip-level complaint and repeated complaint. Fourth, the validity of environmental complaint's handling results especially the handling results through enforcement methods is also unclear. The administrative procedure can only determine the validity of EPB's acts while cannot benefit for the settlement of environmental dispute between the pollutant and victim. Finally, the assessment indexes for effects of environmental complaint are not reasonable. The EPB basically takes settlement as the only index to evaluate its staff, and does not care about whether the pollution resulting in environmental complaint is settled, thus the environmental dispute cannot be resolved from the source.

4.4 Incomplete informatization platforms of environmental complaint and weak information disclosure

The public can use various informatization platforms for environmental complaint, but our investigation indicates that informatization platforms are imperfect in practice, resulting in that the public are not willing to select informatization platforms for environmental complaint. In 2015, the amount of environmental complaints through WeChat in China was 13,719 and only made up a small number of all environmental complaints^[7], which indicates that although in the era of universal WeChat, modern informatization platforms is not the first choice for environmental complainer. The websites of EPBs seldom provide procedural guide to environmental complaints by internet, thus the complainer has to fill various information on the user-unfriendly website. At the same time, EPBs hold a prudent attitude towards the usage of network environmental complaint platforms. The official website of the MEP has not set a column related to "environmental complaints" until now. The websites of some local EPBs once set on-line complaint channel and deleted it without any explanations hereafter.

Information asymmetry often results in deepening of contradictions, while information disclosure is an important approach to protect the public's right of learning environmental information. The coming of information era should make higher degree of information disclosure of environmental complaint by utilizing informatization platforms. However, the practice is still worrying: on the one hand, the disclosure extent of handling process of environmental complaint is not enough and the complainer cannot follow up the process and cannot fully express their opinions, which is unfavorable to final settlement of environmental dispute; on the other hand, the disclosure extent of replies on environmental complaints is not enough. The settlement information of environmental complaints published by EPBs' official websites just made up a small proportion of the total settlement amount nationwide in recent years. There have been no records of handling information of major environmental cases after July 2015. The amount of replies on environmental complaints published by local EPBs through their official websites is a litter small.

5 Conclusions

With the continuous development of information technology, environmental complaint by internet has become one of most important methods for environmental complaints. We should focus on how to improve environmental complaint system especially how to regulate environmental complaints by internet.

5.1 Renewal of ideas of environmental complaint

The environment right refers to the right to live and develop in a health, comfortable and beautiful environment. However, it has not been formally accepted by China's environmental legal system. From the perspective of legislation of environmental right in foreign countries, the constitution alization of environmental right is a major mode of legislation of environmental right^[8]. Only when the environmental rights is protected as constitutional right can EPB put emphasize to resolve environmental dispute through environmental complaint. As for the EPB, it should rectify the action of only paying attention to temporary stability but neglecting the public's legal rights, listen to viewpoints of disputing parties, and promote substantial dispute resolution. As far as the public is concerned, it is a good choice to defend environmental right as a basic right and urge EPB to pay attention to the

public's environmental right protection.

5.2 Promoting legislation of environmental complaint

As for improving the relevant legislation of environmental complaint, the top priority is to promote the Measures for Environmental Complaint to administrative law or regulation and add provisions related to environmental complaint by internet. In addition, the scholar suggested drafting "Environmental Damage Compensation Law" and "Measures for Administrative handling of Environmental Dispute" which contained stipulations of environmental complaint, in order to make environmental dispute resolved according to the law no matter through administrative or judicial way^[9]. Theoretically, the legislation of environmental complaint includes substantial law and procedural law. The basis of substantial law for environmental dispute resolution was regulated in Environmental Protection Law (2014). Article 64 clearly stipulates that where any damage is caused by environmental pollution or ecological damage, the relevant persons shall bear tortious liability in accordance with the relevant provisions of the Tort Law. Under the background of gradual improvement of whole environmental law system, the procedural stipulations of environmental complaint are expected to promulgate officially soon.

5.3 Improving operational mechanism of environmental complaint

First of all, considering the current Chinese context and organization of EPB, Environmental Supervisory Organ of EPB above county level could be equipped with staff for environmental complaint handling, to guarantee the professionalism and independence in handling processes of environmental complaint. Generally, the professional knowledge of a settler of a dispute is a major factor to help disputing parties to collect and investigate relevant information^[10]. However, whether professionalism is favorable to resolve environmental problems is still controversial^[11].

Secondly, it should appropriately increase the application of mediation in environmental complaint handling, since face-to-face mediation in environmental dispute is more likely to generate fair and effective results which will benefit all stakeholders than litigation^[12]. Especially in the handling of mass environmental complaint, mediation can better comfort emotions of victims and avoid intensification of contradictions.

Thirdly, the application of environmental monitoring should be strengthened in dispute resolution. It can be considered to give monitoring obligation of monitor station conditionally; if disputing parties are not convinced of the judgment by EPB's staff depending on their experience and submit to monitor, the monitor station should do it.

Fourthly, since the enforcement methods have a strong one-sided decisive power and coerciveness, it is necessary to endow disputing parties who refuse to obey administrative orders or penalties with the right to file civil litigation within a certain period; otherwise, the results of enforcement methods will have legal validity. To guarantee the settler of a dispute can judge freely, the fundamental premise is to make him/her free from accountability^[13]. Hence, the nature of litigation cannot be administrative but civil litigation.

Last, the assessment standards for EPB's environmental complaint handling should be adjusted. The assessment on governmental organs should be various: the accurate degree of positioning technical value, responsible degree to the public, capability to improve decision-making analysis through dispute resolution, and possibility to promote citizens' education level^[14]. It should replace the settlement rate of environmental complaint as the only assessment standard with pollution prevention and control, as well as comprehensive evaluation on overall performance, to evaluate the performance of EPB's staff.

5.4 Promoting informatization of environmental complaint platforms and information disclosure

The informatization platforms of environmental complaint should be diversified as far as possible and convenient, namely that is cyberization under the background of informatization. It has been a basic tendency of governmental organs to use informatization platforms to provide convenient services. As for environmental complaint, we should enforce the application of cyberization platforms so as to promote construction of website and WeChat pertinent to environmental complaints; moreover, learning from the experience of Korea, the detailed online environmental complaint guide should be provided to increase the public's use frequency of online channel^[15]. Besides, the efficiency of settlement of environmental complaint through informatization platforms should be improved. EPB

can use the informatization platforms for online cooperation with other parties, opinions collection and online hearing. Furthermore, the information platforms are not only used for current problems handling, but also for post-supervision.

The information of environmental complaint which involves immediate interests of citizens and artificial persons is an important part of environmental information. It also consists of an important part of disclosure of governmental information. The scope of information disclosure of environmental complaint should not only include settlement results of environment complaint but also handling process and follow-up investigation. The EPB's staff should have the obligation of disclose important matters such as process, decision and its reasons of environmental complaint handling in time. In addition, disclosure methods of environmental complaint should be networked as far as possible. Disclosure through hard copy is neither beneficial to realize the purpose of information disclosure nor conform to green principle. While disclosure through soft copy cannot only improve the efficiency of information disclosure but also expand the coverage of information diffusion.

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A Comparative Analysis of Civil Service System (CSS) between China and UK*

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Abstract A Comparative analysis of civil service system (CSS) between China and UK requires a framework of historical institutionalism. Notwithstanding the manifest interest in civil system, in-depth comparative analyses are rare. From broadly speaking, civil service system is a basic constituent part of political system. Furthermore, this comparative analysis needs to be conducted across time as well as across countries, as a great number of changes in the civil service systems have altered. Empirically, in China and UK, the top civil servants must more and more pay attention to codes of professional values and ethics. Overall, the country case studies reveal a complex landscape.

Key words Civil service system, Civil servant, China, UK, Historical institutionalism, The standards of selection and promotion

1 The definition of civil service system (CSS)

1.1 The definition of civil servant system in China

In China official civil service is both more exclusive than that found in UK. The civil servant system (CSS) is a personnel system within the political and administrative career that means not only made up of political appointees, but also those permanent career employees holding the government positions. There is no distinction between politicians and administrative officials, so the both two are called civil servants. The most senior officials, including the premier, vice premier, state councilors, ministers and provincial governors are counted as servants in China. Because of the importance of Marxist definitions of the State in China, the symbolic meaning associated with the various phases in Western Europe differs from that in China.^[1] Today the civil servants in China are more likely as administrators or technocrats.

1.2 The definition of civil service system in UK

The civil service systems (CSS) in UK have been defined as mediating institutions that mobilize human resources in the service of the affairs of the State in a given territory^[2]. Based on the definition, the scholars have identified civil servants for the most part as career, appointed officials, rather than elected, political officials, and civilian rather military officials, as including officials at all levels of government, and as operating within holistic systems, the boundaries of which are best determined empirically.^[3] The British civil service is normally defined as servants of the Crown, other than political or judicial officials. The Crown has power under the prerogative to regulate and control the civil service. It was appropriate that recruitment of civil servants should be an area to receive early attention for the reshaping of the Civil Service.^[4]

2 Methodology

The historical reviewing conveys a better understanding the modern system, particularly in this case, future directions of civil service systems. Appreciation of past contours of institutional development can provide significant insights into why, how and in what directions they are heading. The sort of historic frames that will be used for analysis diverse aspects of civil servant system development through time include: institutional comparisons, innovations, and diffusion of ideas, empirical learning process.

3 The historical analysis of civil servants system in China

According to academic wisdom, the imperial civil servant system characterized by selection of the

* This paper is funded by the creative program of Tsinghua University named *Meritocracy Modernization: from Humaneness Government to Good Governance*.

meritorious based on examinations, has more than 1,300 year history. The Confucian idea that the ruler should be served by a group of advisers with moral integrity and wisdom had deep roots in Chinese history. In Han dynasty these Confucian ideas began to affect public policy. At that time, the basis of merit was taken as the first step to recruit civil servants. The appointments to official positions went to virtuous and righteous men who had been commended to the capital on the initiative of local government. Afterwards the emperor asked for advices from the recommended person as a selecting measure to be the civil servants.^[5] In mid-period of Han dynasty, examinations had been set up as a supplement recommendation as to evaluate and select the intellectuals. The contents of selecting examinations became closely integrated with Confucian classics. But still selecting system could not generally be put into effect, because the most of government positions were occupied hereditarily by eminent families.^[6]

Later on, the Sui dynasty put to use the recruitment and training of central civil servants to weaken the powers of regionalism and of the hereditary aristocracy. The Tang dynasty adopted a regular system of examinations to recruit an amount of civil servants form among examinations graduates. From Tang dynasty, the contents of examinations and degree of graduates were offered in several fields, including classics, letters, laws and the others. The Song dynasty and Ming dynasty recruited governmental officials by means of public and competitive examinations. The practice of recommending candidates was entirely abolished. Only scholars maintained by the government were admitted to examinations. In Song dynasty, the contents range of examination system had narrowed, and examination standardized and consisted of the Confucian classics in the orthodox interpretation. Starting with the premise that the examination was primarily concerned with selecting men with talents and abilities for public service, they urged that the school education should be promoted to take place of examination in offering a training which would develop the capacity to render specific services for the government as well as for society in general. This same examination system was continued in the Qing dynasty. There were a limited number of scholars by entrance examination which was held twice in three years.^[2] Actually, this practice paved the way for them to a political career. The intellectuals have lower degrees also had the hope of receiving appointment from the government. At any rate, a participant once passed the assembled examinations, this scholar is justified in expecting to be appointed to office.

The traditions of Chinese thought and learning began to be shaped increasingly by the standards and practices of the examination system. This system drew and absorbed the intellectual energies of generations into the orbit of Chinese imperial state. By the twentieth century, China's the imperial civil servant system had collapsed. The last examination was held in 1904, and then it was abortion in 1905.

4 The historical analysis of civil service system in UK

The different from Chinese CSS, the British one traces its roots back to the Northcote-Trevelyan Report. Before this period, the usual method of appointment to the governmental positions was by patronage, unchecked and uncontrolled, as a result, corruption and inefficiency were rampant.^[7] In 1849, Sir Charles Trevelyan, the Secretary of the Treasury, wrote that "There is a great tendency to look to the public establishments as a means of securing maintenance for young men who have no chance of success in the open competition of the legal, medical and mercantile professions ... We are involved in a vicious circle. The permanent Civil Servants are habitually superseded because they are inefficient, and they are inefficient because they are habitually superseded."^[8] In order to remedy this degraded state of affairs, Mr. Gladstone appointed Sir Charles Trevelyan and Sir Stafford Northcote to inquire into the general conditions of the civil service.^[9] Their report appeared in 1853, and is the foundation upon which the modern civil service system, as we know it today, has been built.

This report recommended in the first place the replacement of patronage by a system of open competition accompanied by a test of age, health and character; and in the second place that a distinction should be drawn between mere routine and the intellectual work of the service, and officials recruited separately for the two kinds of work. As a result of the report, the Civil Service Commission was brought into being in 1855 for the purpose of ascertaining the knowledge, age, health, and character of candidates.^[10] The Order in Council which created the Commission not only laid it down

that the scheme of examination should be settled by the Commissioners, but expressly declared that “such examining Board shall not make any alteration on respect of the nomination or appointment of candidates by those who are or may be charged with the duty of nomination or appointment.”¹ Later, most of governmental departments adopted the system of limited competition, under which candidates would be nominated to compete for each vacancy.^[4] Subsequently, a preliminary examination was used before entry to the main competition. All these devices for preserving the spirit of patronage within the form of impartiality were swept away by the Order in Council of 1870. The passing of the Superannuation Act of 1859, which enacted that with certain minor exceptions, no Civil Servant should receive a pension unless he possessed a certificate of competency from the Civil Service Commission, had already greatly strengthened the position of that body and of those who wished to extend its power.

5 The selection and promotion of civil servants in China and UK

In the last analysis, the standards or criteria of selection and promotion in CSS between China and UK are compared. All in all, in a modern country, though there is not one single standard, namely, competitive written examination in the process of CSS selection and promotion, and a set of merit based criteria are indispensable.

5.1 Selection and promotion of civil servants by competitive examination in China and UK

The open competition which it was recommended should be adopted for all classes was as follows: there was, firstly, to be a competitive written examination, open to all, from which the most successful candidates in China were to be selected and place on a list, the number selected in this way being in excess of the vacancies available.

And all official employees are restricted in certain ways as to their political freedom in UK. The principle that has been acted upon in the past for the recruitment of these grades is that entry to each should be by means of a separate open competition corresponding in quality, but not in kind, to the standard of work that a successful candidate would be required to perform.^[11] The same principle was adhered to in recruiting enable men and women showing promise of ability, with external candidates whose good fortune has permitted them to enjoy a University.²

Practically all these candidates are filled by open competition. In the latter case by examinations of a special character, and in the former case by examinations that frequently differ hardly at all from those used to recruit officials for analogous general classes. In UK a restriction is imposed on free entry to the extent that evidence of technical knowledge is required before permission to compete is granted. But it cannot be regarded as a serious limitation to the principle of open competition.^[12] Then, it is possible to analyze the professional civil service. The term “professional” is in the ordinary civilian sense, and is meant to denote the various qualified practitioners. They are rarely examined, but usually nominated by the Head of the Department concerned and certificated by the Civil Service Commissioners on the evidence of their professional qualifications.³ In fact, there was not rigidly definitive to British civil servants according to the method by which they are recruited at that period. They are not regarded even as temporary civil servants because their payment and conditions of service are not subject to Treasury sanction and Parliamentary control.^[13]

In addition, it is the duty of the Commissioners to ensure that candidates comply with prescribed conditions of fitness in regard to age, health, nationality and character. All this verification is carried on according to considerable publicity. Specimen examination papers and tabulated lists showing the names and marks obtained by each entrant are published for all competitive examinations.^[14]

What are the advantages and disadvantages of this complicated system of public examination as a means to recruit the civil servant? At first, the method of open competitive examination is sound, democratic and equitable in that it treats all comers alike, regardless of distinctions of wealth and social rank. Secondly, it judges men and women impersonally by their ability to carry out a specific performance, and in that it selects individuals, without reference to their family connections and

1 Order in Council, May 21st, 1855

2 Cf. Report of Civil Service National Whitley Council on Organization, etc., of the Civil Service, Feb. 17th, 1920

3 This is permitted under Clause VII of the Order in Council of Jan.1st, 1910

inherited fortune, by the common rule of a prescribed test under known conditions. Above all, it is an effective method of ensuring that no one shall enter any grade in the Service without having attained at least to the minimum standard of knowledge and capacity for work must be the first essential of an expert and efficient administration.

All the disadvantages which this civil service examination system involves are many. Most of them, being due merely to lack of imagination and foresight on the part of those who designed the test, are temporary and incidental, and are therefore capable of correction. The age limits, for example, have often been fixed without reference to the educational development of young candidates attending school or college at like ages.¹

The biggest defect is the fact that it can at most test but a single aspect of an individual's general capacity as a potential civil servants. Of their characters and powers of endurance, of their general discretion, of their moral courage and loyalty, of their honesty purpose and tactfulness, of their cooperation abilities and creative inventions, above all of their qualities of mind and outlook, these vitally important elements the written paper takes no account. But all experience shows that it is impossible to prevent patronage becoming associated with corruption and inefficiency, at any rate unless made subject to a minimum of qualifying competence. Later, the other alternative is the enrolment of officials by the method of advertisement and interview.

5.2 Selection and promotion of civil servants by merits and abilities in China

Generally speaking, China, has adopted a rigid and relatively narrow position classification. The positions which mix rank-in-person and rank-in-position classification, range from Premier (grade 1) at the top to clerk (grades 10 to 15) at the bottom (Provisional Regulations on Civil Servants 1993, Article 10). University graduates are usually hired as section members (grades 9 to 14), the positions just as clerk. The system of civil servants does not identify such as clerical, technical, professional or top administrative and policy-making positions.^[15] Nevertheless, the positions divide into leadership and non-leadership. There are no rules that prevent section members from entering the leadership strata. The candidates from the next lower rank could be selected based on seniority, ability, political integrity and performance if a structural vacancy exists.^[16] The 2017 official criteria for becoming a civil servant limited applicants to those who have political rights, who "respect discipline and the law", who "are upright and have the spirit of serving the people", who "are university graduates as determined by the State"; who are healthy and under the age of 35 or who under the age of 40 will graduate and receive the Master or Doctor degree in 2017, and who meet other criteria as stipulated by employing agency; who has two years or more of basic-level work experience, especially in an economic enterprise or service unit, or in a prefecture, city or lower-level party or government agency.² According to the Provisional Regulations, those who pass the written examination and interview are offered probationary appointments. After one-year probation, they are evaluated for a permanent position within the civil service.

In China, the promotion within the civil servant system is theoretically based on rules that require, first, the availability of a structural vacancy, and second, that promotions be based on "moral integrity and ability", including merit and work accomplishments. "Moral integrity" means, in part, political loyalty. In addition to upholding this leadership, a major point the CCP has been concerned about is governance efficiency, which can be achieved by assigning competent actors to particular posts.³ The general personnel policy in the cadre reform is to select the candidates for top leadership position who are both politically loyal and professionally competent.^[17]

The procedures for promotion require that candidates have the support of both the relevant leaders and their peers and that, if relevant, they pass a qualifying examination. The assessment of candidates is supposed to be based on the results of annual performance appraisal that also have a strong peer evaluation component. The regulations in practice, however, give considerable discretion to work unit

1 Fourth Report of Royal Commission on the C. S., P.34, for special reference to age of recruitment for Second Division Clerks

2 <http://bm.scs.gov.cn/2017/UserControl/Department/html/20161013094802.html>

3 Hong Yung Lee, *From Revolutionary Cadres to Party Technocrats in Socialist China*, Berkeley: University of California Press, 1998: 451-70

leaders to interpret “peer support”. In practice, dual career paths appear to have developed within the civil servants. One is largely technocratic and requires more years of education and relies less on political reliability as a criterion for promotion. Another is political or administrative and requires fewer years of education and more attention to political reliability. The government has also adopted actions to select the national minority candidates and women candidates.

5.3 Fast stream recruitment of British civil service

British civil service Fast Stream Development Program (1995-2000) is a training and development scheme aimed at very able graduates, selected on the basis of their potential to reach the Senior Civil Service. The applicants enter a government department on a Fast Stream training program tailored to their individual needs. From then on, the promotion of civil servants is on merit. A series of program reports were published by the Cabinet Office on behalf of departments during this period. Although the central training capacity is increasing, the bulk of Civil Service training takes place.

The appointment of senior civil servant strictly on merit, and the ability to give objective and impartial advice, is not the same thing. But two go together. Officials who are explicitly politically committed are not going to be objective and impartial in their assessments of policies of their own party. Now no one should think that return of a patronage system in this country, with all its negative effects on the integrity and efficiency of government, is impossible. “The patronage virus is never dead,” observed the former cabinet secretary Lord Richard Wilson, evidently drawing on his own experience at the heart of government, “and constantly needs to be beaten back”. The evidence from the history of government in both Britain and other countries suggests a statement from Lord Wilson is correct.¹ The goal is to ensure the selection of well qualified personnel on the one hand, to eliminate patronage or bias on the other in UK. To this end, selection was made the responsibility of independent Civil Service Commissioners and it was built that the normal method of entry to the service should be by competition whether through written examinations or interviews, open to all candidates with the requisite qualifications.

The selection of civil servants depends on the Civil Service Commissioners (CSC). The CSC is directly responsible for higher level recruits, namely, administration trainees. Selection at Executive and Clerical level is left to the departments under the supervision of Commissioners and in accordance with regulations made by them. It is possible to set out the role of the CSC and the selection procedures in the order stipulated in the framework but the essential points are covered below.

To mark the independent status of the Commissioners, they hold their appointment directly from the Crown and are appointed by Order in Council. Therefore, a government appointee and a senior civil servant by background, the First Civil Service Commissioner enjoys the same sort of independence in practice as, say, the Comptroller and Auditor General or the Parliamentary Commissioner for Administration. The Commissioners head an office is now integrated in the Civil Service Department, though without any loss of independence.

As regards the general regulations for selection, there is in fact a shared responsibility with the Civil Service Department and they are subject to its approval.^[18] However, concerning the application of the regulations, Commissioners have sole responsibility for deciding which candidates shall be declared successful. Selection is obviously linked in practice to the general policies of personnel administration. In practice the staff associations also have a role to play in policy making. There are nine such associations representing different levels and functional categories of the service and these form the side of the National Whitley Council.^[19] The office side consists of senior civil servants and the chairman is also a senior official. It may consider the general principles relating to selection and promotion.²

6 Conclusions

The promotion of civil servants is by merit and loyalty in China. Having emphasized the

1 Alasdair Palmer, The return of Patronage: How special advisers are taking over from civil servants and why we need to worry about it. Civitas, 2015: 31-32

2 F. F. Ridley, *The British Civil Service: Recruitment, Promotion, Remuneration Politics*, Working Paper, The University of Liverpool, 1986: 9

important of political loyalty on elite selection, one should know well the CCP's determination to carry out the leadership transformation for better governance and economic management. In addition to upholding this leadership, a major point the CCP has been concerned about is governance efficiency, which can be achieved by assigning competent actors to particular posts.[20] The general personnel policy in the cadre reform is to select the candidates for top leadership position who are both politically loyal and professionally competent.

In UK, there are no barriers to promotion within the servants and in principle the highest positions are open to the talents at whatever level they enter. This means that while Promotion Boards determine the eligibility of candidates for promotion, the promotion lies with the Permanent Secretary of the ministry or his representative. There is a break between the procedure for determining eligibility and the discretionary decision to promote that may or not follow. This is not intended as a way of rejecting the judge of Promotion Boards on the qualification of candidates but because the deployment of staff is a management responsibility. While the ministry will take into account the individual's ability to perform well in all or most of the duties associated with a higher grade, it also has to look for the best candidates to fill particular jobs. In fact, it is hard to know how these two criteria are reconciled in individual cases. The candidates are given the opportunity to express job preference, but these may not fit in with the longer term staff plans of the department. Moreover, actual promotion depends on the number of vacancies available, a factor which Promotion Boards need not take into account in their assessments. As a result, this may cause some frustration. An official declared eligible but not immediately promoted remains on the list automatically for a number of years and is not removed from it without reconsideration of his case.

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Study on Supervision Organization on PPP Project of Urban Rail Transit in China

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Abstract With the increasing introduction of public-private partnerships (PPP) into urban rail transit, it is particularly important to establish supervision institutions of PPP project, and to clearly define the regulatory functions of each institution. This paper analyzes the current situation of the supervision organization on PPP project of urban rail transit, through constructing utility matrix to make a game analysis of outstanding issues for the unclear duties of multiple regulators of PPP project. Moreover, based on the previous means, it designs the supervision institution system with vertical coordination type of PPP project of urban rail transit. The supervision system includes two kinds of power allocation mechanisms which are the vertical power allocation mechanisms featured hierarchical supervision of the effective combination of centralization and decentralization, and the horizontal power allocation mechanisms featured coordinated operation of regulators and policy departments. Hence, the supervision of PPP project of urban rail transit can be achieved vertically and horizontally.

Key words Urban rail transit, PPP mode, Regulatory agencies, Vertical and horizontal coordination

1 Introduction

Urban rail transit, as the city's large-scale public infrastructure construction, has become the preferred way of public travel. The first passenger subway was launched in 1860s in Britain, and nowadays more than seventy cities all over the world have launched urban rail transit lines^[1]. In China, the first tier cities such as Beijing, Shanghai, Guangzhou and Shenzhen have built a rail network in all directions, and other cities have also made track construction plans. Urban rail project belongs to the city public infrastructure projects, and to the scope of government investment^[2]. With the increasing demand for urban rail transit construction, only relying on the financial allocation will result in huge financial burden of the country. It is urgent to introduce new financing methods in urban rail transit projects^[3].

PPP(Public-Private Partnership) project of city rail transit mainly financed, constructed and operated by the private sector. This method can not only solve the financial problems of the construction of the project, but also improve the efficiency and reduce the cost. However, PPP is confronted with many problems while realizing the win-win situation between both the public and private sectors: Firstly, the complex principal-agent relationship, as the agent of private sector or individual which has the risk of using relevant information to seek rent; Secondly, the self-interest of the private sector is inconsistent with the public nature of the urban rail transit project^[4]. In the context of this problem, it is important to standardize the boundaries between the market and government regulatory and to build a scientific and rational supervision institution, which is conducive to the effective maintenance of social benefits and further improvement of the efficiency of resource allocation.

The research of foreign scholars in the field of PPP is gradually mature, and the maturity of theoretical research has promoted the continuous improvement of the practice of PPP project. The research focus of foreign scholars on the PPP is the following aspects such as risk aversion, pricing mechanism, mode of financing, project decision-making and government regulation, among them, the study on the regulation of the PPP project is mainly on experiences summarization and theoretical abstraction of practical cases. Such as David I Wilson and others reviewed the Australian government's governance of PPP project, and pointed out that the sound governance of the model lies in the construction of a complete PPP project supervision framework^[5].

Mike Goodliffe taking the British aviation transportation field as the research object, introduces the present situation of PPP project supervision in this field, and points out that only reasonable price supervision can ensure the efficient operation of this model^[6]. After Ole Helby Petersen initiated the exploration of the problems of the Danish PPP project, he points out the main problems is that there are

supervision debate existing in the financial sector and the central government. The central government departments have too much intervention resulting in the shortage of financial sector intervention, therefore, the regulatory responsibilities of various departments must be clarified^[7]. China is still in the primary application stage of PPP mode. The domestic scholar Fu Jincun and Wang Junhao believe that we should take consideration of the basic conditions of our country construct supervision system with vertical and horizontal coordination. Vertically, we can draw lessons from the experience of American Central and local hierarchical supervision. The central government is responsible for the legislation and the local government takes responsibility of specific supervision of PPP projects; Horizontally, we emphasize the independence of regulatory agencies, and should give full play to the counsel effect of experts think tank^[8]. Ye Xiao-su analyzed the practical problems, for instance, the serious regulatory power segmentation in China's regulatory authority mechanism of PPP and the large number of regulatory body. Aiming at these problems, they put forward specific suggestion of establishing comprehensive professional independent regulatory agencies, and suggested that the regulatory body should be divided into the traditional regulatory body and comprehensive regulatory body. The traditional regulatory body includes traditional supervisory departments and audit departments and supervision departments, and the comprehensive supervision body refers to the comprehensive independent regulatory authorities. Among them, the supervision department is responsible for the supervision of emergencies; the audit department is responsible for the supervision of the use of fund in the construction and operation of PPP project; regulatory department is responsible for supervision of the beginning of the project; the comprehensively independent regulatory department is responsible for the supervision of the whole process of the project^[9]. Sheng Hong and Qin Hong point out that they should build up the accountability, professionalism, transparency and independence of the regulatory organs, and initiate the ability training and administrative incentives of the relevant departments and personnel, so as to promote the supervision ability. They also believe that both vertical and horizontal regulators should be restructured^[10]. In summary, the establishment of independent regulatory mechanism is an effective way to solve the existing problems, but independent regulatory agencies have some problems such as controlling the opportunism, the possibility of regulatory capture and information asymmetry^[11]. Thus, we should find effective measures to solve such problems in the construction of independent regulatory agencies, and to maximize its regulatory capacity.

2 The status quo of supervision organization of PPP project in urban rail transit in China

The government administrative departments are mainly responsible for supervision of China's urban rail transit PPP project. Among them, the financial bureau is responsible for integrity and legitimacy of all types of accounting data content and the comprehensiveness of management; The NDRC(National Development and Reform Commission) is responsible for supervising the fairness and openness of the project bidding, the legality of the contract signing, and the completeness of the relevant procedures for the acceptance of the project; The competent departments of the industry are mainly responsible for monitoring matters requiring higher professional quality, for example, the quality monitoring department is responsible for monitoring the quality of service; Other supervisory departments include the Department of Transport, the Public Security Bureau, the Bureau of Human Resources and Social Affairs, the Environmental Protection Bureau, the Land and Resources Bureau and the Inland Revenue department.

In short, the supervision system of urban rail transit of PPP project in our country is jointly supervised by many agencies in which the administrative departments are the main subject of supervision. In this system, the supervision power is relatively dispersive and the regulatory standards of various departments is different. In addition, the cross functions of various departments, unclear main responsibility, obstruct cooperation channel in departments and the lack of coordination mechanism, all of these existing problems lead to the inefficient supervision and the lack of effectiveness in urban rail transit of PPP project.

3 Analysis of the supervision institutions problems in urban rail transit of PPP project

In the city rail transit of public-private cooperation projects, the supervision institutions include many departments such as the Ministry of Finance, National Development and Reform Commission, Urban and Rural Construction Committee and the Audit Bureau. The regulatory functions of various departments cross seriously, and the responsibility of them is mutually shuffled in cross regions, which reduces the effectiveness of regulation. In this paper, the game theory is used to construct the utility matrix to analyze the strategic choices made by the regulatory agencies in the cross functional areas when they do their regulation work together. The following two assumptions are to be made:

Hypothesis 1: All parties in the game are the Ministry of Finance, the NDRC, the Urban and Rural Construction Committee, the Audit Bureau and other departments. We set “n” as the number of parties in the game. In order to explain the problem briefly, it is assumed that in the game analysis of the PPP project supervision agency of the urban rail transit, the number of people involved is two, which are respectively named “regulatory body one” and “regulatory organ two”;

Hypothesis two: Each institution faces two strategic options: non-regulation or regulation. Assuming regulatory costs are C, and regulatory gains are G, so the net regulatory returns are G-C, and non-regulatory gains are zero.

Based on the above hypothesis, this paper uses the symmetric game model to study the problem of multi-party supervision of public and private cooperation in urban rail transit project in our country. The payoff matrix of this game is as follows:

Table 1 The 2 × 2 symmetric game model of multi-party regulation with public and private cooperation

		Regulatory agency 2	
		supervise	Non-regulation
Regulatory agency 1	supervise	G-C, G-C	G-C, G
	Non-regulation	G, G-C	0,0

If $G-C < 0$, that is, it supervises in its own while other regulatory departments don't supervise, and the income is negative. At that time, as a rational regulatory authority, it will choose the non-regulation strategy, and the non-regulation is a dominant strategy equilibrium. If $G-C > 0$, it indicates that even if it supervises by itself, the income is still positive. There is no Nash equilibrium, because when regulator 1 chooses regulation, the non-regulation is the dominant strategy of regulatory agency 2. When regulator 1 chooses non-regulation, regulator 2 will choose regulation. Due to symmetry, dominant strategy of regulator 2 also depends on the choice of regulatory agency 1. At this point, it is required to solve the problem through the hybrid strategy—Nash equilibrium.

Similarly, the number of regulators is n. If $G-C < 0$, all regulators would choose not regulation, at the time, it is required to solve the problem through the hybrid strategy—Nash equilibrium. At this time, we can set the probability of each regulator's choice that is the same as that of t, and the probability of non-regulation is 1-t. For any one of the regulators is i, you can choose supervision or non-regulation. If you choose supervision, no matter what the choice of other departments, the gains are G-C; If regulators i choose not to carry out supervision, it will be two cases: one is that other regulators all choose non-regulation, and the revenue is 0. The other case is that at least one regulator of others chooses to regulate, and the yield is G. So for the regulators i, the expected return of choosing non-regulation is $0 \times (1-t)^{n-1} + G \times [1 - (1-t)^{n-1}] + G \times [1 - (1-t)^{n-1}]$, that is, $G - G \times (1-t)^{n-1}$. The expected return of regulatory i is G-C when choosing regulation. According to the equilibrium conditions, the probable conditions of regulators choosing regulation is to promote the equal expected revenue of supervision and non-regulation, that is, $G - G \times (1-t)^{n-1} = G - C$, and the simplification can be obtained: $t = 1 - (C-G) / (n-1)$.

From the above analysis, the probability of each regulators choosing the supervision is $1 - (C-G) / (n-1)$, so the probability of selecting non-regulation is $(C-G) / (n-1)$. The probability of n regulators all choosing non-regulation is $(C-G)^n / (n-1)^n$. Because of $C < G$, C/G is less than 1. Moreover, as $n / (n-1)$ will decrease in accordance with the increase of N, the probability of all regulators choosing non-regulation is $(C-G)^n / (n-1)^n$ which will increase with the increase of N. That is to say, the number of

regulators is larger, the probability of non-regulation is more, and the possibility of regulatory vacuum is also bigger. But when the regulatory costs C is small and has a lot of difference from the benefits G , even if all departments choose non-regulation whose probability will increase with the increase of regulators. However, the probability $(C-G) / (n-1)$ of every institution choosing non-regulation is still very small, that is, the probability of each department choosing regulation will be great. Thus, it will cause regulation repetition, and reduce the supervision efficiency.

From the results of game analysis, it can be seen that too many regulatory agencies, and the premise of overlapping functions in regulation departments is bound to result in regulatory chaos in the functional cross field. When the supervision cost is too large, regulators will shirk their responsibility, resulting in lack of supervision; When the supervision cost is very small, regulators will be competing for the regulation in the areas, leading to regulatory overlap, which increases the regulation cost and reduces the efficiency of supervision in general.

4 Rebuild the PPP project supervision organization of urban rail transit

At present, there are fragmentation management and multi-heads management in the PPP project supervision of urban rail transit. The functions of each regulatory organ are seriously divided, and the function boundaries are blurred. From the above analysis of game, multiple regulatory body and the fuzzy boundary of function will lead to duplication of regulation and regulatory vacuum, which will lower the efficiency of regulation, and decline the quality of products of private sector or services. Thus, it will even increase the probability of social disapproval and moral risk. Thus, in order to ensure the smooth progress of the PPP project of urban rail transit, it is important to reconstruct the PPP project supervision institution of the urban rail transit, and clearly define the functional boundaries of each institution.

4.1 Reconstruction thinking of PPP project supervision institutions of urban rail transit

Regulators of city rail traffic PPP projects can be reconstructed from two dimensions. Vertically, we can set regulatory division from the central and local levels, and establish the coordinated operation mechanism, which is conducive to both the central government to implement macro-control, and to fully mobilize the initiative and enthusiasm of the local government; Horizontally, a comprehensive independent regulatory institution and the operation mechanism for coordinating with the policy department can be constructed. As a result, we can build a supervision system of urban rail transit of PPP project from two dimensions.

4.2 Establish the allocation system of functions and powers of the PPP project supervision institutions of urban rail transit from vertical dimension

At present, due to the complex relationship between the central and local governments, it results in the failure of the comprehensive coordination in the city track traffic of PPP project supervision, or in the regulatory vacuum of cross functions area. This kind of phenomenon impedes the unified implementation of supervision in our country. In the vertical dimension, it is an effective way to solve the problem of the coordination of the vertical supervision by constructing a reasonable allocation system of supervision power, and implementing the effective centralization and decentralization of the central and local supervision power. The vertical allocation of supervision power mainly refers to the allocation of the power of supervision between the national and the local authorities. Because the city rail transit has obvious regional characteristics, there are big differences in the everywhere in many aspects including economic development, infrastructure, local government management system and natural conditions. Moreover, under the infrastructure investment system of the city, the city rail transit is mostly constructed by the local government, and the loss of operating is subsidized by local finance. These characteristics determined that the vertical allocation of the supervision right of PPP of city rail transit should adopt the hierarchical model nationally and locally. As shown in Figure 1: the straight line represents business guidance relationship from the state to the provincial level, and to the city. The curve represents information feedback from the city to the province, and to the nation. The national and local classification modes involve municipal infrastructure supervision institutions at three levels, namely, the national, provincial and municipal levels. The basic idea of the vertical functions and powers allocation of different levels of regulatory organs is that: from principle to concreteness, from policy formulation to

policy implementation, and from business guidance to information feedback. At the national level, the basic functions of the regulatory bodies are macro direction, standard setting and performance appraisal of local regulatory institutions; The provincial regulatory agencies should play a pivotal role, and take a comprehensive guidance and performance evaluation of city rail traffic of PPP projects. At the same time, they also need to coordinate the supervision of city rail transit PPP across cities; The municipal regulators is mainly responsible for the specific implementation on the function of supervision, so as to ensure the effective development of this project, and to insure full supplement of city transport services, and for the initiative of the comprehensive law enforcement supervision on the process and effect. In addition, they should make a reasonable division of regulatory powers, clarify the relationship between power and responsibility, and implement the “responsibility” at all levels of government and regulatory authorities, so as to divide the public-private cooperation of regulatory functions of city’s infrastructure to ensure that people who have power must shoulder the responsibility, and when he use his right, he must get supervision. They need to set up hierarchical supervision mode constituted by the management institutions of province, city and county, and equip with specialized agencies and professional management personnel to response for the supervision and examination, especially for setting up specialized management agencies of district (county) level. Moreover, they should propose a regular training of management personnel to improve the professional technology, and ensure that there is no vacancy of basic management. Finally, there will be the realization of coordinative management in both city and district (county), which will effectively improve the efficiency of management.

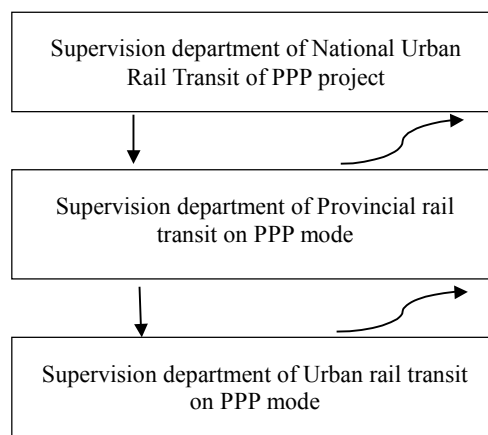


Figure 1 Vertical management system of regulatory institution of PPP of urban infrastructure

4.3 Establish the horizontal authority allocation system of PPP regulatory agencies of urban rail transit

The horizontal business management of public and private cooperation in urban rail transit involves state-owned assets, bidding and government procurement. Therefore, the horizontal regulation of PPP regulators is mainly responsible for the establishment of professional and comprehensive agencies with independence—the comprehensive PPP regulatory institutions of city rail transit. It’s also responsible for the implementation of comprehensive business supervision, and for the concentration of the micro-regulatory function into the independent regulatory agencies. At the same time, some policy departments such as the National Development and Reform Commission and SASAC (State-owned Assets Supervision and Administration Commission) are mainly responsible for macro-control regulatory. Based on clarifying the regulatory functions of various departments, we need to construct scientific organization, personnel and financial relations between the regulators and policy department , so as to attain scientific and relative independence of law enforcement of power allocation in regulatory agencies, and to achieve the moderate separation of regulatory agencies and government departments (separation of government and supervisor). The comprehensive PPP regulators of city rail transit can set up several special departments or offices to centralize supervision of city rail transit. The main function of the comprehensive PPP regulatory body of urban rail transit is: to formulate industry development plans,

formulate and improve relevant laws and regulations, exercise authorization of franchise, establish and perfect service standards, and implement price, service quality, operation safety supervision and so on. The independence of the regulatory body is mainly embodied in the following three aspects: Firstly, the legal status of regulatory authorities should be clear, through legislation to clarify the legal status of regulatory agencies and to authorize by law, which is the basis to ensure the relative independence of regulatory institutions. Secondly, the separation of regulatory institutions and enterprises aims to achieve separation of the government and enterprises, and of government and funds. It doesn't form a community of interests with the supervision of enterprises, and owns the clear and relatively independent sources of funds, to avoid being captured by industry stakeholders, and to achieve fairness and justice in the formulation and implementation of regulatory policy. Thirdly, the regulatory agencies and other government administrative departments is to achieve the separation of regulatory decision-making. What's more, decision-making of regulatory institutions should be able to get rid of the interference of government administrative departments, so as to achieve moderate separation of government and supervision bodies. These agencies have a certain authority and effective means of supervision to implement the regulatory functions independently according to the law.

Comprehensive supervision of city rail transit of PPP regulator is mainly reflected in a reasonable and complete regulatory power allocation, giving regulators full and complete the supervision power. The power and rights such as regulation, price regulation and quality supervision enjoyed by city rail transportation of PPP project are collected into a city rail transit of public-private cooperation regulatory agencies, to achieve symmetric powers and responsibilities, and to ensure the authority and the effective exercise of regulatory powers of the regulators.

4.4 Construction of coordinated operation mechanism of PPP project supervision organization of urban rail transit

In practice, regulators and other policy departments will bound to have a business connection. Therefore, they need to establish a coordination mechanism with other departments to maintain business consultation and coordination with other administrative agencies. In order to reduce the policy conflicts in regulators, and between regulators and government departments, the effective coordination mechanism of crass departments needs to be established. It aims to achieve cross sectoral effective cooperation, so as to increase the public value of government supervision. There are two main forms of coordination mechanism among departments: Firstly, the establishment of inter departmental procedural cooperation, and communication and cooperation mechanisms, such as information sharing, personnel flow, consultation and so on; Secondly, they need to construct the inter departmental coordination organization to strengthen coordination, such as the establishment of the Coordination Committee of Cross Departments or joint meeting system, to carry out comprehensive coordination of cross departmental functions, so as to avoid the confusion of responsibility boundary and the emergence of "regulatory vacuum" and "regulatory overlap".

4.5 Establish a regulatory incentive mechanism for regulatory agencies

The government supervision behavior is a kind of behavior of supervising administrative power, and the supervision institution usually has quasi legislative authority, executive power and quasi-judicial authority. Therefore, the supervision institution has a stronger discretionary power. The stronger the independence of an institution, the greater the discretionary power of an institution. The regulatory body, with a collection of legislation, enforcement and adjudication, has a wide range of discretionary power and extensive involvement in industry activities. Thus, there may be a risk of regulatory failures such as abuse of power and regulatory capture. Therefore, we need to design a scientific incentive mechanism based on the effective evaluation of supervision mechanism, and initiate accountability for the poor supervision and bad performance of regulatory institutions while giving efficiency of supervision and reward high performance regulators to give material or spiritual reward to these that have effective supervision system of governance, to achieve healthy regulatory governance system and attain excellent performance.

5 Conclusions

This paper proposes a game analysis of the unclear responsibility of multiple regulatory in the

regulators system of city rail traffic of PPP project. It's available to analyze the selection of the player's strategy by establishing the utility matrix. Finally, they draw a conclusion that in cross responsibilities area, when the number of government departments is large, there will inevitably be a regulatory overlap and regulatory vacuum. While the cost and the revenue of supervision is relatively small, regulators will compete for supervision so as to increase the overall cost of supervision, and reduce regulatory efficiency. Furthermore, when the number of cost and benefit of regulation are large, regulators will tend to choose not to regulate, resulting in lack of supervision, to cause a moral risk of private enterprise. All of them will harm the public interest, and even lead to project failure; And the phenomenon will become more apparent as regulators grow.

From this point of view, this paper designed the vertical and horizontal PPP project supervision system of urban rail transit. In the aspect of vertical power allocation, this paper establishes the power allocation mechanism of central and local level supervision, in which the central government has ability to control and coordinate, and the local government has enthusiasm and initiative; In the configuration of the horizontal power, we should establish comprehensive and professional regulatory agencies with relatively independent, implement the comprehensive supervision, and centralize micro-regulatory function into independent regulatory agencies. While some policy departments including the National Development and Reform Commission and SASAC is mainly responsible for macro-regulation and regulatory, at the same time, to establish an inter departmental coordination committee that is responsible for the communication and cooperation between policy departments and independent regulatory agencies.

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To Improve Government Procurement through E-commerce

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Abstract Relying on the application of information technology to promote E-government, and to change working methods and style of government is a breakthrough of the administrative reform. Combining the advancement of E-government and E-commerce to improve the government procurement can be regarded as a crucial direction of the reform of government procurement. It is practical and vital for us to learn from the successful experience and mode of E-commerce, and to actively carrying out the reform and innovation of the government procurement system. It's also important for us to improve the information management of government procurement and unify the big platform of public resource trading. In addition, it has a practical meaning that implement the national "Internet plus" strategy and the relevant requirements of the policy—"Further Increasing the Government Procurement through E-commerce Platform" of State Council.

Key words E-government, E-commerce, Government procurement, Administrative reform

1 To promote the development of electricity supplier in government procurement through administrative reform

According to the Report of the Development of the Rule of Law in China, the evaluation made by all circles and public opinions in recent years, there are still many problems in Chinese government procurement: people are willing to buy the expensive instead of the economic commodity, with the same configuration, whose price is inflated and out of line with the market; There are some special and exclusive goods which are few sales on the market, hence, it is difficult to compare their prices with others; It is tough for the government to supervise because of the low proportion of the openness of government procurement information, insufficient procurement transparency, and incomplete procurement records; The information data is not standard and the statistical analysis of purchasing is difficult to obtain; The bidding workload is large, and procurement cycle time is too long. The model is backward and the service is not guaranteed.^[1]

The problems existing in government procurement go hand in hand with the procurement methods such as the supply agreement and bulk purchasing, and with the failure to make full use of some new technologies and concepts including information technology and electronic commerce, and also are more closely related to not fully introducing the market competition mechanism. Existing practices have created these problems which can only be solved in an innovative way. Viewed from the practice of global administrative reform and government work, it is a good solution to solve the problem of government work by using information technology and market competition mechanism.

The government needs to learn and introduce the market competition mechanism. E. S. Savas, a master of world privatization, proposes in *Privatization and Public-private Partnerships*: "The ideal role of government is: (1) the confirmation of the demand for public goods and services; (2) the smart buyers; (3) the experienced inspectors and evaluators of the goods and services they have purchased; (4) the effective collectors of fair taxation; (5) the prudent receiver pays the contractor in due time and in a suitable amount."^[2]

To play the ideal role of good government through government procurement, we must follow the new public management concept which has been proved effective by the practice of many governments: (1) Using the form of privatization, the production and supply of public services are handed over to the market and society, so as to make use of the free market mechanism as far as possible to solve the problem; The government only needs to "operate the rudder" and takes a proper supervision and incentive mechanism. (2) The government should fulfill the demand of citizens and public government information to provide high-quality and efficient public goods and services for citizens. (3) Introducing the competitive mechanism and private sectors with advanced management experience into the government departments.^[3] Only breaking monopoly and making full play of the market competition

mechanism can effectively improve the efficiency and effectiveness of government procurement.

Combating corruption and promoting honesty require government procurement to be more open and transparent. Administrative reform calls for the establishment of a conservation-minded government to reduce government spending and administrative costs, for the construction of a responsible government to enhance government transparency and supervision, and for the establishment of a government ruled by law, so as to promote the standardization and legalization of government. The transparency of the procurement process and results, the overall publicity of procurement information, and the standardization and legalization of procurement process are not only the prerequisite and basis for procurement supervision, but also the effective measures to combat corruption and to build a clean government.

So far, the construction of electronic mall for government procurement which is conducive to market competition mechanism and anti-corruption can guide the practical direction in solving the problem of government procurement. "Electronic mall for government procurement is an electronic trading platform concentrating on many large online shopping mall (electricity supplier) for government procurement which is on the basis of comparison of the price. It is also a combination of e-government in public sector and E-commerce of private sector. It is the complementarity of the advantages of public resources and the market mechanism that can greatly save the financial funds and promote the openness, fairness, justice, efficiency and transparency of government procurement. It can also improve the purchasing satisfaction to attain a unified sunshine procurement as well as the efficiency and benefit."^[4]

2 The current status of government procurement relying on E-commerce

The twenty-sixth article of "The Government Procurement Law of the People's Republic of China" enacts that there are five ways of the government procurement including open bidding, selected bidding, competitive negotiation, single source procurement, inquiry and "other procurement methods determined by the government procurement supervision and Administration Department of the State Council". Regulation on the Implementation of the Government Procurement Law of the People's Republic of China "enacts" If there are special circumstances needing to implement the government procurement policy, after the approval of the financial department of the people's government in the municipal districts, other procurement methods except the open bidding can be adopted in accordance with the law. This regulation also requires that deepen the reform of the government procurement system, regulate government procurement services, and improve transparency, so as to strengthen social supervision and focus on source management and the improvement of procurement efficiency. On September 1, 2014, Wang Ying, director of the Government Procurement Management Office of the Ministry of Finance, put forward at the Ninth National Government Procurement Regulatory summit: "We need to vigorously promote electronic procurement, and to strive to improve procurement efficiency. The government actively carries out a pilot electronic mall which is gradually replacing the supply agreement which can be regarded as a useful complement to bulk centralized procurement mode, and explores the establishment of the mode combining the bulk centralized procurement and electronic mall to realize the unification of efficiency and effectiveness."^[5] The government procurement work points of the Ministry of Finance in 2015 was put forward clearly that the construction of informatization and standardization would be strengthened, and E-commerce would be vigorously developed to promote the construction of electronic stores of central government procurement. In addition, relying on the electronic platform, the supervision of procurement activities, contracts, payment audit and other key aspects will be enhanced.

In practice, the government procurement depending on E-commerce is still in the pilot or the exploration stage. There is no unified management standard, and the name is called differently including electronic mall, online shopping, electronic stores, supermarket and so on. But all of these take advantage of resources of E-commerce and of local electricity supplier business. The traditional agents help electricity providers and traditional supplier to participate in the competition together, which has basically solved the shortcomings of traditional supply agreement and fixed procurement embodying the unity of efficiency and benefit, having achieved good economic and social effect.

2.1 The positive effect of government procurement through E-commerce

Dynamic management of price; Real-time adjustment of electricity suppliers and manufacturers; Market synchronization. The commodity information of electronic mall is directly connected through the interface with the electricity supplier database so that the information of commodity and price is consistent with the electricity supplier. The electricity supplier is a fully market-oriented trading platform with fierce competition, frequent price adjustment, and various sales promotions, which through the database is directly synchronous with electronic mall and market. Thus, the government procurement of goods is no longer out of touch with the market price. Thanks to the dynamic adjustment, the price is no longer empty high and people can “online shopping” the government procurement catalog of goods.

Commodity prices of government procurement through E-commerce are more favorable than that of regular electricity supplier. For the electricity supplier, the government procurement is a huge “group purchase” market with government credit, so they all dare belittle. Therefore, they give great support to the construction of government procurement electronic mall, and the price they give to electronic mall commodity is not higher than the price of their business platforms.

The delivery is efficient and quick, and the purchasing efficiency is improved. The large electricity providers either built logistics system by themselves, or cooperate with the fixed third-party logistics to ensure that the commodities can be reached within 48 hours in the city above the county level (except in the Minority Counties). The commodity may can be reached in large cities in tomorrow. Compared with the period of 3 to 20 days of previous traditional supply agreement, the procurement efficiency is greatly improved, has effectively solving the sporadic procurement of the offices.

The whole process of online trading is beneficial to their own anti-corruption. The electronic mall through the docking interface completes the whole process online. After comparing the commodity prices, people can choose the lowest price or the average market price according to their own requirements. The order is sent directly to the order system of electricity supplier with the management background of agent factory, so the suppliers according to the order can directly finish the whole process including delivery, acceptance, settlement, and procurement, greatly reducing the probability of contact between customers and suppliers which is good for the purchaser himself for anti-corruption.

2.2 The limitations of government procurement with E-commerce

From the effect of implementation, although basically solved the drawbacks of the government procurement agreement supply and fixed-point procurement in the past, there are also many obstacles and limitations needing further reform and innovation.

Restriction of commodity items. Firstly, the policy function of government procurement reflects the requirements of some commodities, such as computers, monitors and so on, must be the energy-saving environmental protection products certified by the relevant departments; Secondly, the Ministry of Finance enacts that the goods with frequent use such as computers and printers must be purchased in a centralized manner; Thirdly, the goods have requirement of security or confidentiality and goods need to be customized.

Settlement limitation. Government procurement is mainly based on settlement while the electronic commerce platform is mainly based on the advance payment or the delivery payment. The payment habits of government procurement agreement to supply have formed for a long time that the suppliers deliver the goods to the purchasers, and after the purchaser getting invoice and contract they will apply for payment according to internal process. Finally, the financial department according to the payment request pays to suppliers. E-commerce platform, due to lower commodity prices, needing the rapid turnover of funds to obtain reasonable profits, usually pays advances through the third parties or cashes on delivery. To solve this problem, at present, E-commerce platform companies in order to meet the needs of government procurement, generally give about 14 days of the settlement cycle; At the same time, some places also require buyers when accepting the goods to pay through official card settlement. However, there are still some problems in these two solutions, which makes it inconvenient for users of government procurement electronic mall.

Restriction of standard commodity repertory. Excellent government procurement electronic mall requires the construction of a repertory, so the goods can be seen and have their parameters which are

consistent with the market; The classification standards should be consistent with the government procurement catalogue, and conform to the requirements of “The Classification of Government Procurement Items” released by the Ministry of Finance in 2012. Only after the realization of commodity parameter management, goods can not only compare with the same type of products, but also can compare with the brand commodities with the same configuration and different types, which is also needed by the current government procurement, especially for the long-term existence of the “special for government”. It needs to be updated through commodity parameter management for price comparison.

3 The means for accomplishment of government procurement through E-commerce

The development of E-commerce prompts online shopping, which becomes the market consumption habit. E-government has entered a mature stage, and the public administrative reform has helped some concepts including openness, efficiency, innovation, competition and supervision deeply rooted in people’s mind. The conditions for the development of government procurement electronic stores are basically completed, and the government procurement electronic mall will greatly promote the reform of government procurement.

There are four types of practical exploration of electronic shopping mall in government procurement.

(1) The electricity supplier will be the designated supplier of government procurement, and the government procurement platform is to provide electronic business platform links. The local purchasing agency represents the purchaser to carry out online shopping directly on the Internet “Taobao”, and the acceptance is sent to the purchaser; Or procurement agencies directly appoint certain electricity supplier as a fixed-point, and the purchaser can choose selective procurement in the designated electricity stores. This way can solve the problem of market availability, but cannot achieve the process specifications, data synchronization and price comparable. The procurement data is not easy to count, so generally there is no price concession.

(2) The government procurement platform sets up special channels in the electronic business platform which belongs to the electricity supplier so buyers can purchase in the electronic business platform. This is the specific channel or column developed by the electricity supplier for developing the local government procurement, and the purchasers through the government procurement website link enter the platform directly and purchase. This way is difficult to monitor, thus, there may be still special and unique models, and procurement statistics cannot be solved. Although the electricity supplier promises to provide certain preferential discounts for government procurement, we still lack technical means for real-time verification.

(3) The electricity supplier goods are imported through the agreement delivery system and the government procurement electronic market can be established so that the purchasers are able to purchase the goods directly in the electronic market. The electronic marketplace is still an agreement provider, but the electricity supplier is the protocol provider which can upload the commodity data. This way of uploading data still fails to solve the inherent problem of protocol delivery. For poor timeliness of data uploaded by the electricity supplier, the synchronization of business platform cannot be guaranteed, and the specific the special types of commodities cannot be excluded.

(4) The introduction of a number of mainstream electricity suppliers, through a unified standard interface, facilitates the construction of real-time synchronous government procurement of electronic commerce and electronic mall. This is a relatively scientific model of electronic mall platform with a series of functions such as multi platforms and single login, synchronous electricity supplier orders, the whole process of recording and real-time monitoring of prices.^[6]

The first three types of processes are difficult to unify and have poor timeliness of data, which is unable to guarantee synchronization of business platform. There may still be a special and unique model. In addition, the procurement data is not easy to count, and the price is tough to compare. There are generally no price concessions. In comparison, the government procurement electronic mall is a relatively scientific business platform with a series of functions such as multi platforms and single login, synchronous electricity supplier orders, the whole process of recording and real-time monitoring of prices, and the excluding of special and specific commodities, which can also enjoy the thoughtful

service and price concessions for large customer of group purchase. Therefore, in practice, the online shopping mall of government procurement is the best way to realize the government procurement through E-commerce.^[7]

4 The goals and advantages of government procurement operating with E-commerce

Government procurement system is characterized by a list of features including publicity, legality, openness, fairness and competitiveness. The government procurement of electricity providers can make up for the shortcomings of the previous government procurement, and better achieve the objectives of government procurement.

(1) Ensure that the product market is optional. The commodities of government procurement must have good market sales and the public are available to buy. Thus, the problems of government procurement of customized commodity including the procurement of special and specific models and the goods can't buy out of the market need gradually eliminating, and through the identification and selection of goods to ensure that the purchaser can purchase cost-effective goods.

(2) Compare prices by price monitoring. Try to encourage a number of electricity providers to participate in in order to improve the degree of competition, and to real-time monitor the prices of same type of commodity from each appliance business, which is also benefit to update and synchronize the price with electronic business platform. Curbing the illegal phenomenon including "the sky-high price purchase", the "excessive procurement" and "false purchase", we can solve the problem of the commodity with high price and low quality so as to avoid the black box operation, rent-seeking and corruption.

(3) Convenient and rapid. It is convenience and quickness that are the biggest advantages of electricity supplier compared with the traditional way of purchasing. A good online shopping mall of government procurement will be able to give users the same procurement experience as that of Taobao.

(4) Improving procurement efficiency and saving financial funds. Government procurement as a group purchase, can enjoy more favorable prices and better service. Procurement through E-commerce is more convenient for count and docking with various e-government systems.

(5) Strengthening information publicity and enhancing transparency. The electronic mall is easier to achieve the openness of the whole process including the government procurement process and procurement transaction information (parameters, sales volume, price, comments, etc.), and is also conducive to strengthening the construction of credit system of government procurement, and to the direct supervision, administrative supervision, judicial supervision and social supervision on government procurement.

The government procurement center of central state organs has put forward the goal at the beginning of the construction of online shopping mall of central government procurement that is to accomplish the "market is available and price can be compared; convenient and efficient; open and transparent," which fully embodying the pursuit of the goal set by the government procurement of electricity supplier.^[8]

5 The strategy to promote government procurement through E-commerce

To adhere to the construction principles of government procurement with E-commerce: (1) A number of electricity suppliers must be introduced to form the price competition. Drawing on business and technology of mainstream electricity providers to introduce a number of mainstream electricity supplier in government procurement, which can not only achieve the commodity be sold on the market, but also be the premise and basis for price comparison. (2) Online shopping mall is built and operated by third parties to maintain its independence. The competition between the electricity suppliers and manufacturers determines that the platform of government procurement relying on E-commerce cannot solely be developed by the electricity supplier or manufacturer, but by jointly developed. Government procurement process and electricity supplier procurement process are not the same. Moreover, the government procurement will dock with some systems including budget management, asset management and office automation. The government procurement electronic mall is constructed and operated by the third party, which can be fairer and more justice. (3) The government dominates the

government procurement of electricity supplier. The government procurement of electricity supplier should be dominated by the financial department of the government or government procurement center. Under the strict supervision of the government, it should, in accordance with the unified standard, be developed, operated and maintained by the third-party organization which is familiar with government procurement or outsourcing company, to ensure the information security and process specification.

Adjustment of government procurement methods and processes. Whether the government procurement of electricity providers can completely replace the agreement supply has yet to be discussed, but at least it can be considered as a new system which is different from the traditional agreements and ways of supply. However, if the government procurement through E-commerce has a quite different system of the supply agreement, we must appeal to the financial sector to specify relevant policies to regulate the government procurement with E-commerce, otherwise, the central purchasing agency cannot operate; If the government procurement of electricity supplier is an upgraded version of the agreement supply system, we only need to increase the competition among manufacturers, suppliers and business. Moreover, it is relatively simple that we only need to collect the bidding scheme of the improvement of supply agreement in central purchasing agency. Therefore, we need to make objective analysis and scientific adjustment to the existing mode of government procurement in accordance with the government procurement policy to strengthen the market competition mechanism and open transparent mechanism. The government procurement of electricity providers is identified as a formal way of government procurement, and the process of government procurement with E-commerce should be standardized so as to attain the standardization and legalization of government procurement.

Unified promotion of government procurement with E-commerce. The technology of government procurement with E-commerce is basically mature, so the financial sector or the government procurement center can formulate a unified interface standard of the commodity information pushing and the transaction process, and make a unified standard of the government procurement depending on E-commerce. We had better construct the unified online mall of government procurement for the deployment or unified use of the government procurement center, to reduce duplication construction and to strive for the preferential price from electricity supplier, so as to reduce management costs and strengthen supervision.

State owned enterprises, the army and other public procurement and group procurement all can consider the government procurement electricity supplier model. The centralized procurement of state owned enterprises and the armed forces are interlinked with other government procurement concepts and methods. They all emphasize openness, fairness, competition and efficiency that are needing to be supervised and brought into the category of preventing corruption, which is also suitable for the mode of electricity supplier.

6 Conclusions

The three advantages including low cost, high efficiency and transparency of E-commerce, corresponding to the full competition, timely delivery, clear process, conducive to supervision, are in full accordance with the requirements and objectives of government procurement system. Therefore, using advantages of E-commerce, through the construction of electronic mall of government procurement, is a useful exploration for the breakthrough in the plight of government procurement.

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On Efficiency of Medical Services and Its Influencing Factors under New Medical Reform Policy in 2009

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Abstract The new medical reform in 2009 is obviously public value-oriented. There are two questions needed to research: whether the public value is achieved on the sacrifice of medical service efficiency and to what extent the new medical reform policy affects medical service efficiency. Based on the panel data set of the 31 provinces in the period from 2005 to 2015, medical service efficiency is calculated by using DEA model, and the policy's effect is evaluated with Tobit regression model. Results are as follows: the change tendency of medical service efficiency in most provinces presents U-shaped structure; medical policy has significant positive effect on service efficiency; among the factors, population size, rural income and age dependency ratio have significant positive effects on service efficiency, and urban income has negative effects on service efficiency.

Key words New medical reform, Medical service efficiency, DEA, Policy effect

1 Introduction

Several medical reforms have been conducted since 1978. On the basis of reform value orientation, reforms can be divided into four stages: breeding stage between 1978 and 1984; decentralization of power and transfer of profits stage between 1985 and 1992; marketization intensification stage between 1992 and 2003; public welfare returning stage between 2003 and now (Zhong Yu-min^[1], 2011). On 6th April, 2009, the Communist Party of China and the State Council enacted *Opinions of the CPC Central Committee on deepening the reform of the medical and health system* and *2009-2011 Implementation plan of deepening the reform of the medical and health system*, which marked the beginning of the new medical reform. The guiding thought of the new medical reform with public welfare as its principle was to strengthen government responsibility and increase government input. As the target of reform was to reduce medical expenditure burden and solve the problem of difficulty and high cost to acquire medical service for residents, it indicates a totally different value orientation, achieving justice and bringing benefits, compared with former reform.

However, whether the medical resources were wasted, and the medical input was converted to maximum output, the issues such as the cost-income ratio are also important. Based on these thoughts, this article aimed to explore two issues: whether the public value orientation is on the sacrifice of medical service efficiency and to what extent the new medical reform policy affects medical service efficiency.

2 Research method and index selection and assumptions

2.1 Medical service efficiency measurement—DEA

Appropriate method is needed to evaluate medical service efficiency. Among the literature of public service and public goods, there are two measurements used. The scholars of first category tended not to differentiate efficiency from effectiveness, so the efficiency is decided by the material effect of public service or public products. However, this measurement usually depends on subjective judgment so it lacks professional data analysis. The scholars of second category adopted the economic definition of efficiency and the input-output ratio. The representative method is DEA. DEA method is an effective method for evaluating the relative effectiveness of decision-making problems with multiple inputs and outputs whose application scope on public management is bigger (Cheng Gang^[2], 2014). The supply of medical service is also a production process with multiple inputs and outputs, needing to be measured by DEA.

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2.2 Index selection of medical service input and output

The first step of measuring efficiency by using DEA is to establish index system. Though there is rare new medical reform policy efficiency research, there is no lack of the research of new medical reform performance. The input index of new medical reform performance is consisted of three aspects: financial input, manpower input and material input. The output index consists of four aspects: quantity of medical service, quality of medical service, effect of medical service and expenditure. Given the availability of statistical data, we chose the government health funds, the numbers of hospital, health technicians and beds of health care institutions (Jin Rong-xue^[3], 2012; Li Xiao-yan^[4], 2012) as the input index to evaluate the policy cost, and chose the numbers of hospital treatment, hospital in-patients, outpatient medical expenses per capita, inpatient medical expenses per capita and medical insured (Dai Ping-sheng^[5], 2011; Niu Ben, Liu Zhi-yuan^[6], 2013) as output index to evaluate policy output and chose BBC model of DEA to calculate the total efficiency of medical service between 2005 and 2013.

2.3 Factors influencing medical service efficiency and hypothesis

The enactment of *Opinions* and *2009-2011 Implementation plan* indicates that the new medical reform policy has an obvious time node. As the efficiency value belongs to interval (0,1), so Tobit regression model is used to evaluate the policy's influence on medical service efficiency. Seven assumptions are promoted as follows:

New medical reform was conducted by central government, which caused great change in medical service field. Enlarging scale of medical care from central cities to grassroots increases availability and efficiency of medical service. Therefore, hypothesis 1 is proposed: **New medical reform policy has positive relationship with health service efficiency.**

There are some evidences showing that regions with high GDP have more technological and institutional advantages and better public service management. In developed provinces, the level of information technology tends to be higher and the information to be more transparent, so it's more effective to prevent rent-seeking and there is better supervision, which improve service efficiency (Athanasopoulos^[7], 1988; Sun De-mei^[8], 2013). Hence, hypothesis 2 is proposed: **GDP has positive effect on health service efficiency.**

Population size and population density can reflect management scale of province and municipalities. Scholars have argued that big population size can decrease management and supervision costs, improve efficiency and create the scale effects of the supply of public goods and public service (Afonso^[9], 2008; Grossman^[10], 1999). Others think that once the population size increases over the bearing capacity of the city, it will bring a series of external negative effects to public service supply, for which increases supply costs and then decreases efficiency (Loikkanen^[11], 2005; Xu Jing-qin^[12], 2011). In China, there is the consensus that our country is lack of public service. Under sufficient supply of public service, the centralization of population can lead to high utilization of service. Here, hypothesis 3 is proposed: **Population base has positive effect on health service efficiency.**

According to Engel's law, the growth of residents' income will influence their expenditure structure. With the expenditure ratio on food declining, demands for medical and health-care service will be stimulated as incomes increase, and government will increase public expenditure ratio in medical and health-care in order to meet with the demand. In overseas empirical studies about the relationship between income level and medical services efficiency, GDP or GDP per capita is usually used as measured variable

But in China, GDP is not consistent with income levels. Given China's urban-rural dualistic structure in the production and supply of public service (He Li-dao^[13], 2011; Qu Yan-chun^[14], 2015), when exploring the relationship between income level and medical services efficiency, the variable income level needs to be measured by urban residents' disposable income and rural residents' disposable income respectively. Therefore, hypothesis 4 is proposed: **Rural residents' disposable income has a positive effect on health service efficiency.** Hypothesis 5 is proposed: **Urban residents' disposable income has positive effect on health service efficiency.**

The urbanization process and the crowded public service increase the demand for public provision such as infrastructure and public goods (Richard Abel Musgrave^[15], 2003). As Chinese empirical

studies prove, urbanization would increase population size and population density, and then create the scale effects of the supply of public service (Xue Qing-he^[16], 2015). Hypothesis 6 is proposed: **Urbanization has positive effect on medical service efficiency.**

Age dependency ratio which reflects the ratio of population without capability of working (mainly the elderly and children) and labor force population, is one of indexes of age structure of population. Among all age groups, the elderly especially has great demand for medical service because of their lowest health capital and high occurrence of chronic disease (Wu Yong-sheng^[17], 2014). Children is prone to get sick for their low immunity. So to speak, the elderly and children are the main consumers of medical service. Higher the age dependency ratio is, the more output of medical service is. But the government expenditure of medical service is not affected by particular groups. As evidence shows, when controlling variables such as technology and time, the elderly has subtle effect on medical expenditure (Di Matteo^[18], 2005). So, the elderly has greater effect on output of medical service than its input. Hypothesis 7 is proposed: **Age dependency ratio has positive effect on health service efficiency.**

The estimation model is established based on assumptions:

$$\delta_{it} = \delta + \beta_1 GDP_{it} + \beta_2 PS_{it} + \beta_3 RI_{it} + \beta_4 UI_{it} + \beta_5 URB_{it} + \beta_6 ADR_{it} + \beta_7 P_{it} + u_i + \varepsilon_{it} \quad (1)$$

δ is the efficiency value of medical service. GDP is gross domestic product. PS is population base. RI is rural resident's income. UI is urban residents' disposable income. URB is urbanization level. ADR is age dependency ratio. P is policy. u is observation variable irrelevant from time and factors. ε is random variable changing with time and individual.

3 Empirical results and analysis

3.1 The medical service efficiency value and analysis

From the *China Statistical Yearbook*, *China Statistical Yearbook of Health and Family Planning*, as well as the *provinces, municipalities and autonomous regions Statistical Yearbook*, the panel data set of the 31 provinces in the period from 2005 to 2013 is acquired. Using MaxDEA 6.4 to evaluate efficiency, the result is as follows. (see Table 1)

Table 1 Regional medical service efficiency value and ranking

DMU	TE 2005	TE 2013	DMU	TE 2005	TE 2013	DMU	TE 2005	TE 2013
Anhui	0.96	0.99	Liaoning	1	0.92	Heilongjiang	0.92	0.83
Beijing	0.79	0.96	Inner Mongolia	0.77	0.73	Hubei	1	1
Fujian	1	0.97	Ningxia	1	1	Hunan	1	1
Gansu	0.88	0.84	Qinghai	0.79	0.88	Jilin	0.84	0.80
Guangdong	1	1	Shandong	1	1	Jiangsu	0.86	0.94
Guangxi	0.97	1	Shanxi	0.77	0.70	Jiangxi	0.95	0.96
Guizhou	0.82	0.97	Shaanxi	0.91	0.90	Zhejiang	0.99	1
Hainan	0.92	0.89	Shanghai	1	1	Yunnan	0.79	0.93
Hebei	0.95	0.94	Sichuan	0.87	0.97	Tibet P.R.China	1	1
Henan	1	1	Tianjin	0.92	1	Sinkiang	0.98	0.99
Chongqing	0.91	0.98						

Note: Due to space limitations, only the efficiency value in 2005 and 2013 is listed here.

In 2013, the efficiency value in 11 provinces was 1, which are Guangdong, Guangxi, Henan, Hubei, Hunan, Ningxia, Shandong, Shanghai, Tianjin, Tibet P.R.China, Zhejiang that reached efficiency frontier. The efficiency value in other 13 provinces such as Anhui, Beijing and Fujian was between 0.9 and 1. There are 7 provinces such as Gansu and Hainan whose efficiency value was less than 0.9. From the perspective of region, the 11 provinces which reached efficiency frontier included eastern, western and central provinces, each region accounting for 5, 3 and 3 respectively. The number of provinces among 13 provinces whose value is between 0.9 and 1 in each region above is 4, 3 and 6. The number of provinces among 7 provinces whose value is less than 0.9 in each region is 1, 1 and 3.

Though there are no obvious difference of the efficiency value in western, eastern and central regions, the western provinces has a worse performance than eastern provinces.

Among 31 provinces, except Guangdong, Hunan, Jiangsu, Yunnan, Zhejiang and Shandong, the other provinces' efficiency has undergone the U-shaped change with provinces perhaps having various U infection points. 17 provinces have the infection time point in 2009 which are Anhui, Fujian, Gansu, Guangxi, Henan, Hainan, Hubei, Jiangxi, Jilin, Liaoning, Inner Mongolia, Ningxia, Shanxi, Shaanxi, Sinkiang, Chongqing and Heilongjiang. These provinces had increased financial expenditure to medical institution at the first year of reform, and transferred such expenditure to rural basic health facility. The aim of increasing financial input was not to improve medical service efficiency immediately but to strengthen medical security system. So, the efficiency value didn't increase in the year of 2009, the effect turned up in next two or three years and became more obvious.

7 provinces had the infection time point in 2008 which are Beijing, Guizhou, Shanghai, Qinghai, Sichuan, Tianjin, Tibet P.R.China. Except Guizhou, other provinces had introduced policies before 2009, so their time point appeared earlier. Another 7 provinces, including Guangdong, Hebei, Hunan, Jiangsu, Shandong, Yunnan and Zhejiang, have great difference with other provinces. Guangdong, Hunan, Jiangsu, Shandong and Yunnan don't have U-shaped tendency, while Zhejiang presents vague U-shaped tendency, however, without obvious infection time point. Guangdong's efficiency value always stayed in the efficiency frontier, so did Shandong and Hunan.

3.2 Analysis of factors influencing medical service

From the statistic above, the new medical reform's effect in service efficiency increased one year later after the new medical reform policies were

promulgated. So, in regression model, policy is dummy variable that lags one phase. Before 2009(including 2009), the policy value is 0, and after 2009 the policy value is 1.

3.2.1 Result of Tobit regression using panel data

The data of Tobit regression model is listed as Table 2 shows. Model I and model II only explores the policy's effect on dependent variable. Model I is a mixed effect model, and model II is a random-effect model, both of which show that policy has significant effect on service efficiency. Model II's LR test result indicates inter-individual effect in panel data model for prob > chi2=0.0000, so the random-effect model is chosen here in model III, model IV and model V. Model III only explores the control variables' effect on dependent variable; model IV explores policy and control variables' effect; and model V shows the result after eliminating unnecessary variables according to model IV. Model III indicates that all control variables don't affect service efficiency without the impact of policy. After adding policy into independent variable, Model IV shows some control variables' effect on efficiency under the influence of policy. Model V eliminates some unnecessary variables, but the estimated coefficient of significant variables changes smoothly, indicating the model's stability and its result's reliability. An equation is got from model V as (2).

Table 2 Factors influencing medical service efficiency

Model	Dependent variable: medical service efficiency				
	I	II	III	IV	V
c	0.890***	0.889***	0.891***	0.629***	0.703***
P	0.554***	0.547***		0.090***	0.088***
GDP			-8.07×10^{-7}	-1.46×10^{-6}	
PS			2.00×10^{-5}	$2.00 \times 10^{-5}***$	$2.00 \times 10^{-5}***$
RI			2.00×10^{-5}	$2.00 \times 10^{-5}***$	$2.00 \times 10^{-5}***$
UI			-1.65×10^{-6}	$-8.34 \times 10^{-6}***$	$-8.99 \times 10^{-6}***$
URB			-0.001	8.00×10^{-4}	
ADR			0.001	0.004*	0.004**
Sample size	279	279	279	279	279

Note: ***, **, * represents 1%,5%,10% significance test.

$$\delta_{it} = 0.703 + 0.088P_{it} + 2.00 \times 10^{-5} PS_{it} + 2.00 \times 10^{-5} RI_{it} - 8.99 \times 10^{-6} UI_{it} + 0.004ADR_{it} + u_i + \varepsilon_{it} \quad (2)$$

3.2.2 Hypothesis testing and exploration

The result of hypothesis testing is as follows:

Hypothesis 1,3,4,7 are verified, that is to say, new medical reform policy, PS, RI, ADR significantly improve medical service efficiency positively. The policy has the deepest effect on efficiency. This result is consistent with efficiency's U-shaped change tendency over time.

Hypothesis 2 is not verified. GDP doesn't affect medical service efficiency significantly. The developed areas don't give technological and institutional advantage a full play. In addition, input in underdeveloped areas has increasing returns in terms of scale. The limited financial funds bring bottleneck to effective medical service supply.

The Hypothesis 5 is proved as false. The medical service includes basic health services, special health services and health care needs. The DEA output indicators cover substantially the scope of basic health services and the increase of rural residents' disposable income motivates parts of the unmet medical needs. While in urban areas, the improvement of urban residents' per capita income does not lead to the improvement of the saturated basic health services, but to promote urban residents to spend a part of basic health services expenditure on health. So, there is a significantly negative relationship between urban residents' per capita income and urban residents' per capita income.

Hypothesis 6 is not confirmed. Medical facilities and services layout of the city were not flexible, balanced, equitable and efficient model of development to keep up with the speed of urbanization, of which spatial structure needs to be further optimized (Zhang Pei^[19], 2015). The service provision policy link is poor while the transfer of medical insurance is difficult (Sun De-chao^[20], 2014), which affect the overall optimization of the efficiency of medical services.

4 Conclusion and prospect

Based on the panel data set of the 31 provinces in the period from 2005 to 2015, DEA model is used to calculate medical service efficiency and Tobit regression model is used to evaluate the policy's effect. Three results are as follows: the change tendency of medical service efficiency in most provinces presents U-shaped structure; new medical reform policy has significant positive effect on service efficiency; among these factors, population size, rural income and age dependency ratio have significant positive effect on service efficiency, and urban income shows negative effect. The result demonstrates that in the process of pursuing public welfare, the new medical reform doesn't sacrifice efficiency but improves efficiency and is a bridge through which other factors promote efficiency as well.

Pursuing public welfare, the orientation of new medical reform, deserves recognition. Meanwhile, from the perspective of distribution of medical resources, cost-benefit analysis is crucial for improving medical service efficiency. The government should maintain consistent medical funds and rationalize the input structure, making the input meeting with residents' demands. What's more, under the generic policy system, the government needs to conduct payment reform and adopt preferential policy in disadvantaged western regions.

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An Empirical Research of Grassroots Civil Servants' Satisfaction on Salaries: Based on Questionnaire Survey

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Abstract Among Chinese civil servants, 60% of them are come from grassroots. Since they are ones who directly face and contact with the masses, their satisfaction with the salary system will have direct impact on administrative efficiency and work quality of our country. This paper will measure salary satisfaction of grassroots civil servants through questionnaire survey and statistical analysis by taking Chinese grassroots civil servants as objects of study. Moreover, the author will identify factors that affect salary satisfaction of Chinese grassroots civil servants according to result of the measurement. The result shows that their salary satisfaction is positively related to salary level, proportion of basic wage, scientificity of performance assessment method, importance degree attached to performance assessment, pay time and transparency of salary payment; on the other hand, it is negatively related to the proportions of subsidies and allowances in the salary composition and lump sum payment way.

Key words Civil servants, Grassroots, Salary, Satisfaction,

1 Research background and issue

National civil servants, who exercise state power on behalf of the country and execute national duties, are important carriers for the formulation and implementation of national policies as well as conveyors of government information and representatives of government image. In the structure of Chinese civil servants team, 60% of them are from grassroots who are directly facing and contacting with the masses; therefore, they best know the hardships of the masses while bearing the heaviest workload. To sum up, they are national civil servants whose working conditions are the harshest. Salaries of grassroots civil servants are payoffs to their work and play an important role in attracting, retaining and encouraging a great deal of excellent grassroots civil servants. However, Wu Mu-luan(2014) discovered through studying salaries of Chinese civil servants that: salaries of civil servants in China were always lower than labor workers before 1993; though salaries of civil servants continued to rise after China practiced tax distribution system in 1994, the serious corruption phenomenon has destroyed the salary distribution structure and that has resulted in obvious gaps among departments and among areas. Though remarkable results were achieved for the previous four civil servants salary reforms, the civil servants salary structure oriented by posts in China still fails to change the salaries of Chinese bottom-level civil servants. In 2015, China adjusted salaries of civil servants that remained unchanged for the previous ten years upon the foundation of pension integration; but according to interviews of some grassroots civil servants, their actual salaries have declined instead of risen due to the pension integration. In fact, there is a big gap between satisfaction of grassroots civil servants about their salaries and the illusion of common people about "secure job" of civil servants. Considering that, this paper has tried to answer following research problems through having a questionnaire survey of grassroots civil servants. first, how satisfied are Chinese grassroots civil servants about their salaries? Second, what factors are affecting their satisfaction? Third, how to further perfect China's civil servants salary system so as to improve their satisfaction about salary and therefore guarantee their work motivation and efficiency?

2 Theoretical hypotheses and measurement models

In order to explain factors that affect salary satisfaction of grassroots civil servants, this paper has constructed a four-dimensional salary satisfaction analysis framework upon previous literatures that analyze "salary satisfaction". This research believes that factors that affect salary satisfaction of grassroots civil servants include: salary level, salary structure, performance pay and form of payment. In specific, theoretical hypothesis for independent variable under every factor and its relation with

dependent variable salary satisfaction is as following:

2.1 Salary level model

Since salary is the main labor reward for civil servants that concerns existence and development of civil servants and their families, salary level is the basic factor that constitute salary satisfaction of civil servants. Hence, our theoretical hypothesis H1 is: the higher the absolute salary level of grassroots civil servants is, the higher the salary satisfaction will be (this variable is presented as “salary level”). Besides, salary satisfaction is affected by not only absolute salary level but also relative salary level. In specific, we have come up with theoretical hypothesis H2: within a local area, the more the salary of a grassroots civil servant exceeds those of local residents (this variable is presented as “resident”), the higher the satisfaction degree will be; theoretical hypothesis H3: within a local government, salaries of more departments (this variable is presented as “department”) are lower than a grassroots civil servant regarding salary, the higher the salary satisfaction of the grassroots civil servants will be; theoretical hypothesis H4: when salary of a basic-level public servant is compared with those of other industries (this variable is presented as “industry”) within the area, the more industries are lower than the grassroots civil servants regarding salary, the higher the salary satisfaction of the grassroots civil servants will be; theoretical hypothesis H5: when salary of a grassroots civil servant is compared with those of other grassroots civil servants from same department in other areas (this variable is presented as “area”), the more areas are lower than the grassroots civil servants regarding salary, the higher the salary satisfaction of the grassroots civil servants will be. According to above theoretical hypotheses, we have established model 1 that measures factors that affect salary satisfaction of grassroots civil servants, which is shown as following:

$$satisfydegree_i = \alpha_1 + \beta_1 salarylevel_i + \beta_2 resident_i + \beta_3 department_i + \beta_4 industry_i + \beta_5 area_i + \beta C_i + \varepsilon_i$$

Model (1)

Here, “satisfydegree” means salary satisfaction of a grassroots civil servant, C relevant control variables (such as area, gender and age limit), α constant terms, ε error term and the following are same as above.

2.2 Salary structure model

In the salary structures of Chinese civil servants, post orientation is very typical, that is, the proportion of basic wage is too small while subsidies account for about 70% of the whole salary structure. In contrast to other countries, China has a salary structure where a lot of civil servants practice “power rent-seeking” through subsidies (Zhan Hong-yan, 2009). Hence, our theoretical hypothesis H6 is: the higher the proportion of basic wage (this variable is presented as “basic wage”) for a grassroots civil servant is, the higher the satisfaction will be; theoretical hypothesis H7: the higher the proportion of subsidies (this variable is presented as “subsidy”) for a grassroots civil servant is, the lower the satisfaction will be; theoretical hypothesis H8: the higher the proportion of allowances (this variable is presented as “allowance”) for a grassroots civil servant is, the lower the satisfaction will be. Besides that, the wage scale of Chinese civil servants tends to be average distribution, salary gap among common-level civil servants is small. Such “equalitarianism” in reality has to a great extent undermined the incentive effect of salary on grassroots civil servants. Hence, our theoretical hypothesis H9 is: the greater the salary graduation (this variable is presented as “graduation”) among grassroots civil servants is, the higher the satisfaction will be. According to above theoretical hypotheses, we have established model 2 that measures factors that affect salary satisfaction of grassroots civil servants, which is shown as following:

$$satisfydegree_i = \alpha_2 + \beta_6 basicwage_i + \beta_7 subsidy_i + \beta_8 allowance_i + \beta_9 graduation_i + \beta C_i + \varepsilon_i$$

Model (2)

2.3 Performance pay model

Performance pay of Chinese civil servants is an important way to stimulate motivation of civil servants and live up the atmosphere of grassroots governments. Lv Yun and Zhai Nian-xiang (et.al. 2014) believe that the way to assess civil servants in China is primarily superior levels assessing inferior levels, which has resulted in the intervention of various interest relations and human relations and made performance assessment a mere formality. Upon that we have established theoretical hypothesis H10: the higher importance degree (this variable is presented as “importance degree”) a

department gives to work performance assessment, the higher the satisfaction of grassroots civil servants will be. Chinese civil servants are featured with huge number, complicated varieties and diversified work natures and inter-department differences were not taken into consideration when assessing standard was formulated, that is, one standard is applied for assessing all civil servants. Therefore, such assessment does not have scientificity or rigorousness and cannot reflect actual performance. Considering that, we have established theoretical hypothesis H11: the higher the method scientificity (this variable is presented as “methodscientificity”) of department performance assessment is, the higher the satisfaction will be. For a long time China has not attached adequate importance to performance assessment of grassroots civil servants. Along with a lack of scientificity and rigorousness in assessing method and that many grassroots civil servants are seeking for “stability”, laid-back and slack behaviors have been resulted in among grassroots civil servants. Given such system status quo and psychological state of grassroots civil servants, we have established theoretical hypothesis H12: the higher the performance assessment method strictness (this variable is presented as “methodstrictness”) is, the lower the satisfaction will be. According to above theoretical hypotheses, we have established model 3 that measures factors that affect salary satisfaction of grassroots civil servants, which is shown as following:

$$\text{satisfydegree}_i = \alpha_3 + \beta_{10} \text{importance}_i + \beta_{11} \text{methodscientificity}_i + \beta_{12} \text{methodstrictness}_i + \beta_5 \text{area}_i + \beta C_i + \varepsilon_i$$

Model (3)

2.4 Payment form model

Salary system of civil servants affects their satisfaction. However, there is an unexpected problem among Chinese local governments: the back pay for grassroots civil servants has become increasingly typical. Wu Mu-luan (2011) pointed out when studying salary adjustment of civil servants that: arrears of wage for Chinese civil servants in recent years has become increasingly severe, especially for grassroots civil servants in counties and towns; there is deviation between central government and local governments regarding the execution of financial policies. Apart from that, it is discovered through interviewing some grassroots civil servants that: problems like delayed salary payment to Chinese grassroots civil servants and uncertain payment time are existing, which has greatly affected work enthusiasm and motivation of grassroots civil servants. Hence, we have put forward theoretical hypothesis H13: the more punctual the monthly salary is paid to grassroots civil servants (this variable is presented as “paytime”), the higher the satisfaction will be; theoretical hypothesis H14: the more times monthly salaries of grassroots civil servants are paid in lump sum (this variable is presented as “lumpsum”), the higher the satisfaction will be. Primary reasons for the delayed salary payment to Chinese grassroots civil servants include inadequate financial supervision from the government and low salary transparency. Hence, we have put forward theoretical hypothesis H15: the higher the salary transparency (this variable is presented as “transparence”) is, the higher the satisfaction will be. According to above theoretical hypotheses, we have established model 4 that measures factors that affect salary satisfaction of grassroots civil servants, which is shown as following:

$$\text{satisfydegree}_i = \alpha_4 + \beta_{13} \text{paytime}_i + \beta_{14} \text{lumpsum}_i + \beta_{15} \text{transparence}_i + \beta C_i + \varepsilon_i$$

Model (4)

3 Research method

To solve research problems mentioned above, this research has measured salary satisfaction of grassroots civil servants and influencing factors through structured questionnaire survey. In the way of measure dependent variable and factors that affect salary satisfaction, corresponding questions are set up according to variables of theoretical model established in the second section. Due to limited length of this paper, they are not elaborated here. After the first draft of the questionnaire was ready, the author gave it out to experts of relevant fields. Then draft two was attained through amendment according to opinions of the experts. Finally, a pre-survey was conducted among 60 MPA students. After that, the author further completed the questionnaire according to the feedback and opinions and come up with the final version of Questionnaire on Salary State of Grassroots Civil Servants in China.

When the questionnaire was formally given out, we applied a sampling strategy that combines purposive sample, convenience sample and snowball sample. Primary reasons for that include: first,

due to the difficulty of attaining name list of all civil servants and the sensitivity of the issue “salary of civil servants”, it is quite impractical to sample by basing on all grassroots civil servants in China; second, if the survey targets at only grassroots civil servants of certain local government, the same government is not conducive to the discussion about impact of regional and system differences on salary satisfaction of grassroots civil servants. Hence, a compromising way is using purposive sample to make sure the samples cover civil servants in middle, eastern and western China; besides, convenience sample enables to find a number of grassroots civil servants as respondents and make them fill the questionnaire anonymously so as to guarantee good responsiveness of the questionnaire; finally, snowball sample encourages the first group of respondents to continue spreading the questionnaire so as to increase the sample scale. In the end, the questionnaire survey in total 351 questionnaires are collected and 321 of them are effective ones, that is, the recovery rate is as high as 91%. This survey it covers the middle, eastern and western China areas (22 provinces in total) and involves 43 departments as an exploratory research due to the lack of empirical studies on salaries of Chinese grassroots civil servants. To sum up, it has provided firsthand data for discussing salary satisfaction of grassroots civil servants in different areas and departments, which quite meets original research intention of the author.

4 Result of empirical analysis

4.1 Analysis of salary satisfaction of Chinese basic-level public servants

According to analysis of data on collected questionnaires, among the grassroots civil servants, the proportion of very satisfied with salary among grassroots civil servants account for 0.32%; that of quite satisfied with salary is 5.92% ;that of satisfied with salary is38.63%; that of not satisfied with salary is 33.02%; that of very unsatisfied with salary is22.12%. In general, salary satisfaction of Chinese grassroots civil servants is low as 90% of grassroots civil servants feel unsatisfied with their salaries.

4.2 Analysis of factors that affect salary satisfaction of grassroots civil servants

According to the 321 effective collected questionnaires, along with above-mentioned theoretical hypotheses, we have taken general satisfaction of grassroots civil servants as a dependent variable and other 15 variables (absolute salary level, relative salary level(including comparisons with individuals, departments, industries and areas), salary graduation, proportion of basic wage, proportion of subsidies, proportion of allowances, importance degree to performance assessment, scientificity of performance assessment method, strictness of performance assessment, pay time, lump sum, transparency of wage payment as independent variables. Then we process data with STATA for practicing ologit regression. The result of regression is shown as following Table1:

Table 1 The regression result of satisfaction on grassroots civil servant

Model	Model1	Model2	Model3	Model4
Variable				
Salarylevel	1.277372*** (6.06)			
Resident	0.4478335** (2.36)			
Department	.0020972 (0.01)			
Industry	0.3802926** (2.12)			
Area	0.3962549*** (2.62)			
Basicwage		0.1398969 (1.11)		
Subsidy		-.6492533*** (-2.61)		
Allowance		-.0908074 (-0.66)		
Graduation		0.0386994 (0.36)		

Variable \ Model	Model1	Model2	Model3	Model4
Importancedegree			0.1693912 (0.68)	
Method scientificity			0.8760286*** (3.45)	
Method strictness			-0.2761479 (-1.06)	
Paytime				0.2819827 (1.04)
Lumpsum				-0.7513539*** (-2.90)
Transparence				0.4524149* (1.79)

***. Significantly correlated at 0.00level.

** Significantly correlated at 0.01 level.

*. Significantly correlated at 0.05level.

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Study on the Improvement of Basic Public Service in Hebei — Based on the Comparative Analysis of Beijing-Tianjin-Hebei Region in China

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Abstract It is an important foundation for the coordinated development of Beijing-Tianjin-Hebei region to achieve the equalization of basic public service in Beijing-Tianjin-Hebei region, at present, the basic public service level of Beijing-Tianjin-Hebei region has a scar gap. Therefore, this paper constructs an indicator system including education services indicator, medical services indicator, employment services indicator, housing security services indicator, infrastructure services indicator, culture and sports services indicator and social security services indicator to reflect the basic public services equalization index system of Beijing-Tianjin-Hebei region, then uses entropy method to assign the 22 indicators of secondary indicators and calculate the scores of the secondary indicators. Lastly puts forward feasible countermeasures and suggestions through the comparative analysis of the indicators of the Beijing-Tianjin-Hebei region.

Key words Basic public service, Equalization, Beijing-Tianjin-Hebei region, Coordinated development

1 Introduction and literature review

The report of the 18th party congress clearly puts forward the goal of equalization of basic public services. Promoting the equalization of basic public services and achieving the goal of equalization of basic public services for all people are the important measures for people to share the achievements of modernization, and an important task for improving people's livelihood, coordinating urban and rural development and building a harmonious society. Beijing-Tianjin-Hebei region which is the third growing pole of China's economy must realize the regional basic public service equalization, narrow the gap between basic public services of Beijing-Tianjin-Hebei region, improve the basic public service level of Hebei province in order to achieve the strategic objectives of regional cooperation, so that to promote the free flow of elements, attract talent inflow and enterprise investment to lay the foundation for the Hebei province and effectively ease the Beijing non-capital function, at the same time promote Hebei to accelerate development in the docking services of Beijing and Tianjin. Finally achieve coordinated development.

The research on the equalization of basic public services is increasing, mainly divided into the qualitative research and quantitative research. The qualitative research on the equalization of basic public services is mainly focused on the historical evolution of equalization of basic public services^[1], connotation, objective pursuit and necessity research^[2], etc., the study of the equalization of basic public services in Beijing-Tianjin-Hebei region is mainly focused on the crux of the problems and countermeasures of the equalization of basic public services in Beijing-Tianjin-Hebei region^[3]. In addition, the quantitative research on the equalization of basic public services, including the evaluation of the integration of basic public services in Beijing-Tianjin-Hebei region^[4], the evaluation of the equalization of basic public services in Beijing-Tianjin-Hebei region^[5], the integration of basic public services in Beijing-Tianjin-Hebei region^[6], suggestions for improving basic public services in Hebei province^[7] and the comparative analysis of the level of the integration of basic public services in the region of Beijing-Tianjin-Hebei region^[8]. In addition, some scholars from a specific aspect of the basic public services analysis, for Beijing-Tianjin-Hebei region cooperation development proposals, mainly focused on the education and medical field, including the Beijing-Tianjin-Hebei education resources sharing^[9], basic education services equalization^[10], public health expenditure performance difference analysis^[11]. Based on the past research, this paper constructs 22 second level indicators from the seven aspects of education, medical treatment, employment, housing, infrastructure, social security and culture-sports, and uses the entropy weight analysis method not only to compare the basic public services in Beijing-Tianjin-Hebei region from the seven aspects, but also put forward specific

countermeasures for the optimization of the basic public services in Hebei province.

2 Comparative analysis of basic public service level in Beijing-Tianjin-Hebei region

2.1 The principles of constructing indicators

The combination of scientificity and feasibility

The scientificity reflects the strong correlation between the second level indicators and the first level indicators, which effectively reflects the impact of the first level indicators on the equalization of basic public services, and on the other hand, it is necessary to consider the feasibility which means the data of the secondary indicators can or can not be obtained through authoritative reliable means such as the official website of the government. In addition, because the research object is Beijing-Tianjin-Hebei region, main index data of Beijing-Tianjin-Hebei region is less, so it is necessary to obtain data from Beijing statistical yearbook, Tianjin statistical yearbook and Hebei economic yearbook respectively. therefore, the unity of statistical indicators of three different data sources needs to be balanced at the same time.

The combination of absolute and relativity

Due to the large gap between Beijing-Tianjin-Hebei region in terms of administrative area, population size, and economic development level, it is difficult to compare the objective gap between the three areas only through the absolute value of evaluation index. therefore, in the index system construction, the basic public service level of Beijing-Tianjin-Hebei region is more compared with the relative value of the number of every ten thousand people have public service resources. In the 22 indicators, except for the number of school or institution of higher education, expenditure on R&D, unemployment rate in urban and the number of highways passenger traffic. The other 18 indicators are presented in the form of relative values, with a view to more rationally reflect the objective level of basic public services in Beijing-Tianjin-Hebei region.

The combination of comprehensiveness and typicality

The narrow sense of basic public service includes education, medical, social security and many other fields, and the various fields including more specific measures, for example education services can be measured by the proportion of education in public finance expenditure, number of school or institution of higher education, teachers-students rate in middle school, kindergarten enrolment rate and other specific indicators. This paper selected some indicators closely related to people's life, especially specific indicators related to balance the level of Hebei Province undertaking the Beijing non-capital function. Such as the education service contains R & D expenditure index considering the lack of talent in Hebei Province, because of the high level of scientific research funding support in Beijing and Tianjin is much higher than Hebei Province, resulting in the serious uneven distribution of talent in the Beijing-Tianjin-Hebei region. Therefore, the typical index of R& D expenditure is analyzed, with a view to analyze the typical problems of the equalization of basic public services in the region at the same time as the overall evaluation of the basic public service level of Beijing-Tianjin-Hebei region.

2.2 Constructing the indicator system

There is no uniform definition of the concept of basic public services in academic circles in China. scholars have classified the basic public services as the following three opinions: "narrow - school" scholars such as Song Ying-fa, Bao Xing-rong advocate the integration of social public services with the nature of civil rights into the category of equalization, such as public education, social security and public health care, etc.; Chen Chang-sheng as a representative of "wide school", thinks basic public services contains production, living infrastructure, environmental protection and other economic services, education, medical care, social security and other social services, as well as general administrative management, law, justice and other maintenance services; Chang Xiu-ze, Chen Hai-wei and Zhu Ling as a representative of "Middle school", advocate that the equalization of public services should not be too broad or narrow, and that the scope should be moderate, emphasizing the inclusion of employment, social security, basic education, basic medical care, public culture, public welfare infrastructure, environmental protection, public safety services and so on^[12]. Based on the previous scholars' research, this paper combines with the above index system construction principles, chooses

the factors to promote the free movement of talents in Beijing-Tianjin-Hebei region, and promote the development of the coordinated development, the index system of equalization of basic public service in Beijing-Tianjin-Hebei region consists of education services, medical services, employment services, housing security services, infrastructure services, culture-sports services and social security services.

Table 1 The index system of equalization of basic public service in Beijing-Tianjin-Hebei region

First level indicators	Second level indicators
Education services	The proportion of education in public finance expenditure
	Number of school or institution of higher education(unit)
	Number of every ten thousand persons have full-time teachers (person)
	Expenditure on R&D(100 million yuan)
Medical services	The proportion of medical treatment and health in public finance expenditure
	Number of every ten thousand persons have health institution(unit)
	Number of every ten thousand persons have medical technical personnel(person)
	Number of every ten thousand persons have beds in health care institutions(bed)
Employment services	The proportion of social security and employment in public finance expenditure
	The proportion of employed population in permanent population
	Unemployment rate in urban
Housing security services	Number of every ten thousand persons have completed area of social housing construction(10,000m ²)
	Number of every ten thousand persons have investment in real estate development(100 million)
	Per capita housing construction area of urban residents(m ²)
Infrastructure services	Number of every ten thousand persons have total length of highways(km)
	Number of highways passenger traffic(10,000 persons)
	The proportion of internet users in permanent population
Culture-sports services	The proportion of Culture,sports and communications in public finance expenditure
	Number of mass art centers and cultural centers(unit)
	Number of every ten thousand persons have total collection in public libraries(10,000 volumes)
Social security services	Insured persons rate in urban employees basic endowment insurance
	Insured persons rate in urban employees basic medical insurance

2.3 Data processing and analysing

Data sources

The research data are obtained from the Beijing statistical yearbook in 2016, the Tianjin statistical yearbook in 2016, and the Hebei economic yearbook in 2016. Due to the absolute number of each project expenditure is only published in the Tianjin statistical yearbook in 2016, the proportion of each expenditure in public expenditure is calculated. In addition, in order to compare objectively the difference of the basic public service level of Beijing-Tianjin-Hebei region, some second level indicators were adopted to the amount of resources owned by every ten thousand person, and the population is calculated according to the resident population and urban population in the main index of Hebei economic yearbook in 2016.

Dimensionless processing of data

Due to the differences in the nature and form of each index, some of the data is absolute value, and the other proportion is presented as a percentage, which is difficult to be compared. This paper selects the mean value method to deal with the original data, which means the value of each variable divided by the average of the variable. After standardization, the average value of each variable is one, the standard deviation is the coefficient of variation of the original variable.

The process of index weight assignment

At present, two methods of determining the index weight are subjective weight and objective weight. As an objective weighting method, entropy method can not only reflect the effect value of index information, but also overcome the overlap of information between indicators. it is widely used in the field of social and economic research. this paper uses entropy method to determine the index weight, the specific calculation process is as follows.

$$\text{proportion of each indicator value in each region: } Y_{ij} = \frac{X_{ij}}{\sum_{i=1}^m X_{ij}} \quad (1)$$

$$\text{information entropy of Indicator: } e_j = -k \sum_{i=1}^m (Y_{ij} * \ln Y_{ij}), \quad k = \frac{1}{\ln(m)} \quad (2)$$

$$\text{Information entropy miscellaneous degree: } d_j = 1 - e_j \quad (3)$$

$$\text{weight of indicators: } w_j = \frac{d_j}{\sum_{j=1}^n d_j} \quad (4)$$

$$\text{Single-indicator score: } S_{ij} = W_j * X_{ij} \quad (5)$$

(“m” means the number of areas, “n” means the number of indicators)

2.4 The score of indicators

Table 2 The score of indicators

First level indicators	Second level indicators	Beijing	Tianjin	Hebei
Education services	The proportion of education in public finance expenditure	0.008513	0.012537	0.014850
	Number of school or institution of higher education (unit)	0.007920	0.005567	0.008418
	Number of every ten thousand persons have full-time teachers (person)	0.010011	0.007562	0.012560
	Expenditure on R&D(100 million yuan)	0.154362	0.039271	0.056904
Medical services	The proportion of medical treatment and health in public finance expenditure	0.015151	0.019861	0.031290
	Number of every ten thousand persons have health institution(unit)	0.043833	0.030800	0.096608
	Number of every ten thousand persons have medical technical personnel(person)	0.056892	0.028222	0.024159
	Number of every ten thousand persons have beds in health care institutions(bed)	0.002190	0.001755	0.001964
Employment services	The proportion of social security and employment in public finance expenditure	0.012040	0.011053	0.018766
	The proportion of employed population in permanent population	0.000138	0.000147	0.000144
	Unemployment rate in urban	0.017357	0.043703	0.044952
Housing security services	Number of every ten thousand persons have completed area of social housing construction (10,000m ²)	0.077549	0.092550	0.021958
	Number of every ten thousand persons have investment in real estate development(100 million)	0.079503	0.049396	0.023565
	Per capita housing construction area of urban residents (m ²)	0.012960	0.008453	0.014670
Infrastructure Services	Number of every ten thousand persons have total length of highways (km)	0.030070	0.031904	0.074126
	Number of highways passenger traffic (10,000 persons)	0.073005	0.063694	0.020788

First level indicators	Second level indicators	Beijing	Tianjin	Hebei
	The proportion of internet users in permanent population	0.009693	0.009945	0.006419
Culture-sports services	The proportion of culture, sports and communications in public finance expenditure	0.010041	0.006985	0.006854
	Number of mass art centers and cultural centers(unit)	0.066987	0.063638	0.602883
	Number of every ten thousand persons have total collection in public libraries(10,000 volumes)	0.273328	0.109504	0.029576
Social security services	Insured persons rate in urban employees basic endowment insurance	0.071557	0.041707	0.023566
	Insured persons rate in urban employees basic medical insurance	0.083534	0.043402	0.026691

2.5 Conclusion of data analysis

According to the Table 2, generally there is still a big gap in the social security services, infrastructure services, housing security services, education services in Beijing-Tianjin-Hebei region. The indicators which Beijing and Tianjin are significantly higher than Hebei are: R & D expenditure, number of every ten thousand persons have medical technical personnel, number of every ten thousand persons have beds in health care institutions, unemployment rate in urban,

number of every ten thousand persons have completed area of social housing construction, number of every ten thousand persons have investment in real estate development, number of highways passenger traffic, the proportion of internet users in permanent population, the proportion of culture, sports and communications in public finance expenditure, number of every ten thousand persons have total collection in public libraries, insured persons rate in urban employees basic endowment insurance and insured persons rate in urban employees basic medical insurance.

The indicators which Hebei is higher than Beijing and Tianjin are: The proportion of education in public finance expenditure, number of school or institution of higher education, number of every ten thousand persons have full-time teachers, the proportion of medical treatment and health in public finance expenditure, number of every ten thousand persons have health institution, the proportion of social security and employment in public finance expenditure, per capita housing construction area of urban residents, number of every ten thousand persons have total length of highways and number of mass art centers and cultural centers.

In addition, the proportion of employed population in permanent population was essentially flat in Beijing-Tianjin-Hebei region.

Compared to each specific indicators in Beijing-Tianjin-Hebei region, the largest gap is social security services. Although the index system only select some indicators which are closely related to the basic pension of urban workers and medical insurance, but in general which can reflect the overall level of social security services. Beijing is more than three times than Hebei, Tianjin is about twice than Hebei. Although the basic old-age insurance and medical insurance coverage of urban and rural residents is high in Hebei Province, it is still lower than Beijing's new rural cooperative rate of 99.3% in 2015.

In the aspect of infrastructure services, a major abstract in Beijing-Tianjin-Hebei region cooperative development is to achieve traffic integration, so the infrastructure services indicators select the absolute and the relative value to measure traffic conditions, while increasing the era of large data indispensable Internet penetration indicator. Hebei ranks first, Beijing ranks third in the indicator of number of every ten thousand persons have total length of highways. because the larger administrative area in Hebei and Beijing population concentration. For number of highways passenger traffic, Beijing highways passenger traffic is close to Hebei four times, Tianjin is three times than Hebei, which shows Beijing and Tianjin population is dense and high turnover rate. For the proportion of internet users in permanent population, Tianjin ranks first, Beijing ranks second and Hebei ranks third, but the gap between Beijing and Tianjin is slight, Hebei behind more, which Indicates that residents living is relatively isolated, the level of living is not high in Hebei.

In the aspect of housing security services, Tianjin ranks first, Beijing ranks second, Hebei ranks

third in the indicator of number of every ten thousand persons have completed area of social housing construction, which in the number of every ten thousand persons have investment in real estate development, Beijing ranks first, Tianjin ranks second and Hebei ranks third. Combined with above two indicators, Beijing's real estate industry develops rapidly, Hebei's real estate industry development is insufficient, in addition, Hebei ranks first in the indicator of per capita housing construction area of urban residents. therefore, Hebei provincial government can vigorously develop the real estate industry in future to stimulate local economic development and be a big bright spot to attract talents.

In the aspect of education services, Hebei is higher than Beijing and Tianjin in the number of school or institution of higher education, because the larger administrative divisions, the more population and more demand for education, but the institutions of higher education institutions include scientific research institutions, undergraduate colleges, colleges, higher vocational schools, adult institutions of higher education and other private higher education institutions. Although the absolute number of higher education institutions in Hebei is more, but the higher level and the more financial support of 211 colleges and universities is only one, and located in Tianjin. Therefore, Hebei should increase the high-level research-oriented talent, attract and strengthen the teaching staff to enhance the quality of education. In the R & D expenditure, Tianjin, Hebei and Beijing there is still a big gap, therefore, Beijing-Tianjin-Hebei region need to coordinate the allocation of educational resources to achieve balanced allocation, or allow students enjoy the preferential policies for education like Beijing.

In the aspect of medical services, Hebei ranks first in the proportion of culture, sports and communications in public finance expenditure.

Number of every ten thousand persons have total collection in public libraries.

Beijing-Tianjin-Hebei region has a relatively balanced development in the number of every ten thousand persons have beds in health care institutions, but Hebei only ranks third in the number of every ten thousand persons have medical technical personnel. Because health agencies not only include the hospital but also contain community health service centers, street hospitals, township hospitals, village clinics and clinics. And primary health care institutions accounted for 96% in Hebei, therefore, Hebei need to enhance the level of health care workers.

In the aspect of cultural-sports services, Hebei ranks third in the proportion of Culture,sports and communications in public finance expenditure and number of every ten thousand persons have total collection in public libraries, due to the county-level mass art museums are more, Hebei is on the top of this Indicators. At present, the main form of cultural and sports services for the masses is entertainment services, it also need to increase the investment and guidance of reading and other in-depth study.

Finally, it is employment services, there is balanced in the proportion of social security and employment in public finance expenditure and the proportion of employed population in permanent population. But Beijing is far lower than Tianjin, Hebei in the unemployment rate in urban which is an important reason that a lot of people choose to Beijing: more employment opportunities. Therefore, Hebei need to invest and set up factories to provide policy support to attract large enterprises to Hebei, adjust Hebei's economic structure, provide more employment opportunities and promote economic development.

3 The suggestions of optimizing basic public services in Hebei Province

3.1 Change the passive attitude of government “to rely on”, to take the initiative to do something

Administrative system is one of the biggest obstacles in the process of in Beijing-Tianjin-Hebei region collaborative development. Beijing is the unshakable key position, although the beijing- tianjin-hebei collaborative planning outline that Beijing is defined as “the national political center, cultural center and international communication center, science and technology innovation center, Tianjin is the” national advanced manufacturing research and development base, the northern international shipping core area, financial innovation demonstration area, advanced reform and opening area”. Hebei is “the national important modern commercial logistics base, the industrial transformation and upgrading test area, the new type of urbanization and urban and rural areas as a whole demonstration area, ecological environment of Beijing-Tianjin-Hebei support area”, therefore, to a certain extent,

Hebei needs to support and service the development of Beijing and Tianjin, But on this basis, Hebei needs to clear own development direction, seeks help for the central government actively, active request in collaborative cooperation of Beijing-Tianjin-Hebei, promote the basic public service level of ascension in hebei, for example, in terms of the number of the college education institution, Hebei is higher than Beijing and Tianjin, Hebei provincial government needs to actively reflect the situation to the central government, apply for resources, create better public service condition for permanent residents in hebei, at the same time, which also increase chip to attract advanced talents.

3.2 Focus on improving the key service areas and effectively undertake the non-capital functions of Beijing

The perfect basic public service is the basis to attract elements like talent, capital and others. effectively undertake the Beijing non-capital function and enhance own economic development. However, Hebei services for Beijing and Tianjin in long terms so that its own economic development level is limited, the basic public service level is insufficient, on this basis, the promotion of the Beijing-Tianjin-Hebei cooperation need to focus on important aspects and gradually upgrade. First of all, for the talent attraction, social security services, housing security services, medical services and so on are closely related to people's life, and There is a huge gap between Hebei and Beijing and Tianjin in social security services and medical services, so it is necessary for the government to increase public finance in social security, medical services, especially the cultivation and introduction of health technical personnel. At the same time, due to the large administrative area and limited financial resources in Hebei Province, the key areas can be selected to make a breakthrough, especially in Langfang, Baoding and other places around Beijing. In addition, Per capita housing construction area of urban residents in Hebei is larger than Beijing and Tianjin, which is the beneficial digging point to attract talents, but the development of real estate is insufficient. therefore, the government should stimulate the land development of real estate enterprises through public policy, guarantee the housing demand after the transfer of talents, and lay the foundation for carrying on the functions of Beijing non-capital.

3.3 Establish a trans-regional horizontal financial transfer payment system to provide material security

One of the important reasons for the scar gap of basic public services in Beijing-Tianjin-Hebei region lies in the fiscal gap between local governments. For areas with a high degree of "financial autonomy", the efficiency of the use of public service projects is high, and the residents of the region may be more satisfied with public service.^[13] in order to realize the equalization of basic public services, we must rely on the financial transfer payment system to narrow the gap of local financial ability. China adopts the vertical financial transfer payment system, there is no normative transfer payment system in the normative sense, but in practice, the phenomenon of the transfer of financial funds between places exists. The transverse financial transfer payment system is based on the paid type of the market principle, and the allocation path of the public goods should also consider the role of the market mechanism. to play the decisive role of the market in the resource allocation, establish a cross-regional horizontal financial transfer payment system, and provide material security for the upgrading of basic public service level in Hebei Province. On the basis of the total financial amount, the financial expenditure structure should be rationally allocated, and the basic public services expenditure in priority areas should be increased as a priority.

4 Conclusions

Because of the administrative system and the layout planning, Hebei is always in the passive position of serving Beijing and Tianjin in the coordinated development of Beijing-Tianjin-Hebei region, but Hebei can not ignore its own development, especially the Beijing-Tianjin-Hebei cooperation development strategy proposed to undertake the functions of Beijing non-capital, which should be an opportunity to drive regional development for Hebei. Of course, the iron also needs its own hard, so Hebei needs to focus on improving the basic public service level in the region to provide protection for industrial transfer, enterprises invest to build factories and the introduction of talents. Combined with the analysis above, the basic public services in Hebei Province should mainly grasp the following

points, using the local per capita housing construction area is much higher than the advantages of Beijing and Tianjin to promote the development of the real estate industry, and create a bright spot to attract talents; Increasing the expenditure of R&D to provide guarantee for the research and development of scientific researchers; Cultivating and introducing high level health technical personnel to improve the level of health service; Improve the transportation, network and other infrastructure services, expand the internet penetration, etc. And gradually improve the basic public service level. Of course, this paper still needs to be improved, such as the index system design needs more comprehensive and scientific reflection of the basic service level, which will be improved in the future study.

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Research on the Formation Mechanism of Initial Trust of Mobile-Government Users: Based on the Perspective of Social Capital

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Abstract The Mobile-Government is an important embodiment of Internet Plus E-Government. Enhancing initial trust of Mobile-Government users, and promoting public adoption of Mobile-Government have become an important way to achieve modernization of national governance. Regarding public perception as the medium variable, trust tendency as the moderate variable, the research designed a model of the formation mechanism of social capital on the initial trust of Mobile-Government users. Then, the researcher collected data by questionnaire and analyzed it with hierarchical regression analysis. The results showed that social capital has a positive impact on the initial trust of Mobile-Government users; the public perception plays a mediating role between social capital and initial trust of Mobile-Government users; the moderating effect of trust tendency between public perception and public's initial trust is not significant, but the main effect of it on public's initial trust is significant. Finally, the research put out suggestions to improve initial trust of Mobile-Government users based on the perspective of social capital.

Key words Social capital, Mobile-Government, Initial trust, Public perception, Trust tendency

1 Introduction

With the emergence of mobile Internet and new social media, Microblog, WeChat and other applications have been widely used in government public services. According to statistics, there have been more than 164,000 users having registered Sino Government Affairs Microblog and over 34,000 Toutiao accounts for government affairs created in China as of December 2016, covering numerous fields like public security, medical treatment and party and government administration^[1]; this has set off a craze for mobile government. The so-called mobile government is a new mode of e-government in which government departments, in the Web 2.0 environment, takes Government Affairs Microblog, Government Affairs WeChat and Government Affairs Client as platforms to complete release and disclosure of information, response to public demands and network public opinion guiding; it is an important embodiment of "Internet Plus Government Services"^[2]. In the high-risk state, the virtuality of online mobile government services gives users a feeling of insecurity, and its emphasis on construction and technology and neglect of application and service in the course of development has, to some extent, ignored users as its important service targets, which further reduces users' expectations and trust. Trust is an important factor affecting users' adoption of mobile government, which to some degree relates to the success or failure of mobile government.

Initial trust is the starting point of trust concerning whether users are willing to take the "First step" of adoption^[3], which is crucial to the development of mobile government. In this study, it is believed that at the stage of initial trust, users tend to gain cognition from social network^[4] and decide whether or not to offer trust based on their own knowledge structure due to lack of experience. Since various dimensions of social capital such as network structure, network information diffusion and network standard are tightly bound to the social network properties of mobile government^[2], which can well explain users' initial trust in mobile government, this paper attempts to discuss the mechanism affecting users' initial trust in mobile government from the perspective of social capital.

2 Literature review

2.1 Social capital

Social capital theory is an emerging sociological theory coming into being in 1980s to 1990s. This

theory mainly explains the deep social relationships between individuals, between organizations and between individuals and organizations from the social attribute of interpersonal interaction, which provides a strong framework for explaining issues related to economic growth, social development, political democratization, etc. Bourdieu first puts forward that social capital is a resource with which individuals integrate into social organizations or groups to form different network connections and obtain trust and commitment from network, and therefore it has obvious network properties. Later, Coleman points out that social capital is a social structural resource owned by individuals and hidden in social organizations or social network, and it is an approach for individuals to acquire social capital to become a member of the network or establish network ties. Dimensions of social capital are classified in various ways. In this study, the three dimensions classified by Chiu et al. (2006) are adopted, namely, structural, relational and cognitive dimensions^[5].

2.2 Users' initial trust in mobile government

Trust theory was first proposed by Simmel, who held that interactions between people generate social relationships and trust is an important foundation for maintaining interaction and relationships. Fukuyama believed that trust is a reasonable expectation arising from people in a normative and reciprocal community. McKnight, DH (2002) divided the development of trust into three stages: the establishment of initial trust, trust maintenance and trust decline. The initial trust is formed by two sides in the absence of pre-contact. Accordingly, this research considered that the initial trust of Mobile-Government users means a positive expectation or preference of the users towards the mobile government before they initially contact it.

Initial trust can help reduce risk perception and uncertainty and plays an important role in promoting the adoption of Mobile Government. The relatively typical initial trust models in the existing research include the ones proposed by McKnight, DH (2002)^[3] and by Liu Xin (2008)^[4]. These theoretical models are based on the rational behavior theory or the technology acceptance model, and they are suitable for the trust analysis of traditional PC-side users. Under this model, the users' behaviors are often independent. Based on the new social media platform, the Mobile Government has obviously the social network attribute. The network itself is a huge source of information and can restrict, regulate and assimilate the perception and behaviors of its internal members. These features have not been systematically discussed under the existing analysis framework.

3 Research hypotheses and theoretical models

3.1 The logical relationship and hypothesis of social capital and the initial trust of Mobile-Government users

Mobile-Government users form different sizes of virtual social networks through interactions in the social platform. The users' information can be quickly interacted and shared in the networks and the network members often share certain consensus and value norms and influence others to different degrees. The Mobile Government, which has clear attributes of social network, has an indissoluble bond with social capital. There have been academic researches about the relationships between social capital and new social media and the trust, participation and adoption of Mobile-Government users^[2]. This research will further explore whether there is a link between social capital and the initial trust of Mobile-Government users and analyzes the mechanism for social capital to influence the trust of Mobile-Government users from three dimensions: structural, relational and cognitive.

The structural dimension means that social capital represents an overall structure of social relations between people and can be measured by indicators such as centrality and interactive relation. As Lin Nan stressed, the acquisition of social capital depends on the existing resources, embedded network structure and interaction. Wasserman and Faust argued that centrality is a manifestation of the status of members in the network of relationships and the degree of network embedding. The more central members tend to be active and are more likely to cooperate with others or accept others^[6]. Interactive relation refers to the frequency of contact, depth of interaction, and degree of relation between network members. Fuhrer C used the social network analysis method to study the relationship between social capital and the adoption of social platform and found that members in different network positions develop different trust and adoption tendency towards the social platform^[7].

The relational dimension means that social capital is the relational network built by people through the interaction and from which community recognition, member support, organizational commitment, and reciprocity norms are obtained. Recognition mainly refers to the trust between members and trust is the basis of cooperation and promotes the full communication and sharing of information within the network; support refers to the knowledge, technology and emotional assistance that network members provide for each other and it facilitates the dissemination of Mobile-Government information and platform promotion; organizational commitment emphasizes that the network provides environmental protection for the members; reciprocity norms refer to the benefits that individuals get from others. The trust of Mobile-Government users is a kind of new social media trust influenced by the social order and interpersonal relationships; it is also the extension of the government trust in the new social media platform and will be influenced by the government image and reputation, as indicated by Zhu Duo-gang (2015) et al^[8].

Nahapiet and Ghoshal believed that sharing in language and communication can facilitate the formation of a resource-sharing network within the members. The sharing of certain consensus among the members is reflected in their shared views on things and the sharing of language and coding, culture and values, vision, and ethics^[9]. Common language and experience can enhance the ability of the members to share and make barrier-free communication of information and resources possible; the common vision and value provide the impetus for the members to learn and share knowledge with each other. Therefore, the cognitive dimension of social capital well accounts for collective action and its internal communication process. A Dabbs (2002) showed that shared culture and cognition can stimulate individuals within an organization to actively share resources and direct their behaviors automatically towards the interests of the group to reduce the transaction costs of information and communication^[10]. Warren A M et al. (2015) argued that interaction, language sharing and cognitive sharing can increase the trust between members and between members and the new social media in new social media networks^[11].

Based on this, the following hypotheses are made in this research:

H1 social capital has a positive effect on the initial trust of Mobile-Government users; H1a structural dimension has a positive effect on the initial trust of Mobile-Government users; H1b relational dimension has a positive effect on the initial trust of Mobile-Government users; H1c cognitive dimension has a positive effect on the initial trust of Mobile-Government users.

3.2 The logical relationship and hypothesis of user perception in social capital and the initial trust of Mobile-Government users

As a psychological attitude, trust is a psychological expectation that an individual has of other individuals or organizations. Under the influence of social capital, the users develop initial understanding and perception of Mobile Government and calculate its risk and profit ratio to determine whether to trust it or not. In other words, the users' perception of Mobile Government determines their level of trust. Based on TAM, the academic circle explores the influence of different external variables on the initial trust of users through perceived usability and perceived accessibility. For example, Liu Yu-peng et al. (2016)^[12] found that perceived usability, perceived accessibility and perceived safety are important factors that influence in initial trust. At the same time, based on the relational model^[13] of e-government trust and risk proposed by F Belanger, the risk perception will decrease and the user trust will be enhanced if the transparency of Mobile Government operations increases and uncertainties decrease.

In addition, many scholars such as Tsai, CH (2014)^[14] found that social capital has significant effects on perceived usability, perceived accessibility and perceived safety. Based on this, this research argues that the user perception is a bridge between social capital and the initial trust of Mobile-Government users and makes the following hypotheses:

H2 user perception plays a mediating role between social capital and the initial trust of Mobile-Government users; H2a perceived usability plays a mediating role between social capital and the initial trust of Mobile-Government users; H2d perceived accessibility plays a mediating role between social capital and the initial trust of Mobile-Government users; H2g perceived safety plays a mediating role between social capital and the initial trust of Mobile-Government users.

3.3 The logical relationship and hypothesis of trust tendency in user perception and the initial trust of Mobile-Government users

Situational theory suggests that individual behavior or thought is influenced by personality traits or motivations. The same is true of trust. Due to the differences in cultural background, personality traits, and life experience, individuals' expectations of others are different, or the trust tendency is different. Trust tendency is a kind of intrinsic trust value of a user. It is usually stable in a certain period of time and is less susceptible to the external environment, but it can adjust the trust attitude and behavior choice of a user. In the initial trust model of e-government constructed by Liu Xin (2008), trust tendency is regarded as an important factor influencing the formation of trust concept^[4]. Trust is essentially an individual's subjective expectation of others' social preference for allowing the interests of the other party in practical actions. The greater the social preference, the stronger the trust in others is. It can thus be inferred that user perception influences the initial trust of Mobile-Government users, and the trust tendency may increase or decrease the degree of trust. The following hypotheses are proposed:

H3 trust tendency has a positive effect on the initial trust of Mobile-Government users; H4 trust tendency plays a regulatory role in user perception and the initial trust of Mobile-Government users; H4a trust tendency plays a regulatory role in perceived usability and the initial trust of Mobile-Government users; H4b trust tendency plays a regulatory role in perceived accessibility and the initial trust of Mobile-Government users; H4c trust tendency plays a regulatory role in perceived safety and the initial trust of Mobile-Government users.

Based on the above hypotheses, the theoretical model of this research is shown in Figure 1:

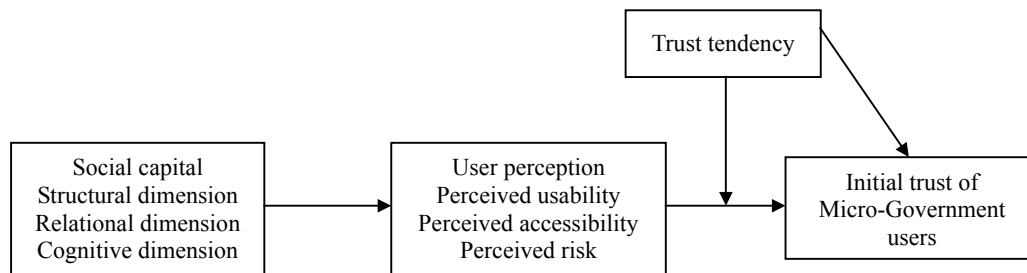


Figure 1 Theoretical model of the initial trust of Mobile-Government users

4 Research design

4.1 Definition and measurement of variables

This research mainly involves five variables, namely: social capital, user perception, trust tendency, initial trust of Mobile-Government users, and control variables. First of all, specific measurement items are selected based on the operational definitions of the five variables above; then, they are measured with the Likert five-scale measurement in which "1" represents "totally disagree" and "5" represents "totally agree".

4.2 Data collection and sample descriptive statistics

In this study, the Likert five-scale measurement by questionnaire is used and 600 questionnaires were distributed in Beijing, Shanghai, Guangzhou, Wuhan and Chengdu (October - December, 2016). With the ineffective questionnaires excluded, 524 effective questionnaires were collected and the effective response rate was 87.3%, which met the sampling requirement. According to the data collected, the proportions of men and women were basically the same; most of the respondents had a network history of 7-9 years, accounting for 46.1%; 48% of them held an undergraduate degree; in terms of occupation, 69.7% of them were students; the respondents were mainly aged from 20 to 39, accounting for 82.5% of the total.

5 Data analysis and discussion of results

5.1 Reliability and validity analysis

The Cronbach's alpha reliability coefficient and CR reliability test were used to test the internal consistency of the data scale. The results showed that the variables had Cronbach's Alpha and CR values greater than 0.7, indicating that the scale had high reliability. The validity was measured by convergent validity and discriminant validity and the results showed that the AVE values were greater than 0.5. The measured variables all had factor loading over 0.7, indicating that there was good convergence validity between the variables.

5.2 Hierarchical regression analysis of mediating effects

According to the test method of mediating effect proposed by Wen Zhong-lin^[15], the regression equation of mediating effect is as follows:

$$Y=cx+e1 \tag{4-1}$$

$$M=ax+e2 \tag{4-2}$$

$$Y=c'x+bM+e3 \tag{4-3}$$

Table 1 Test results of mediating effects

x \ Y	PS	PU	PEU	PT			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
SN	0.087*	0.024*	0.129*	0.254***	0.150**	0.222***	0.228***
SR	0.284**	0.431***	0.418***	0.081*	0.013	0.074	0.002
SC	0.252*	0.281**	0.132*	0.416***	0.222***	0.144*	0.287***
PS					0.575***		
PU						0.590***	
PEU							0.365***
R2	0.274	0.432	0.328	0.414	0.639	0.607	0.507
F	17.363***	34.024***	22.191***	60.679***	113.564***	99.434***	66.071***

* represents $p < 0.1$; ** represents $p < 0.01$; *** represents $p < 0.001$

The mediating effect test is shown in Table 1. In model 4, the initial trust of Mobile-Government users was the dependent variable and the three dimensions of social capital were the independent variables in the regression analysis. The effects were 0.254*, 0.081*, and 0.416**, and all had significant positive effects. In other words, the coefficient c was significant, and H1 and its corresponding hypothesis held. Then, to test whether the coefficients b was significant, the three dimensions of user perception were the dependent variables in model 1, 2 and 3. The results showed that the relational dimension and the cognitive dimension of social capital had significant effects on the three dimensions of user perception. Model 5, 6 and 7 included the dimensions of user perception on the basis of model 4 and the results showed that the effect coefficients of the three dimensions of social capital on the initial trust of Mobile-Government users dropped, coupled with the significant coefficients a, b, and c in the mediating effect equation, indicating that user perception played a mediating role between social capital and the trust of Mobile-Government users. Judging from the significance of coefficient c', the relational dimension of social capital lost its significance to the initial trust of Mobile-Government users when the three dimensions of user perception were the mediating variables and the cognitive dimension of social capital lost its significance to the initial trust of Mobile-Government users when the perceived safety was the mediating variable, namely: c' was not significant and was complete mediation. The other effects were all significant and were partial mediation. H2 and its corresponding hypothesis were true.

5.3 Hierarchical regression analysis of mediating effects

The moderating effect analysis method proposed by Wen Zhong-lin^[32] was used in this research and the regression equation is as follows:

$$Y=aX+bM+c \tag{4-4}$$

$$Y=aX+bM+dX' * M' + c \tag{4-5}$$

When the independent variables, dependent variables and regulatory variables were all significant

variables and the independent variables and adjustment variables were continuous variables, regression models with product were used for hierarchical regression analysis. The results of the analysis are shown in Table 2. The product of the interaction between the three dimensions of user perception and trust tendency was added to model 11, 12, and 13, and the results showed that the interaction coefficients were not significant and the resulting R² change was small. It can be seen that trust tendency did not have significant moderating effects on the three dimensions of user perception and the initial trust of Mobile-Government users. H4 and its corresponding hypothesis were not valid. In other words, the effect of user perception on initial trust was not affected by trust tendency. It is noteworthy that the R² value was increased from 0.688 to 0.742 when trust tendency was added to model 10, different from model 9, and trust tendency had a more significant effect on the initial trust of Mobile-Government, which indicated that trust tendency had a significant main effect on the initial trust of Mobile-Government. This was consistent with the research finding of Zhu Duo-gang (2015)^[8]. Thus, H3 was true.

Table 2 Analysis results of moderating effects

Y	PT					
	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13
x						
SN	0.254***	0.163***	0.088*	0.086*	0.085*	0.079*
SR	0.081*	-0.083*	-0.138**	-0.137**	-0.134**	-0.129**
SC	0.416***	0.113*	0.122*	0.123*	0.121*	0.114*
PU		0.336***	0.295***	0.293***	0.293***	0.287***
PEU		0.058*	0.004*	0.007*	0.005*	0.006*
PS		0.381***	0.361***	0.358***	0.359***	0.357***
PC			0.293***	0.288***	0.285***	0.275***
PEU×PC				-0.018		
PS×PC					-0.020	
PU×PC						-0.066
R ²	0.414	0.688	0.742	0.742	0.742	0.745
ΔR ²	0.414***	0.274***	0.054***	0.000	0.000	0.003
F	60.679***	93.559***	104.318***	91.044***	91.066***	92.557***

* represents p<01; ** represents p<0.01; *** represents p<0.001

6 Conclusion and suggestions

6.1 Conclusion and contribution

Based on the social network attributes of Mobile-Government, this research introduces the social capital theory and validates that social capital has a positive effect on the generation of initial trust in Mobile-Government users. This effect is not entirely direct; it is mediated by user perception to indirectly affect the generation of initial trust. In addition, the trust tendency of users has a positive effect on the generation of initial trust, but it does not moderate the role of user perception in initial trust. From the theoretical point of view, this research can enrich the theoretical studies of social capital and initial trust; from the practical level, it provides operational guidance for enhancing the trust of Mobile-Government users.

6.2 Suggestions

Enriching social capital is an important way to enhance the initial trust of Mobile-Government users. (1) In terms of structural dimension, offline social self-organization and online virtual communities should be fostered and guided and their roles in disseminating information and communicating emotions in society should be made use of. (2) In terms of relational dimension, the use of social network platforms for malicious marketing should be reduced as this will overdraft social credibility. It is more important to nurture and enhance social norms and trust. (3) In terms of cognitive dimension, the government information shared by “big V” opinion leaders in social networks tend to attract the attention, praise and re-tweet of other users and this is the “celebrity effect”. Therefore, the active guidance role of government information subscriber accounts and opinion leaders should be given full play to foster social consensus and cultivate the initial trust of Mobile-Government users.

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Research on the Influence Factors of Governmental Support for Chinese Foundations

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Abstract Currently, the development level of the Chinese foundations is relatively low, and there exist many issues that need to be solved by the collaboration between the government and foundations. In this paper, the Chinese 112 foundations subsidized by the government in 2015 are studied by employing the multiple regression analysis to analyze the influence factors of governmental support for foundations. The outcomes reveal: there are significant correlations between government subsidies and leader number, foundation type, management efficiency and nongovernmental subsidy income, individually, which indicates that leader number, foundation type, management efficiency and nongovernmental subsidy income will affect the governmental support for the foundations; board size and public welfare projects will not affect the governmental support for the foundations. Also, some corresponding policy proposals are proposed to promote the development of Chinese foundation.

Key words Chinese foundation, Governmental support, Influence factors, Multiple regression analysis

1 Introduction

Chinese foundations have developed more than thirty years, since the first foundation was founded in 1980s. Originally, the Chinese foundations are affiliates of the government, not of nongovernmental organizations. With the transformation of government functions, foundations need to undertake more social functions and get more development space.

Since 1981, Chinese foundations grew rapidly over the past three decades, which could be divided into three periods: first, the slow development period from 1981 to 1995. In 1981, there were seven foundations established in China. However, Chinese foundations developed slowly after that. The number of organizations increased at a low speed. Second, the smooth transition period from 1995 to 2004. In 1995, the People's Bank of China issued the "Notice on Further Strengthening the Foundation's Management", and established a strict policy on foundation examination, approval and management. Then Nongovernmental organizations were regulated and re-registered from 1997 to 2000. In this period, most Chinese foundations made no further development. Third, the rapid development period since 2004 from now. In 2004, the State Council promulgated the Regulations on Foundation Administration, which was implemented from June 1, 2004. Since that, the number of China's Foundation grew rapidly. As of July 5, 2017, there are 5965 foundations in China.

The United States with a history of more than 100 years has 86726 foundations. Compared with American foundations, Chinese foundations are relatively immature. The government has been playing an important role in the development of Chinese foundations, which attracts the attention of scholars to study the relationship between the government and the foundations. Therefore, obtaining governmental support is very important for the development of China foundations.

This paper studies the influence factors of governmental support for foundations and discusses the direction of the reform of Chinese foundations in the future.

2 Methodology

2.1 Research hypothesis

In general, Chinese foundation incomes include donation, government subsidy, investment and other incomes. The amount of government subsidy reflects the strength of governmental support for foundations. Therefore, this paper considers the amount of government subsidy as a dependent variable that reflects the strength of governmental support for foundations. The independent variables which

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affect government subsidy include foundation structure, foundation type, management efficiency and public welfare projects.

(1) Foundation structure

Every foundation exists a council which plays an important role in the management process of the foundation. Bradshaw, Murray and Wolpin argued that the size of and the standardization of the councils, and the number of committees would have impacts on the performance of nonprofit organizations (Bradshaw, Murray and Wolpin, 1992^[1]). Callen, Klein and Tinkelman focused on the impact of the composition of the councils and the Commission on nonprofit Organizations (Callen, Klein and Tinkelman, 2003^[2]). According to the resource dependency theory, larger councils are always associated with better performance in organizations. Because more directors represent broader benefits and provide organizations with more opportunities to obtain external resources (Siciliano, 1996^[3]). And some scholars pointed that many leaders in Chinese foundations lack professional skills, which impedes the development of the foundations (Han Yi-zhen, 2014^[4]). By contrast, Liu Li-long suggested that more leaders there are, more likely foundations are to obtain social resources (Liu Li-long, 2015^[5]). Based on the above literature, the scales of councils and the number of leaders in the councils are potential influence factors in the governmental support. Therefore, hypotheses 1 and 2 in this paper are following:

Hypothesis 1: Government subsidies are correlated with the number of councils

Hypothesis 2: Government subsidies are correlated with the number of leaders in the councils.

(2) Foundation type

The Chinese foundations can be divided into public foundations and private foundations, and public foundations are usually established under the guidance of the government. As can be seen, the association of public foundations with the government is closer than with private foundations. In addition, Han Lin-ming pointed out that public foundations have wider audience range than the private foundation, and their influence and responsibility in the society are greater (Han Lin-ming, 2016^[6]), which implies that public foundations are more possible to receive government subsidies than private foundations. Accordingly, the hypothesis 3 in this paper is following:

Hypothesis 3: There is a correlation between the government subsidies and foundation's types, in which the public foundations are more likely to receive government subsidies.

Dummy variable type=1(public foundations), type=0(private foundations)

(3) Management efficiency

The total expenditure of a foundation includes four aspects: the cost of business activities and financing, the management fees and other expenses. Petrovits discovered that organizations with excessive overheads are motivated to conceal their finances, and organizations with lower cost of management are willing to attract more public donations and government subsidies by revealing information (Petrovits, 2011^[7]). Weisbrod employed the ratio of management cost to total cost in foundations to measure the efficiency of organization management and found that organizations with high management efficiency tended to disclose their own information (Weisbrod, 1986^[8]). Hence, the hypothesis 4 in this paper is following:

Hypothesis 4: government subsidies are positively related to the efficiency of foundation management.

(4) Public welfare projects

Most foundations in China provide public services in the form of project operation, and the operation and management of projects constitute the core of organizational activities and the basic way of social commonweal behavior (Li Li, 2011^[9]). The development of public welfare projects is an important channel for foundations to raise funds (Jiang Hong-qing, 2012^[10]). Gui Cun-hui uncovered that the number of annual projects has a positive impact on the quality of information disclosure of foundations. Moreover, the higher the quality of the foundation's information disclosure is, the easier it is to obtain government subsidies (Gui Hui-cun, 2016^[11]). Thus, the hypothesis 5 in this paper is following:

Hypothesis 5: government subsidies are positively related to the number of public welfare projects in the foundation.

In addition to the above factors, the impact of foundations income, as a control variable, on government subsidies is also examined in this paper. The research from Petrovits indicated that the higher the income is, the better the financial condition of nonprofit organizations are, making it easier to obtain the governmental support. In addition, foundations with more income prefer to put some money into the organization, which strengthens the relationship with the government and the public and then receives more donations(Gordon, 2010^[12]). Based on the above literature, the ratio of the donated income to the total income and nongovernmental subsidy income were defined as control variables. Also, the hypotheses 6 and 7 in this paper are following:

Hypothesis 6: government subsidies are related to the ratio of the donated income to the total income.

Hypothesis 7: government subsidies are related to nongovernmental subsidy income.

2.2 Variable definition and model design

Variables and their definitions are shown in Table 1 below:

Table 1 Variables and their definitions

Variable range	Variable	Notation	Interpretation
Dependent variable	Strength of governmental support	SGS	The amount of government subsidy
Independent variables	Board size	BS	The number of people in the board
	Leader number	LN	The number of chairman and vice chairman in the council.
	Foundation type	FT	The public or private foundation
	Management efficiency	MAE	Management cost/ Total expenditure
	Public welfare projects	PWP	The number of annual projects
Control variables	Proportion of donated income	PDI	Donated income/ Gross income
	Nongovernmental subsidy income	NSI	Gross income- government subsidy

Model design:

This paper constructs a regression model for the influence factors of governmental support for foundations:

$$SGS = \alpha_0 + \alpha_1 BS + \alpha_2 LN + \alpha_3 FT + \alpha_4 MAE + \alpha_5 PWP + \alpha_6 PDI + \alpha_7 NSI \quad (1)$$

2.3 Empirical test

The top 200 foundations supported by government subsidies in 2015 are selected as the research samples. Their government subsidies account for more than 93% of the total government subsidies. Because of the difference in the internal management levels of the foundation, the disclosure of data is incomplete. This paper excludes 88 data-deficient foundations, and ultimately determines the foundation's effective sample of 112 cases. The data in this paper is from the basic information on foundations published by the China Foundation Center and the annual work report published by the Ministry of Civil Affairs. The regression analysis is achieved by STATA 14.0.

Regression results analysis:

Regression analysis results using the least squares method (OLS) are shown in Table 2.

Table 2 Model overall parameter (OLS)

Number of obs	F(7,104)	Prob>F	R-squared	Adj R-squared	White test Prob > chi2
112	13.98	0.0000	0.4849	0.4502	0.0012
Independent variables:(constant), BS, LN, FT, MAE, PWP, PDI, NSI					
Dependent variable: SGS					

The White test of the model shows that there is the heteroscedasticity in the model. Therefore, we need to select the weighted least squares (WLS) method for regression analysis. The results are as follows:

The regression results of the weighted least squares (WLS) method are as follows:

The regression coefficients and significance tests of the model are shown in Table 3.

Table 3 Regression coefficient and significance test (WLS)

SGS	Coef.	Std. Err.	t	p> t	95% Conf. Interval	
BS	0.0069955	0.0182081	0.38	0.702	-0.0291118	0.0431028
LN	-0.0853145***	0.0253593	-3.36	0.001	-0.135603	-0.0350261
FT	1.018637***	0.3375335	3.02	0.003	0.3492954	1.687979
MAE	0.0005906***	0.000108	5.47	0.000	0.0003765	0.0008048
PWP	-0.0091582	0.008827	-1.04	0.302	-0.0266624	0.0083461
PDI	-3.574765***	0.3735505	-9.57	0.000	-4.31553	-2.834
NSI	0.6350719***	0.0695675	9.13	0.000	0.497117	0.7730268
CONSTANT	6.112096***	1.9795373	6.24	0.000	4.169637	8.054555

t statistics in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

The results of the collinearity diagnosis of the model are shown in Table 4.

Table 4 Collinearity diagnosis of the model (WLS)

Variable	NIS	PDI	BS	PWP	LN	FT	MAE	Mean VIF
VIF	2.79	2.18	1.50	1.39	1.22	1.15	1.07	1.61
1/VIF	0.358050	0.459307	0.666187	0.718214	0.819365	0.872384	0.937354	

It can be seen from table 3 that there is no significant correlation between SGS and BS, and PWP, individually. In general, the VIF is greater than 5, which indicates that there is a significant correlation between the independent variables. As shown in table 4, the VIF values of all variance expansion factors are less than 3, which means that there is no multicollinearity between the independent variables. Therefore the two independent variables, BS and PWP, are removed.

The regression results of the weighted least squares method (Without BS and PWP) are shown in Table 5.

Table 5 Model overall parameter (WLS)

Number of obs	F(5,106)	Prob>F	R-squared	Adj R-squared
112	29.41	0.0000	0.5811	0.5614
Independent variables:(constant), LN, FT, MAE, PDI, NSI				
Dependent variable: SGS				

Regression coefficient and significance test are shown in Table 6.

Table 6 Regression coefficient and significance test (WLS)

SGS	Coef.	Std. Err.	t	P> t	95% Conf. Interval	
LN	-0.0829057***	0.0238692	-3.47	0.001	-0.1302288	-0.0355826
FT	1.033801***	0.3205846	3.22	0.002	0.3982109	1.669391
MAE	0.0005969***	0.0001064	5.61	0.000	0.000386	0.0008078
PDI	-3.554385***	0.3716323	-9.56	0.000	-4.291182	-2.817588
NSI	0.6119126***	0.0614648	9.96	0.000	0.4900527	0.7337725
CONSTANT	6.487784***	0.9045578	7.17	0.000	4.69441	8.281158

t statistics in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

It can be seen from the above analysis results that the F value , the P value of the partial variable, the R-squared value and Adj R-squared value are all better than the least squares regression analysis.

The modified regression model is obtained as follows:

$$SGS = 6.487784 - 0.0829057LN + 1.033801FT + 0.0005969MAE - 3.554385PDI + 0.6119126NSI \quad (2)$$

3 Results analysis and discussion

According to the empirical study, the hypothesis testing results of the influence factors of governmental support for foundations are shown in Table 7. The results indicate that leader number, foundation type, management efficiency, proportion of donated income and nongovernmental subsidy income are significantly related to the strength of governmental support. Foundation type and nongovernmental subsidy income were positively related to the strength of governmental support. Leader number, management efficiency and proportion of donated income were negatively related to the strength of governmental support. Therefore, the testing results are consistent with the hypotheses 2, 3, 6 and 7.

Table 7 Hypothesis testing results

Influence factors	Hypothesis	Test results	Conclusion
Board size	Hypothesis 1	Government subsidies are not related to the number of Councils	inconsistency
Leader number	Hypothesis 2	Government subsidies are negatively correlated with the number of leaders in the council	consistency
Foundation type	Hypothesis 3	Public foundations are more likely to receive government subsidies	consistency
Management efficiency	Hypothesis 4	Government subsidies are negatively correlated with the efficiency of foundation management	inconsistency
Public welfare projects	Hypothesis 5	Government subsidies are not related to the number of public welfare projects in the foundation	inconsistency
Proportion of donated income	Hypothesis 6	Government subsidies are related to proportion of donated income to total income	consistency
Nongovernmental subsidy income	Hypothesis 7	Government subsidies are related to nongovernment subsidy income	consistency

As can be seen, board size has no impact on government subsidies, in other words, the number of councils is not related to the availability of governmental support. At the same time, the more leaders in the council are, the less likely it is to acquire governmental support. With the same findings as Han Yi-zhen, most of the leaders in Chinese foundation lack professional skills, which may hinder foundations from gaining governmental support (Han Yi-zhen, 2014^[4]). The testing result of hypothesis 3 shows that public foundations are easier to obtain governmental support than private foundations. This may be because public foundations are mainly built by the government (Cai Ya-jie, 2016^[13]). More standard foundations, such as public foundations, can receive more governmental support. These foundations have more professional and more full-time workers than private foundations, which results in the higher cost of management. Therefore, government subsidies are negatively correlated with the efficiency of foundation management. The testing result of hypothesis 5 shows that there is no significant correlation between the number of public welfare projects and governmental support. In terms of testing results of hypothesis 6, the higher ratio of donated income to total income is, the less ratio of government subsidy income to total income is. Consequently, the government subsidy is negatively related to proportion of donated income. For testing result of hypothesis 7, government subsidies are positively related to nongovernmental subsidy income, that is, the higher the nongovernmental subsidy income is, the higher the government subsidy income is, which implies that the government is more willing to support foundations with high incomes.

4 Conclusions

Currently, the development level of the Chinese foundations is relatively low, and there exist many issues that need to be solved by the collaboration between the government and foundations. The empirical study indicates that leader number, foundation type, management efficiency and

nongovernmental subsidy income will affect the governmental support for foundations. Foundations should reduce the number of leaders in the council and improve the expertise of leaders and workers. The Government should provide more support for private foundations and foundations with less gross incomes. Because of the special situation in China, the development of China foundations need the support from the government. Therefore, the China foundations should strive to establish a great cooperative relationship with the government.

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News Reports on Misjudged Cases in New Media and Coping Strategies in China

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Abstract The speed with which news spreads today is moving web-savvy Chinese further away from traditional channels of news communication and closer towards the Internet where news is posted and spread as promptly as it can be typed via new media such as WeChat, a social messaging app. In the communication process of the news concerning wrongful convictions of major criminal cases, it is found that a completely brand-new news framework is formed in which grievances are overemphasized in these cases but analysis of why the innocent are wrongly convicted and reflections on how to prevent wrongful court verdicts are seldom mentioned. The reasons for this phenomenon lie in development of new media and awakening of civic awareness. More importantly, there are some problems with judicial system itself. It is believed that only by initiating judicial reform and restoring people's confidence in the judicial system can news reports concerning wrongful convictions achieve objectivity and fairness. Only by understanding these features possessed by new media can the government better regulate and monitor the spread of new media so that it is more likely to harness new media and establish a more harmonious society in the long term.

Key words New media, Wrongful convictions, News frame, Judicial reform

In December, 2016, the Supreme People's Court declared Nie Shubin innocent, 21 years after the resident of Shijiazhuang in North China's Hebei Province was executed for "rape and murder" at the age of 21. The correction of the verdict against Nie, a milestone in the legal history of China, shows the promotion of the rule of law has made great progress. Actually, there are similar wrongful convictions in judicial practice in china. Some scholars have studied the reasons why innocent people are wrongly convicted by analyzing problems which exist in the Criminal Procedure law. However, few of them apply theories of journalism and communication to analysis of the spread of news concerning wrong court verdicts in traditional media, much less new media such as WeChat, Weibo and other social media based on the Internet.

Wrongful convictions tend to draw the public's attention and are widely covered by news media because reviewing this kind of cases often requires a long time and involves many officials. As a result, it is vital to study how to make media report these cases truthfully and objectively and guide public viewpoints correctly. In the era of traditional media, only official newspapers, magazines, televisions and their reporters have the right to publish and spread the news concerning these controversial cases while in the era of new media, radical changes occur in the production and spread of such news. With technological advances, commoners have a great say in the process. They not only receive instant messages and but also produce messages via all kinds of social media such as podcast, Weibo and WeChat public accounts. By using these messaging applications, users today are granted more freedom to voice their opinions and each individual is provided more freedom to participate in any heated debate over any public affairs. A new communication pattern has gradually formed which are users-oriented and has weak government control on news communication.

So what is the news framework of these news concerning wrongful convictions in these new media? The paper first attempts to explore and answer this question.

1 Theoretical basis

Frame theory is one of theories that have been increasingly studied and used in the field of journalism and communication in recent years. The concept of frame can be traced back to the last century. In 1955, in his masterpiece *A Theory of play and fantasy* Gregory Bateson argued that frame is a kind of meta-communication. Whether messages are implicit or explicit, they are defined in a frame in which based on facts, communicators offer guidance and help in order to make receivers better

understand what is being conveyed by these messages^[1]. Some scholars think it is the first time that frame theory was used in the sociological field.

Scholars Pan Zhong-dang and Gerald M. Kosicki maintains that theoretical presumption of frame theory mainly originates in macroscopic and microscopic levels: sociological study in macroscopic level and psychological studies in microscopic level^[2]. The former mainly focuses their attention on the frame of communication activities and tend to deal with the problem as to how to construct news reports and present news to readers more efficiently.

Erving Goffman is another very important sociologist who contributes substantially to the study of frame study. In his famous book titled *Frame Analysis: An Essay on the Organization of Experience*, Goffman attempts to explain how conceptual frames, in other words, ways to organize experience, structure an individual's perception of society.^[3] This book is thus about the organization of experience rather than the organization of society. A frame is a set of concepts and theoretical perspectives that organize experiences and guide the actions of individuals, groups and societies. Frame analysis, then, is the study of the organization of social experience. To illustrate the concept of the frame, Goffman gives the example of a picture frame: a person uses the frame (which represents structure) to hold together his picture (which represents the content) of what he is experiencing in his life.^[4]

In new media, ordinary people, rather than judicial personnel who are engaged in the functions of investigating, prosecuting, adjudicating, supervising and controlling offenders, are in charge of reporting and spreading news concerning serious criminal cases. The group of people, different from official reporters working for traditional media such as newspaper, televisions and journals, have their own life experience and perspectives from which they see and analyze issues in the society. These life experiences and perspectives thus form their own news frame while producing and spreading cases in which innocent people are wrongful convicted. The distinctive features of the news frame are as follows.

2 News frame of news reports in new media

2.1 Use moral judgment as a yardstick

A yardstick is used as a standard by which people measure some things and use it as the basis to analyze and handle problems. When new media users spread and comment on cases in which people were unjustly charged and convicted, they use moral standards as their yardstick to judge these cases. In their mind, moral judgment is more important than the factual judgment. In other words, they never base their analysis of these unjust cases on articles of laws and its correct procedures.

From these reports in the new media, it can found grievances caused by unjust convictions and mental and physical damages brought by judicial injustice are blown up out of all proportion. That wrongful convictions completely changes these victims' life is a common theme in these reports.

For example, an article titled *Zhao Zhuo-hai and His Life of a Roller Coaster* tells readers that "now, all Zhao Zhuo-hai can do and find meaningful is his memories, to be more precise, those memories before October, 1997 when he was wrongly convicted by the local court."^[5] In addition, pains inflicted on family members of the victims are also the main content of the new media coverage. For instance, "She Xianglin's mother and brothers were arrested appealing to the higher authorities for help. His daughter had no other choice but to drop out of school. Besides, the family were always subject to ridicules and even curses from their neighbors."^[6]

In these news reports appearing in new media, moral stance is used to analyze the problem and question the impartiality of laws. Although questioning itself is reasonable, the questioning is clearly beyond the boundary between reasonable and unreasonable behavior and actually some of conclusions these news reports eventually reach are strong subjective judgments.

When spreading news about unjust cases, sources of news can be victims, attorneys, legal scholars, judicial personnel and ordinary people. However, people on the Internet merely utilize victims as their main sources of news and intentionally ignore others sources of news. In doing so, more objective legal analysis and reflections on prevention mechanism of such unjust cases from professionals such as legal scholars, legal scholars, judicial personnel can never be presented in the discussion in new media. That's because what people spread most in the new media is mainly

concerned about the grievances for the deceased from their family members and the double whammy of their physical and mental health caused by unjust, fake and false convictions.”I feel that in this world there is no person I can turn to for help. All I can do is drink up all the liquors that I have alone.”^[7]

2.2 Take punishment as a high priority

The news reports in self-media usually overstate harm to innocent victims done by unjust verdicts and as a result, they put more emphasis on the urgency and necessity of investigating and affixing the responsibility for the wrongful court verdicts and claiming compensation for them.

Take the She Xianglin case as an example. In this typical case in 2005, a farmer from Hubei province, She Xianglin, spent 11 years in jail for “killing” his wife before being released in 2005 after his “victim” turned up alive. Therefore, he got State compensation of about 226,000 yuan. In the article entitled *How did the Criminal Investigation Develop into Wrong Judicial Verdicts*, the news reports in the new media mainly focus on the two aspect of the case. First, it simply explore the reasons why investigative mistakes occurred. After a simple analysis, it jumps to the conclusion that “Investigative errors are the starting point and root cause of unjust, false and erroneous cases. In our country, because of long-term adherence to the procedural model of the collaboration of public security branch, procuratorial branch and people’s courts. One of the defects of the present model is investigation centralism, which means the conclusion of investigation determines the results of prosecution and trial.”^[8] Second, these reports primarily focus their attention on accountability for unjust cases and state compensation. However, the topics closely associated with the case such as fact-finding, application of law, reflections on that these erroneous cases have brought about are seldom dealt with in the self-media, to speak nothing of going further to ponder over the question of how to establish a more reasonable legal system in order to prevent similar things from happening again.

2.3 Construct hero figures as an incarnation of righteousness

In the news frame of self-media, a hero figure is one of key components of such news reports. It can be found compared to traditional media, new media choose different hero figures. In addition, the two kinds of media construct these hero figures in completely different ways. Generally speaking, traditional media have a tendency to choose law as their hero figure and in their mind, it is law that eventually brings people genuine justice and fairness. However, in the eyes of common people, it is a real hero, such as a righteous reporter or an upright defense attorney that can help re-examine cases involving unjust, false or wrong charges and reverse the verdicts that were passed on them. Therefore, in the self-media, only certain individual rather than law can answer the question concerning how justice can be done, just like Bao Zheng, commonly known as Bao Gong, who was a government officer in China’s Song Dynasty. During his years in office, Bao consistently demonstrated extreme honesty and uprightness and heard the grievances of the people, which made him a legendary figure and gain the honorific title Justice Bao due to his ability to help peasants overcome corruption. That is the reasons why Bao Zheng today is honored as the cultural symbol of justice in China. His stories have appeared in a variety of different literary and dramatic mediums, and have enjoyed sustained popularity.

Today, Bao Zheng still appear in self-media owned by common people and are extolled by them as an incarnation of justice. These people are defense lawyers, law professors or journalists and they always overcome all kinds of obstacles on the road to seeking truth and through persistent efforts eventually help victims to achieve freedom and liberation. Apparently, such news reports in self-media attribute the correction of wrongful convictions to these individual heroes like supermen rather than procedural justice which is the deciding factor in avoiding handing down wrongful punishment to the innocent. From these reports, it can be seen that in China ordinary people still holds that righteous individuals overweigh the rule of law and thus they cannot transcend traditional ideological and cultural constraints. They still place their hope on Justice Bao Zheng and expect them to liberate wrongly jailed suspects from their miserable conditions.

For example, some report reads “a heartless state apparatus, have run over and killed an innocent life. Numerous journalists, attorneys and scholars struggled with the state apparatus and forced him to concede for so many years. Finally, the dawn of justice have arrived and dark clouds have disappeared.”^[9]

2.4 Cater to the popular mood and fight for injustice

When spreading news about wrong convictions, new media users express their genuine outrage at unreasonable ruling and show deep sympathy for the wrongly accused. And Sentimental expressions covers a larger proportion of news, compared to rational thinking. Generally speaking, the structure of such reports can be divided into two parts: a few facts and a great number of emotional expressions and personal opinions. From these reports in new media, it can be discovered that the contents are infused with pain and loss induced by irresponsible judges an police, metal and physical scars left on victims and their family left by wrongful convictions. Moreover, most reports argue that justice delayed is justice denied and that redressing grievances done to innocent people who have been executed cannot bring them back to life. Obviously, these reports in the new media bear arbitrary subjectivity by conveying intense fury at the way that these victims have been treated by incompetent judicial and police officials. They seem to urge the authorities concerned to severely penalize these people involved in these wrongful convictions otherwise it is difficult to appease righteous wrath from common civilians.

For example, at the end of one news report concerning Nie Shubin case, the writer says “when Nie was eventually absolved Nie of the crimes, twenty-one years have passed since Nie was found ‘guilty of rape and murder’ and executed in April 1995. And it has been 11 years since Wang Shujin, a real criminal, claimed in 2005 that he had committed the crimes. The sentence given to Nie had attracted a lot of social attention at the time, yet the judiciary in Hebei where the case was heard made little progress. These public officials must be held accountable for neglecting their duties and for treating innocent people’s lives with utter disregard. Only by severely punishing them and bring them to justice, judicial justice can be achieved.”^[10]

3 Conclusions

Through the analysis of news about wrongful convictions, it can be discovered that the transmission of such news is a continuous process of adjusting itself. In doing so, a new framework has been formed in which grievances are overemphasized and victims’ feelings are more important than reasonable analysis of the cases. Therefore, after reading news reports, readers are shocked by miserable fates brought by judicial injustice but never impressed by reasonable reflections on how to prevent wrongful court verdicts in the future. Obviously, such news framework can offer a full vent to commoners’ negative feelings but do little to correct these cases where innocent people are wrongly convicted. Perhaps Chinese people can benefit from what commoners in foreign countries do to help defend innocent people find justice. In America, some non-governmental organizations and social groups are a powerful force for compelling courts to review controversial cases which have allegedly imprisoned the innocent and dampened judicial credibility. In contrast to Chinese commoners, they never rely on moral outrages to find justice for the innocent. Instead, they seeks all kinds of concrete ways to reduce and prevent wrongful convictions, for example, to reexamine DNA fingerprints of these people.

So what measures should be taken to monitor and regulate new media when they spread news concerning unjust cases?

On the one hand, the government should listen to the grass-roots groups’ outcries over injustice via these new media. On the other hand, the government should help them to establish a sense of responsibility and guide them to solve their complaints within the framework of law and return to rationality. However, what is the most important is to reform the present judicial system and avoid as many wrong convictions as possible, which is the key to tackling the root of the problem.

There is no denying that some unjust cases have been reviewed by courts and some wrongful convictions have been corrected, and thus some innocent victims in these cases have been absolved of the crimes they never committed. That these cases has been corrected marks a giant step in China’s efforts to comprehensively advance the rule of law. However, the fact remains that some of the problems that plagued China’s judiciary in the past still exist and that some roots of the problem have not found out and completely eradicated from our judicial system.

First, the pressure to solve criminal cases quickly to meet tight deadlines are among the main

causes of recent wrongful convictions in China. It is found out among the wrongly jailed suspects, the majority were convicted of felonies such as murder, rape, looting and drug-related crimes. This is why some superior officers set very strict investigation deadlines to crack these serious criminal cases. Working under great pressure, some police tend to force the innocent to confess to crimes they did not commit in order to accomplish the task. As a consequence, it is necessary to set a reasonable and feasible deadline for the police in the judicial practice.

Second, judges and police must realize the significance of the “presumption of innocence” principle which means a person is considered innocent unless proven guilty, and always follow it. In other words, nobody has the right to declare defendants guilty and hang down wrongful punishment to the innocent without sufficient evidence. If a case lacks sufficient evidence, it is even preferable to spare guilty people than to hand down wrongful punishment to the innocent.

Third, especially defense attorneys, must play a bigger and more active role in court hearings in order to prevent wrongful convictions. In judicial practice in China, it is common that the role of lawyers is often undermined and many criminal defense lawyers even complain of suffering unfair treatment in the courtroom. This trend must be reverse so that it is likely for lawyer to be able to protect the legal rights of the defendants based on facts and laws in court. It should be realized that defense lawyers are an indispensable part of the legal community, an ally of the courts and an irreplaceable force in preventing wrongful convictions.

It is believed that through joint efforts of Lawyers, courts and procurators, these far-reaching judicial reforms can help the courts to improve their image and restore people’s confidence in the judicial system and eventually help the country to establish the rule of law comprehensively. Until then, news reports concerning criminal cases in new media is bound to be more objective and become the most reliable power for supervising judicial system and upholding justice.

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Analysis of the Current Status of Public Service from the Perspective of Community Differentiation in China — Take Chenghua District of Chengdu City for Example *

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Abstract Urban community differentiation is an inevitable trend of rapid urbanization. With the development of social economy, the phenomenon of urban community differentiation is increasingly significant; at the same time, a lot of social problems appear. For example, it is not equal to get public service as well as the gap of public service facility level is gradually widening. The thesis takes Chenghua District of Chengdu City as research scope and 14 administrative sub-districts in the district as units. From the perspective of community differentiation, the thesis analyzes the 6th national population census data by combining social and economic data of residents; In addition, the thesis evaluates the current status of Chenghua District by adopting research method of combining field investigation and quantitative statistical analysis from many dimensions and levels. The thesis attaches more attention to observing and studying the current status of public service facilities in Chenghua District and social attributes to guarantee the effective supply and reasonable distribution of urban public resources, strengthen community construction and improve community public service by analyzing the spatial layout of regional public facilities.

Key words Community differentiation, Public service, The current status of configuration, Chenghua District

1 Introduction

1.1 Research background

With the deeper reform of economic system, social management system and policy of supplying community public service facilities, market and other forces begin to participate in the allocation of community public services. Therefore, unbalanced distribution of facilities is a growing trend, which is not only reflection of rapid urbanization and market economy mechanism in urban social spatial structure but also a kind of essential tendency. Nigel Taylor (2006) stresses that urban plan which is a public policy shall promote social equality and justice^[1]. In Wang Mi-jie's (2007) opinion, in public service, equality and justice of supply are of equal importance because it is a concept of "new public service" which is the embodiment of people's right^[2]. In addition, Wu Li-chao, Lin Zi-chen and Guan Yue (2014) hold the opinion that the differences of impacts of all factors on different regions are significant during the period of realizing equalization of public service; at the same time, it is greatly helpful for equalization of public service to improve economic level^[3]. Zhao Yong, Zhang Hao and so on (2015) think that "people-oriented" public service is the primary content of urban construction. Urban public service construction management shall be improved constantly from the aspects of optimization of top-level design, integration of resources, advancement of policy decision as well as strengthening of social participation^[4].

1.2 Research objective

The thesis takes 14 sub-districts in Chenghua District of Chengdu City as research objectives whose geographical position is between 103°53'-104°03' east longitude and 30°33'-30°44' north latitude in northeast with the administrative area of 110.5 square kilometers. These sub-districts include Mengzhui Bay, Shuangqiaozi, Jianshe Road, Tiaodeng River, Shuangshuonian, Fuqing Road, Xinhong Road, Er'xian Bridge, Wannianchang, Taoxi Road, Shengdeng, Baohe, Qinglong and Longtan.

* Financed by Research Program of Sichuan Academy of Social Science: Research on Evaluating Urban Residential Community Differentiation and Space Matching of Public Service Based on Spatial Statistical Analysis (Project No.: SC17TJ007).

1.3 Research methods

From the view of community differentiation, the thesis analyzes the relevant date of the 6th national population census, and adopts research methods of document analysis and quantitative statistical analysis to record and analyze the layout and operational conditions of community public service facilities through field investigation and statistical analysis on the basis of new public management theory and new public service theory. Besides, the thesis analyzes the social attributes of all sub-districts in Chenghua District through ArcGIS technical composition as well as spatial layout of public service in Chenghua District through location quotient to make quantitative conclusion and reflect the existing problems more clearly and intuitively through data and chart.

2 The current status of public service in the community of Chenghua District

2.1 General situation of residential community in Chenghua District

Since the establishment of People's Republic of China, Chengdu City totally drew up four urban overall plannings respectively in 1954, 1982, 1995 and 2011. The overall planning of 1995 stresses industrial construction to build into socialist industry city; the overall planning of 1982 emphasizes the characteristics of historic cities to realize the combination of development of new urban areas and redevelopment of existing urban areas as well as protection and utilization; the overall planning of 1995 pays attention to optimizing land use structure in the central cities, clearing and defining urban development layout as well as leading the city on high-efficient way; what's more, the version of 2011 embodies the new spatial layout of "one district, two cores and six corridors" to improve urban location and attach more importance to urban functions as well as urban-rural comprehensive development^[5].

2.2 General status and distribution of residential community in Chenghua District

Chenghua District is located in northeast of city center with the total area of 109km². As the famous industrial region in the eastern suburbs, Chenghua District makes great contribution to the economic development of Chengdu City. There are a lot of factories in the east of the second ring road; at the same time, living quarters and cross regions are mostly located in the west^[6]. There are 14 sub-districts in Chenghua District (including Mengzhui Bay, Shuangqiaozi, Jianshe Road, Tiaodeng River, Shuangshuian, Fuqing Road, Xinhong Road, Er'xian Bridge, Wannianchang, Taoxi Road, Shengdeng, Baohe, Qinglong and Longtan.) and 95 communities.

2.3 The current status of public service configuration in Chenghua District

2.3.1 Educational industry

Chenghua District not only makes great efforts to basic education but also cooperates to respond to the reforms in education, integrate educational resources, as well as develop preschool education, vocational education and adult education in order to promote balanced development of education at all levels as well as meet diverse demands for education and educational patterns. There are 25 primary schools in Chenghua District. The numbers of enrollment and graduation are respectively 6873 and 5317 the same year; the number of teaching and administrative staff is 4295; In addition, there are 20 ordinary middle schools; the numbers of enrollment and graduation are respectively 8366 and 8655 the same year; besides, the number of teaching and administrative staff is 2368. There are 5 vocational schools; the numbers of enrollment and graduation are respectively 1965 and 1696 the same year; the number of teaching and administrative staff is 4295.

2.3.2 Cultural industry

Chenghua District promotes to construct the cultural landmarks comprehensively and sets up five key regions as well as cultural landmarks such as Longtan Temple, Qinglong Park, Eastern Suburb Memory, office building of UESTC and cultural relic building in the Chengdu University of Technology. And actively promote free opening service work of the public cultural facilities, 48,000 new public books added to the district library, 985 kinds of newspapers, 25 thousand circulation books for the streets and communities distribution, all service windows open for free, yearly received readers are over a total of 220 thousand, books borrowed out 120 thousand, 16 public talks carried out, computer training with 2 sections. District Cultural Center has opened 18 cultural activity rooms for 320 days with music, dance, instruments, etc., and offers free services of utilities, audio, piano, training

and tutoring for 2880 hours the whole year, received 96 thousand people^[7].

2.3.3 Medical industry

At present, there are dozens of medical institutions, 5797 medical technicians, 14 health service centers, 33 hospitals, 1 center for disease control and prevention, 1 hygiene supervision brigade as well as 5330 beds in Chenghua District. In addition, Infant mortality rate in Chenghua District is 4.23%; newborn mortality rate is 3.29%; mortality rate of children below 5 years old is 5.41%; rate of screening neonatal diseases is 98%, which are all within the scope of the standard^[8]. Now, Chenghua District is improving medical facilities and essential public health service. At the same time, Chenghua District is also deepening reform of the medical care and health service system.

2.3.4 Sport industry

Themed as “Happy Sporting and Healthy Chenghua”, Chenghua District carries out all types of exercise activities for the general public for more than 300 times. For projects with regional characteristics popularization and promotion, “Happy sports, happy growth” street basketball competition was successfully held, over 2,500 people participated; vigorously carry out tai chi, soft ball, empty bamboo and other fitness activities, 56 practice sites has been established, and the excising group continues to grow, to promote the prosperous development of nationwide fitness activities^[9].

3 Social attribute characteristics in the sub-districts of Chenghua District

3.1 Analysis on population density and proportion of registered population in the sub-districts of Chenghua District

As can be seen from Figure 1, the population density of Chenghua District shows the characteristics of high in the west, low in the north and Central. Population density in Taoxi Road is the highest, 52,056 people/km². The second highest is in Mengzhui Bay Street and Shuangqiaozi Street, population density is 46,429 people/ km² and 44,164 people/ km². The population density of Tiaodeng River, Qinglong Street, Shengdeng Street, Baohe Street, Longtan Street is lower, with 9394 people/ km², 6364 people/ km², 2869 people/ km², 1923 people/ km² respectively. Longtan Street owns the lowest population density, which is 1562 people/ km². Population density has a great influence on regional development, which affects the environment, public space, housing, etc, so it is necessary to improve the utilization efficiency of regional public service resources.

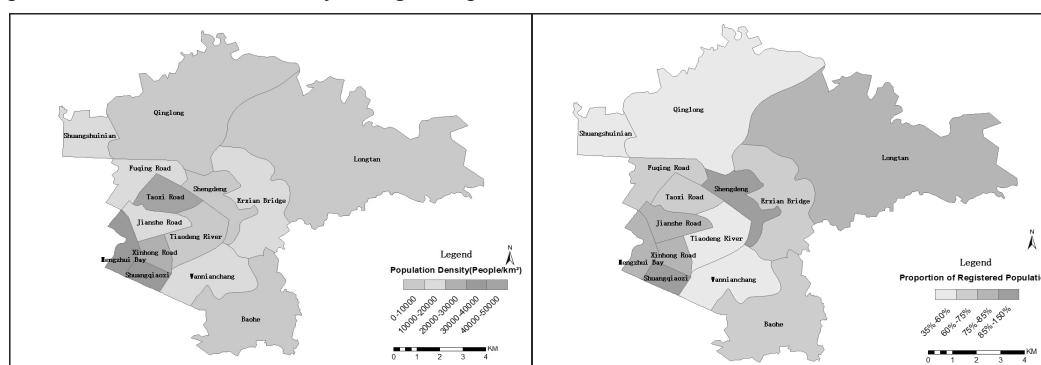


Figure 1 Diagrams of people density and proportion of registered population in the sub-districts of Chenghua District (Resource: drawn by the author)

According to the sixth census statistics, the registered population of Chenghua District is 641,275, among them, the proportion of men accounted for 50.8%, women accounted for 49.2%. The number of people who live and reside in the street, town, township is 490,858. The number of people who live in the street, town, township, reside in other street, town, township, leave the residence registration for six months is 445,894. The number of people living in the street, town, township, which is to be determined is 1565. The number of people who live in the street, town, township, learn or work abroad is 468. Through the comparative analysis of registered population, the proportion of Middle and West is higher, and the proportion in the northwest and south is lower. Shengdeng Street has the highest registered population proportion. Proportion in Shuangqiaozi Street, Mengzhui Bay and Xinhong Road is higher, with 91.1%, 89.6%, 85.8% registered population proportion respectively.

3.2 Per-capita housing space in Chenghua District

Through the analysis of Figure 2, it is concluded that households below 50m² in Chenghua District are mainly located in Qinglong Street, with a population of 52,956. Because of the low population density in middle part, the proportion of per-capita housing area below 50m² and above 50m² are less. Types of households vary widely in different regions. There are 22,641 residents of this type in the Wannianchang Street, 22,292 residents of this type in Shuangqiaozi Street of southern part, and 4506 residents of this type in Shengdeng Street of middle part.

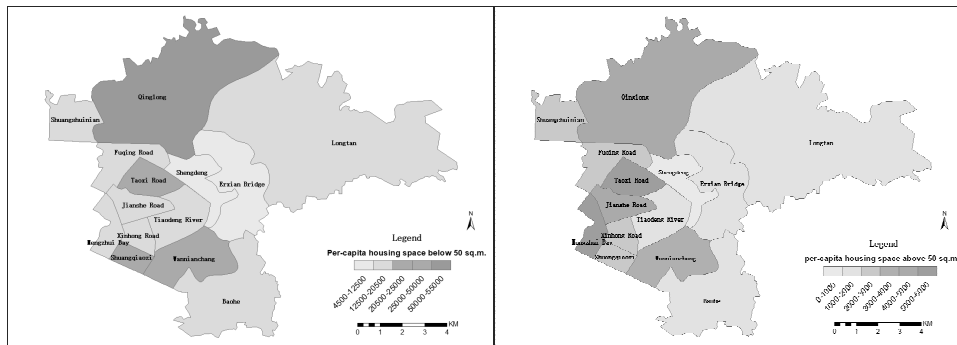


Figure 2 Diagrams of per-capita housing space below 50m² and above 50m² in the sub-districts of Chenghua District (Resource: drawn by the author)

In addition, households above 50m² in Chenghua District are mainly located in Taoxi Road, this type of households are 5715 people. Secondly, this type of households in Qinglong Street and Jianshe Street is second to Taoxi Road, with a population of 5053 and 5038 respectively. And Shengdeng Street still owns the least number of per-capita housing space above 50m², which has a great relationship with the local population density. From the above analysis of 50m² below household, housing space above 50m² and below 50m² in Qinglong Street is in the majority, showing a trend of diversification.

3.3 Analysis of the degree of education and aging in Chenghua District

In Chenghua District, among the proportion of illiterate population over 15 years old, illiterate population over 15 years old and above in Longtan Street is 10,507, which accounts the highest. The district with highest level of 9 year compulsory educations is Qinglong Street, 66,639 people; Shengdeng Street is with the lowest level, 6878 people. Demographic breakdown from age 0 to age 19, we can tell the trend that the proportion of population of age 0 to 19 is high in north and low in west from Figure 3. The youth population in Longtan Street ranks the highest, 20%, then Shuangshuinin Street and Qinglong Street, 18.6% and 18.3%; the proportion in Mengzhui Bay is comparatively low, 15.7%, and the lowest in Shuangqiaozi Street, 11.5%.

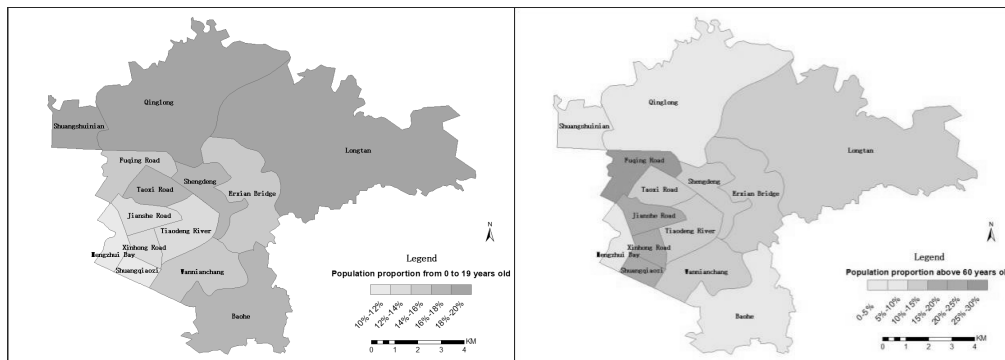


Figure 3 Diagrams of population proportion from 0 to 19 years old and above 60 years old in the sub-districts of Chenghua District (Resource: drawn by the author)

Age structure population data shows that the street where the population with 60 years old is the most is Shuangqiaozi Street in Chenghua District; the number is 14,579, the street with fewer people is

Shengdeng Street, 1958 people. From aging degree distribution diagram, western region shows the characteristics of aging structure diversification. Among them, the highest proportion of people over 60 years old is Fuqing Road, 27.6%, while lower level same located in the west of Mengzhui Bay and Shuangqiaozi Street, 4.8%. With the increasing of degree of aging population, a series of social problems appear, social burden is aggravated, the development of social and cultural welfare undertakings is not suited to the aging of population, and the increasing demand for health care and living services.

4 Analysis of spatial layout of public service in Chenghua District

4.1 Classification and assortment of community public service facilities

Chengdu has classified the public service facilities into four levels, including urban level, district level, residential level and grass-roots communities level. The thesis studies the public service facilities in residential district level and grass-roots community level. Public facilities of urban level and district level is mainly large independent covering facilities for the whole city, including administrative office, cultural facilities, education and scientific research, sports, health care, social welfare, business services, municipal public and square green space 9 categories. Public service facilities of Chengdu residential level and grass-roots communities level are mainly including administrative management, community service, education, medical treatment, culture, sports, municipal public utilities, green land square and commercial service industry those 9 categories^[10]. In this thesis, the public service facilities in Chenghua District are divided into education, sports culture, welfare, transportation, environment and community service 6 categories to analyze.

4.2 Differentiation characteristics of public service space in Chenghua District

This thesis obtains the concentration degree of all kinds of public service facilities through location quotient. By calculating the location quotient for a certain public service in Chenghua District, dominant public services in Chenghua District can be found. When the location quotient is greater than 1, it can be considered that the public service facilities are specialized facilities in Chenghua District. The greater the location quotient, the higher the level of specialization. If the location quotient is less than or equal to 1, the industry is considered to be a self-sufficient service facility^[11]. This thesis calculates the location quotient of all kinds of public service facilities on the basis of distribution of population, education, sports culture, welfare, transportation, environment and community service in sub-districts of Chenghua District.

$$Q=(n1/a1)/(N1/A1)$$

In the formula, “*Q*” refers to the location quotient of public service facilities in the street, “*n1*” refers to the total size of the supply of certain types of public service facilities in the street, “*a1*” refers to the street population, “*N1*” refers to the total supply of a certain public service facility in Chenghua District, and “*A1*” refers to the total population of Chenghua District.

Table 1 Location quotient of various types of public service facilities in sub-districts of Chenghua District(calculated according to the 6th national population census data)

Sub-district names	Education	Sport and culture	Welfare	Transportation	Environment	Community service
Mengzhui Bay	0.70	1.95	1.10	0.39	0.43	0.69
Shuangqiaozi	0.43	0.70	0.60	0.30	0.74	0.53
Jianshe Road	1.67	0.85	1.45	0.34	0.59	0.54
Fuqing Road	0.85	1.48	2.21	1.14	0.83	0.78
Er`xian Bridge	2.19	0.60	0.50	1.28	0.45	0.66
Tiaodeng River	1.16	0.59	1.20	0.52	0.49	0.85
Xinhong Road	0.90	1.44	0.95	0.54	0.65	0.85
Shuangshuonian	0.20	0.30	0.42	1.33	1.02	0.65
Wannianchang	1.00	1.13	1.09	0.63	1.37	1.33
Taoxi Road	1.79	0.94	1.12	0.83	0.49	0.61
Shengdeng	0.30	0.10	0.23	0.69	2.10	0.75
Baohe	0.65	0.94	1.24	1.25	3.54	4.98
Qinglong	1.54	2.14	1.73	4.97	2.24	3.14
Longtan	0.64	0.31	0.58	1.10	1.77	0.70

Through the analysis of Table 1, among location quotients of all public service facilities in the sub-districts of Chenghua District, many public service facilities in the sub-districts of Tiaodeng River, Shengdeng, Longtan are less than 0.6; at the same time, location quotients of other facilities are less than 1. It shows that aggregation degree of public service facilities in these sub-districts is widespread low^[12]. However, although the scale of public service facilities is large in Shuangqiaozi Street, permanent resident population in Shuangqiaozi reaches 140,000 which takes up 16.7% of the total population in Tianhe District; therefore, location quotients of all public service facilities are less than 1. It shows that aggregation degree of public service facilities will be less than aggregation degree of population.

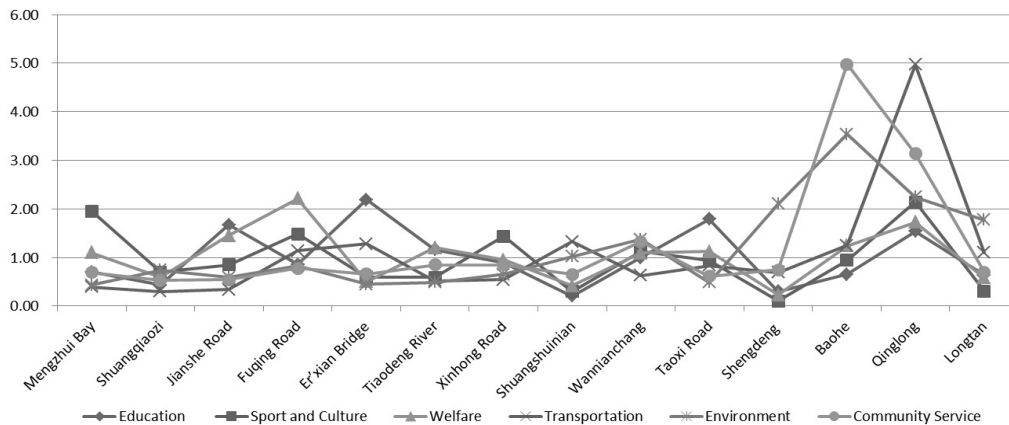


Figure 4 Comparison of location quotients of all public service facilities in the sub-districts (Resource: the 6th national population census data)

As you can see from Figure 4, in the gathering level of public service facilities and the gathering level of different types public service facilities in the streets, there are still have big differences in the 14 streets of Chenghua District. Qinglong Street has the highest overall gathering level of public service facilities, its location quotient of traffic facilities is up to 4.97, and its location quotients of sports culture, environment and community service facilities are more than 2. This distribution state reflects Qinglong Street has balanced supply of public service facilities in the community, and has a higher supply level. Followed by Baohe Street, the location quotients of the 4 public service facilities are greater than 1, the location quotient of community service facilities is 4.98. It is the highest value of the location quotients of all kinds of public service facilities, which means that the distribution concentration of public service facilities in the street is high. The overall gathering level of public service facilities in Shengdeng Street is the lowest, and the location quotient of sports cultural facilities is as low as 0.1. Location quotients of education and welfare facilities in this street are less than 0.5, which in a low density unbalanced distribution state. Its total population is 21805, only accounting for 2.6% of the total population of Chenghua District. The low distribution density of public facilities is closely related to its low population density.

The calculation results of location quotient show that the spatial distribution of public service facilities in Chenghua District is unbalanced. The aggregation degree of public services in the northern streets is more than that in the central region, its public service facilities are more evenly distributed, but regional agglomeration levels have widened further. And the population concentration levels in Qinglong, Baohe, Fuqing Road, Er'xian Bridge are obviously less than the concentration level of some of its public service facilities. The agglomeration level of Shuangqiaozi, Mengzhui Bay Street in Southwest and Shengdeng Street in central is greater than the population agglomeration level of part of the public facilities. Meanwhile, the concentration levels of various public facilities in the same street are also different. Compared the agglomeration degree with other public facilities, the concentration level of educational facilities in Shuangshuonian and Shuangqiaozi is lower. Although the location quotient of the community service facilities in Baohe Street has reached 4.98, location quotient of

educational facilities is less than 1.

5 Conclusions

Through the analysis of social attributes of streets in Chenghua District, we can see that the social differentiation characteristics of community public service facilities are remarkable. Meanwhile, the spatial distribution of public services is closely related to the demographic characteristics of the population, there is a significant correlation between different economics characteristics of population and spatial layout of public service facilities in different sub-districts. Educational facilities clearly exist the gathered characteristics to highly educated community. Welfare facilities in the large per-capita housing area are more perfect.

Through the analysis of the layout of public service space in Chenghua area, it can be seen that the distribution of public service facilities in the communities of Chenghua District is uneven. From the aggregation of distribution of public service facilities, spatial agglomeration of public service facilities in Qinglong Park and zoo in the north is the highest, and east passenger station and Chengdu-Chongqing interchange area is the second. In areas where the environment, welfare and community services are highly distributed and concentrated, the distribution of sports cultural facilities and educational facilities is uneven.

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An AHP Based Evaluation Method for the E-government Service Quality in China *

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Abstract With the wide use of electronic government (e-government) in public sectors, the service quality evaluation becomes a hot topic of academia. In this paper, we present a novel framework for e-government service quality evaluation based on the combination of fuzzy AHP and fuzzy comprehensive evaluation method. The evaluation model is decomposed hierarchically into three main criteria namely: government, public, website. These criteria are further disaggregated into 11 subindicators to measure the quality of e-government service. In this case, public is found to be the most important main criterion. On the basis of the system, the fuzzy comprehensive evaluation method was employed to evaluate e-government service quality. A case application was also used to illustrate the propose framework. It is expected that this work may serve as an assistance tool for government in improving the e-government service quality level.

Key words E-government, Service quality, Evaluation system, Analytic Hierarchy Process(AHP)

1 Introduction

With the government service quality increasingly attract the worldwide attention, many public sectors attempt to assess themselves and evaluate the service system. Especially in the background of information society, the e-government service as the new method of government to serve public, its service quality is significant to the satisfaction of public and build service-oriented government. To enhance the satisfaction level of public, public sectors need to provide their best services to meet the social demands. Government can only provide the best service to the community if it commits to continuous quality improvement. The need for evaluating the quality of e-government services has become increasingly important.

2 Theoretical framework and research hypothesis

2.1 Service quality

The concept of service quality first came from the field of service marketing. Lewis R. C. and Rooms B. H. defined “service quality” as a measure of enterprise service levels to meet customer expectations. (Lewis R. C., Rooms B. H., 1983^[1])

2.2 Electronic services quality

With the rapid development of information technology and the Internet, e-commerce has gradually emerged, and the research on the quality of electronic service has gradually developed. Martin Fassnacht and Ibrahim Koese defined the electronic service: “The quality of electronic services is the ability of electronic services to efficiently and effectively deliver the customer’s needs.” (Fassnacht M., Koese I., 2006^[2])

2.3 E-government service quality evaluation indicators

There are some previous studies about e-government service quality evaluation indicators, for example: the United Nations and the American Institute of Administration, evaluated the e-government service quality in three indicators, including the status of government websites, the status of local infrastructure, and the state of human resources^[3]. The World Market Research Center and the Brown University of the United States are mainly targeted at the five aspects include contact information, publications, databases, portals and online public services^[4].

* Financed by Reform Research Program of Degree and Postgraduate Education and Teaching in Heilongjiang Province for the 12th Five-year Plan.

3 The framework for designing quality evaluation index system

3.1 Identifying the assessing indicators

The hierarchical structure is constructed by combining the factors and subfactors which refers to some previous studies and methodologies, and screen these factors by experts who have experience with the research topic. The top of the hierarchy reflects the goal of the study, which is to measure the e-government service quality using the quality evaluation index as the metric. The three main criteria as detailed by the government, public and website. At the bottom of the hierarchical structure are the subcriteria or indicators. Figure1 shows the hierarchical structure.

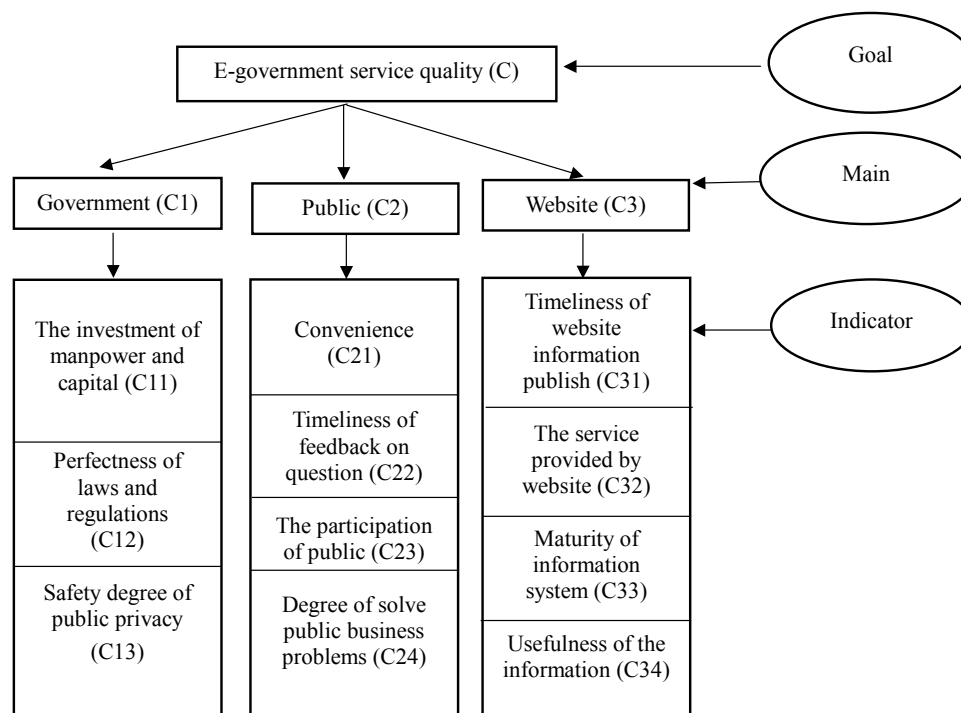


Figure 1 hierarchical structure in evaluating e-government service quality

The top of the hierarchy reflects the goal of the study, which is to measure the e-government service quality using the quality evaluation index as the metric. The three main criteria as detailed by the government, public and website. At the bottom of the hierarchical structure are the subcriteria or indicators.

3.2 Evaluating the importance weight of the indicators

The weights of the indicators imply the preconceived preference of participants in regard to what an effective e-government service should be.

To acquire the factor and subfactor weights, a group of 100 decision-makers, including government official, members of public and experienced lecturers, was formed. Questionnaires were provided to get their viewpoints. Pairwise comparisons, which were derived from their assessments on the relative importance of one factor over another, were used to form the comparison matrices of each decision-maker. Table 1-Table 4 are the comparative judgment matrixes.

Table 1 Comparative judgment matrix of main criteria

C	C1	C2	C3
C1	1	1/3	3
C2	3	1	1/4
C3	1/3	4	1

Table 2 Comparative judgment matrix of C1 indicator

C1	C11	C12	C13
C11	1	1	1
C12	1	1	1/3
C13	1	1	1/3

Table 3 Comparative judgment matrix of C2 indicator

C2	C21	C22	C23	C24
C21	1	1/2	1/3	1/4
C22	2	1	2	1/2
C23	3	1/2	1	1/3
C24	4	2	2	1

Table 4 Comparative judgment matrix of C3 indicator

C3	C31	C32	C33	C34
C31	1	1/3	3	1/3
C32	3	1	3	1/3
C33	3	1/3	1	1/4
C34	3	3	4	1

The fuzzy AHP was then employed to identify the factor and sub-factor weights. By taking pairwise comparison matrix of the factors in Table 1 to Table 4, the factor weights were calculated. Table 5 shows the important weight of main criteria and indicators.

Table 5 The relative importance of the indicators and criteria in the evaluation model

Goal	Main criteria	Indicator	Important weight
E-government	Government C1 (0.2721)	The investment of manpower and capital C11(0.1999)	0.0544
		Perfectness of laws and regulations C12(0.1999)	0.0544
		Safety degree of public privacy C13(0.6001)	0.1633
Service	Public C2 (0.6080)	Convenience C21 (0.0993)	0.0604
		Timeliness of feedback on questions C22(0.2515)	0.1529
		The participation of public C23(0.1857)	0.1129
Quality	Website C3 (0.1199)	Degree of solve public/business problems C24(0.4633)	0.2817
		Timeliness of website information publish C31(0.1635)	0.0196
		The service provided by the website C32(0.2677)	0.0321
(C)		Maturity of information system C33(0.0842)	0.0101
		Usefulness of the information C34(0.4846)	0.0581

The calculation results show that the weight of “public” is largest. Hence, this factor plays the most important part in e-government service quality, followed by “government”, the last is “website”.

4 Fuzzy evaluation of e-government service quality

From the above e-government service quality evaluation index system and acquired factor and sub-factor weights, the fuzzy comprehensive evaluation method was utilized to assess the e-government service quality. We took a case from Heilongjiang Province as an illustration.

4.1 Determining the set of comments

The evaluation comment set is as follows: $V = \{v_1, v_2, v_3, \dots, v_m\}$ (Jeng-Fung Chen, Ho-Nien Hsieh, Quang Hung Do, 2015^[5]). In this study, we used five grade to set up the comments for evaluation: $V = \{\text{excellent, very good, good, fair, poor}\}$, in order to make the index quantitative, we provided grade for the corresponding comment sheet: $V = \{5, 4, 3, 2, 1\}$

4.2 Determining the membership grade matrix

As there are different types of evaluation levels, the evaluation result of each factor is a fuzzy set

of evaluation set V which can be written as the fuzzy vector $R_i = (r_{i1}, r_{i2}, r_{i3}, \dots, r_{in})$, $i=1, 2, \dots, m$, $R_i \in \mu(V)$. All of the single-factor evaluations constitute the fuzzy relationship from U to V : $R = (r_{ij})_{n \times m}$. That is

$$R = (r_{ij})_{n \times m} = \begin{bmatrix} r_{11} & \dots & r_{1j} & \dots & r_{1n} \\ r_{21} & \dots & r_{2j} & \dots & r_{2n} \\ \vdots & & \vdots & & \vdots \\ r_{m1} & \dots & r_{mj} & \dots & r_{mn} \end{bmatrix} \quad (1)$$

r_{ij} presents the grade of membership of factor c_i aiming at the comment v_j .

According to the evaluation index system and the comment set proposed in the previous sections, we collected opinions of public members and experienced lecturers about the e-government service quality. The evaluation matrices of indexes were then formed. Table 6 shows the survey results of e-government service in Heilongjing Province.

Table 6 The questionnaires of e-government service quality

Main criteria	Indicator	The set of comments				
		Excellent	very good	good	fair	poor
C1	C11	0.16	0.32	0.40	0.12	0.00
	C12	0.22	0.31	0.41	0.06	0.00
	C13	0.26	0.31	0.28	0.15	0.00
C2	C21	0.15	0.36	0.39	0.10	0.00
	C22	0.20	0.29	0.37	0.14	0.00
	C23	0.09	0.28	0.48	0.15	0.00
	C24	0.10	0.26	0.45	0.19	0.00
C3	C31	0.18	0.34	0.33	0.15	0.00
	C32	0.12	0.41	0.38	0.09	0.00
	C33	0.22	0.39	0.30	0.09	0.00
	C34	0.10	0.42	0.36	0.12	0.00

Taking the constructing the matrix R_1 as an example. As Table 5 shows, when “the investment of manpower and capital” was considered, 16% of respondents rated it “excellent”, 32% of respondents rated it “very good”, 40% rated it “good”, 12% rated it “fair”, and 0% rated it “poor”; when “Perfectness of laws and regulations” was considered, 22% of respondents rated it “excellent”, 31% of respondents rated it “very good”, 41% rated it “good”, 6% rated it “fair”, and 0% rated it “poor”; when considered “Safety degree of public privacy”, 26% of respondents rated it “excellent”, 31% of respondents rated it “very good”, 28% rated it “good”, 15% rated it “fair”, and 0% rated it “poor”. Hence the matrix R_1 can be derived as follows:

$$R_1 = \begin{bmatrix} 0.16 & 0.32 & 0.40 & 0.12 & 0 \\ 0.22 & 0.31 & 0.41 & 0.06 & 0 \\ 0.26 & 0.31 & 0.28 & 0.15 & 0 \end{bmatrix}$$

Similarly, the matrix R_2, R_3 were obtained. They are as shown below:

$$R_2 = \begin{bmatrix} 0.15 & 0.36 & 0.39 & 0.10 & 0 \\ 0.20 & 0.29 & 0.37 & 0.14 & 0 \\ 0.09 & 0.28 & 0.48 & 0.15 & 0 \\ 0.10 & 0.26 & 0.45 & 0.19 & 0 \end{bmatrix} \quad R_3 = \begin{bmatrix} 0.18 & 0.34 & 0.33 & 0.15 & 0 \\ 0.12 & 0.41 & 0.38 & 0.09 & 0 \\ 0.22 & 0.39 & 0.30 & 0.09 & 0 \\ 0.10 & 0.42 & 0.36 & 0.12 & 0 \end{bmatrix}$$

4.3 Producing the evaluation result

The results of evaluation can be obtained through multiplying the vector of the factor weight and the matrix R of single-factor evaluation:

$$B = W \times R = [\overline{W_1}, \overline{W_2}, \dots, \overline{W_m}] \begin{bmatrix} r_{11} & \dots & r_{1j} & \dots & r_{1n} \\ r_{21} & \dots & r_{2j} & \dots & r_{2n} \\ \vdots & & \vdots & & \vdots \\ r_{m1} & \dots & r_{mj} & \dots & r_{mn} \end{bmatrix} = [b_1, b_2, \dots, b_n] \quad (2)$$

Where B is the evaluation result based on all factors in the index system C . The k -th element b_k is membership of the evaluation object with regard to k -th element in the comment set. The conclusion of the comprehensive evaluation can be obtained by the maximum membership principle.

Then we can get the evaluation result of C_1 by the formula

$$B_1 = W_1 \times R_1 = [0.1999 \quad 0.1999 \quad 0.6001] \begin{bmatrix} 0.16 & 0.32 & 0.40 & 0.12 & 0 \\ 0.22 & 0.31 & 0.41 & 0.06 & 0 \\ 0.26 & 0.31 & 0.28 & 0.15 & 0 \end{bmatrix} \\ = [0.2320 \quad 0.3120 \quad 0.3299 \quad 0.1260 \quad 0]$$

Similarly, we got the evaluation result of C_2, C_3 through calculations

$$B_2 = [0.1282 \quad 0.2811 \quad 0.4294 \quad 0.1610 \quad 0] \\ B_3 = [0.1285 \quad 0.4017 \quad 0.3554 \quad 0.1143 \quad 0]$$

We established the evaluation matrix R at the first level from the above matrices as follows:

$$R = \begin{bmatrix} B_1 \\ B_2 \\ B_3 \end{bmatrix} = \begin{bmatrix} 0.2320 & 0.3120 & 0.3299 & 0.1260 & 0 \\ 0.1282 & 0.2811 & 0.4294 & 0.1610 & 0 \\ 0.1285 & 0.4017 & 0.3554 & 0.1143 & 0 \end{bmatrix}$$

The evaluation matrix R represents the membership degree values of each comment, which is correlative with each factor in the evaluation index. Hence, the comprehensive evaluation of e-government service quality is calculated as:

$$B_1 = W \times R = [0.2721 \quad 0.6086 \quad 0.1199] \begin{bmatrix} 0.2320 & 0.3120 & 0.3299 & 0.1260 & 0 \\ 0.1282 & 0.2811 & 0.4294 & 0.1610 & 0 \\ 0.1285 & 0.4017 & 0.3554 & 0.1143 & 0 \end{bmatrix} \\ = [0.1566 \quad 0.3041 \quad 0.3934 \quad 0.1459 \quad 0]$$

The result shows that the “good” probability of the e-government service quality is 0.3934; the probability of “excellent”, “very good”, “fair” and “poor” is 0.1566, 0.3041, 0.1459 and 0 respectively. According to the maximum membership degree principle, the comprehensive evaluation result of the e-government service quality in Heilongjiang Province is “good”. In addition, another implication from the distribution of B_1, B_2, B_3 vector weights is that service quality regarding “government” and “public” factors are not good as “website”. The evaluation result, which based on the opinions of public members and experienced lecturers, also provided government with suggestions on how to improve the service quality: the government should pay more attention on “government” and “public”. Furthermore, the proposed method makes it easier to explain the results to the government and it also provides government officials with useful information. The information collected in the evaluation process can aid in maintaining and enhancing the e-government quality. Therefore, the application of this method can improve the overall quality in each government and in the e-government system as a whole.

5 Conclusions

Evaluation method is an effective instrument to maintain the quality of e-government service and, therefore has been getting a lot of attention from government. This paper presents an evaluation index system for e-government service and develops an evaluation framework based on the combination of fuzzy AHP and comprehensive evaluation method. One contribution of this approach is the introduction of AHP to determine the factor and sub-factor weights in the evaluation index system: the

most important factor is public (the weight score is 0.60800), secondly is government (the weight score is 0.2127), finally is website (the weight score is 0.1199). Beside, the application of fuzzy comprehensive evaluation to conduct e-government service quality can not only reflect the overall service level is at Medium level, but also helps ministry know what needs improvement in order to enhance their service quality: (1) Increase government investment. (2) Solve the public problem more effectively. (3) Provide more useful information.

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Function Execution and Coordinated Reform of Self-governance Organization in China Rural and Urban Areas —Based on a Survey of the Administration Legislation Difference in Guangdong *

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Abstract An investigation held within 24 urban and rural grassroots communities in Guangzhou and Yunfu in Guangdong Province had found that one of the important factors that lead to the social isolation between urban and rural areas is the heterogeneity of system of urban and rural grassroots self-managementsystem supply. So far we can learn is the committees of village resident and city resident are running under different laws as “The Organic Law of Village Resident Committees” and “The Organic Law of City Residents Committees” that endow different functions on them, leading to the heterogeneity and disruption of urban and rural social management at the grass-roots level. Due to the rapid urbanization, the rural and urban residents are more desire to have the same life of same quality of autonomous service, social management and sociality as the difference between their social lives had been revealed by deeper interaction. The social change have requested to promote the development of urban and rural areas harmoniously, change the VRC to the CRC or the CMC, unify the urban and rural social management system, and break off the isolation reality by this system innovation path that integrating the grassroots autonomous organizations.

Key words Social management, System innovation, Urban and rural separate governance, Harmonious development of urban and rural areas

1 Introduction

Since the foundation of the PRC, different grassroots social management systems were used in it: the “Units System” was adopted as priority system to represent the production and social management by urban government while “Street System” was used as subsidiary; the “People’s Communes + Production Team” system was designed for rural areas as the significant combination of management of administrative, production and social aspects. Therefore, the urban and rural societies were in “Segmentation Governance”.

* Financed by 2016 General Program from National Natural Science Foundation of China: Preventing the Social Risk and Promoting the Social Capital in the Process of Local Governance Transformation—Taking Guangdong as Research Space(Project No.: 71673091); 2012 General program from National Natural Science Foundation of China: Research on Grass-roots Governance Reconstruction and Social Management Innovation in the Process of Urban and Rural Development (Project No.: 71273094); and Humanity and Social Science Project of the Ministry of Education(Youth Fund)—the Interaction Mechanism between Government and the People in the Governance of Villages and Towns from the Perspective of Beautiful China(Project No.: 13YJC710056).

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These two kinds of system design had actualized the overall rule of public resources and social members as well as successfully had proceeded the management of social affairs and spaces by national authority. It is very important for the new country, helping people to live and work peacefully and happily, especially after more than 100 years' state of war. According to the historical conditions of political, economic and cultural environment in China, the grass-root communities were recognized as "urban communities" and "rural communities" with the restriction of objective condition and the guidance of subjective ideology.

After the reform and opening-up, Guangdong, as a national experimental field, of which the urban and rural areas develop fast, and the urbanization level of Pearl River Delta is keeping the leading edge all around the China. However, the heterogeneity between urban and rural areas still remain, and how to balance the development of the urban and rural is still a tremendous challenge.

Because of large flow of rural surplus labor and the rapid development of urbanization, Guangdong has entered the gradual change process from the dualistic society into the harmonious society. Many "Urban-rural Integration Communities" are generating in outskirts of big cities and medium-and-small-sized towns that turns the community types from two to three, which illustrates a new development trend of rural communities.

In order to understand the present situation of Guangdong's urban and rural grass-roots social management, we conducted an investigation in 2 cities—Guangzhou and Yunfu, 4 street offices and 4 towns were randomly chosen as the research area, using the method of drawing lots to select 24 communities, in which 8 City Resident Committees(CRC) and 16 Village Resident Committees(VRC) as the investigation samples. We found that communities in Guangdong can be divided into three types: "the pure Urban Community" (UC), "the pure Rural Community" (RC) and "the Urban-Rural Intasome Community" (URC, the transition state from rural to urban community) now, the pure Urban Communities (UC) are all located in the urban center and managed by the City Resident Committee(CRC), the pure Rural Community(RC)is traditional rural village and managed by the Village Resident Committee(VRC), the Urban-rural Intasome Communities, 20.8% of all the communities we investigated, are mostly reconstructed from suburban villages and villages in cities, 40% of them are still governed by the VRC because of they are not restructured yet, 60% of them are governed by the Community Corporation(transformed from the Village Collective Economic Organization) and the CRC at the same time because of restructuring incompletely.

The investigation shows that: the different system supply of urban and rural grassroots social management is an important factor which causes and aggravates the gap between the urban and rural. The urban and rural harmonious development is a fabulous ideal of all the people, but isolation between the urban and rural is the cruel reality^[1]. Therefore, it is essential to concentrate on the strong desire and progress trend of the urban and rural coordinated development, break the existing institutional barriers, implement the innovation of grassroots autonomous institution and release the efficiency of institutional change. Those are the things that will lead to the result of changing the current situation and realize the ideal.

2 The different supply of the urban and rural grassroots social management system in Guangdong

The survey found that: there is significant difference existing in the autonomy institution of the urban and rural grass-roots society, formed since the founding of the PRC, resulting in a long-time suffering of urban and rural that they were not supplied the homogenous system. These divided system design still existing at present that have inhibited the forward footstep of the urban and rural harmonious development.

(1) Fundamental differences in system design

The survey found that: from the legislative basis, the design of the urban and rural community autonomy systems are set up respectively from 1949, and operated under different organic law and relevant regulations that lead to a different position disparity of the CRC and the VRC.

The VRC system is used in the rural grassroots community autonomy, based on the "Law of the VRC", in which the VRC is clearly defined as an autonomous organization to perform tasks, such as

self-management, self-education, self-service; the number of the VRC must be elected by democratic election, the village affairs must be decided by democratic decision, process making must be managed by all villagers through the VRC, must be supervised by all villagers. Meanwhile, the CRC system is used in the urban grassroots autonomy, based on the “Law of the CRC”, in which the CRC is clearly defined as an autonomous organization to perform tasks, such as self-management, self-education, self-service.

From the relevant provisions of that two organic Laws, we can find that: the VRC and the CRC are the only legitimate autonomy respectively of the rural and urban grassroots communities, but the textual representations about the nature and the function of VRC and the CRC are not exactly the same in the two organic Laws, especially about the function of the VRC, the “Law of the VRC” clearly states: “the VRC should support and organize the villagers to develop various forms of economic activity and economic cooperation in accordance with all of the national laws, coordinate the village production, promote the rural production construction and economic development”. It is an obvious difference from the CRC which does not undertake any economic management function.

The direct superior organizations of the VRC and the CRC are different, based on the two organic Law. The Law of the VRC regulates that “the People’s Governments of Townships, of Ethnic Townships, and of Towns, directly support and help the VRC to work”, at the meantime the Law of the CRC regulates that “the People’s Governments of City which are not divided into districts, of Municipal District or its agencies, directly support and help the CRC to work”. Obviously, the VRC’s supervisor organization is the Town or Township Government, the CRC’s superior organization is the City Government, District Government or Street Office. The reasons why are the supervisor organizations of the VRC and the CRC different are because in the administration system of state governance, the urban and rural are divided and managed severally from 1949, the “City Government” manages urban area, its subordinate organization is the District Government; the “County Government” manages the rural area, its subordinate organization is the Town or Township Government. Therefore, the two systems of China, local governance and social management in the urban and rural areas, are designed separately, presents a state of fragmentation, neither the same system of administrative governance is supplied nor the system of social grassroots self-government is unified that resulting in the functions design and the operation mode of the VRC and the CRC are not equivalent which becomes the most important system barrier that leading to differences and separations between the urban and rural areas.

(2) The significant difference of real functions

Since the two organic Laws give the VRC and the CRC different functions, in the social reality, the VRC and the CRC exert disparate influence on the rural and urban community autonomy. In comparison, the VRC has a great influence on the vital interests of the villagers in the past and now, because the VRC have the authority to decide all internal and external affairs, especially to control production activity and distribute all economic income, such as land contract, land bonus, and so on. Therefore, the VRC always bundle the dispatching of village administrative tasks and the allocation of profit with the right exercise of autonomy together. The relationship between village staffs and villagers is very complex, this survey revealed that “profit distribution, equity and democracy, work attitude, service quality and management level” are the key factors which villagers mostly think about when they evaluate the VRC. Yet the CRC have no income-generating power or undertake the management of economic problems of community residents. After assisting the Street Office to complete administrative affairs, the CRC mainly complete all kinds of community service. As the matter of fact, the relationship between the CRC and the community residents is relatively simple. This survey revealed that “work attitude, service quality and management level” are the key factors which residents mostly think about when they evaluate the CRC. Meanwhile, the VRC staffs are all villagers, they are embedding into the community, so they interact with the villagers closely in a long term, their action follow the rules of “many times repeated game”, accept some social rules of small groups which constraints individual activity, such as revenge, isolation, exclusion, encouragement, mutual benefit and so on. However, most of the current CRC staffs, the survey found that 91.1% of them are not residents living in the community where they work and their relationship with community residents is

relatively alienated. This kind of situation has neither met the core value of “community autonomy” nor providing a commitment sense of the community, therefore the staffs cannot excavate community autonomy resource sufficiently and unable to have a high job involvement, the only advantage maybe a more objective attitude and perspective in the work that they can keep.

In real executing environment, the typical division of labor of a VRC and a CRC in Guangdong are summarized in Table 1 and Table 2, from these tables, we can see that the VRC and the CRC have some same functions , but difference is the majority.

Table 1 A typical division of labor of the CRC(Containing the Community Party Branch)

Position	Division of labor
Secretary of the CRC	Community Party Branch Work, Party Office
Director of the CRC	Comprehensive Community Affairs, Concentrating on Community Safety and Security Management, Fire Protection, Production Safety, Labor Security
Member of the CRC	Publicity Affairs, Women Work, Family Planning, the Communist Youth League work , Helping and Educating Juvenile delinquents and Resettlement, Helping the disabled, Helping Oversea Chinese Work
Member of the CRC	City Image and Sanitation Management, Rental Rooms Management, Residents Files Management, Data Statistics, Recruitment, Community Services for the Retired Elderly People
Member of the CRC	Civil affairs, the Lowest Life Welfare Guarantee and Social Relief, Funeral Management, the People’s Mediation, the Committee work for the Care of the Next Generation, Soldiers and Civilians Mutual Support, Community Culture

Table 2 A typical division of labor of the VRC(Containing the Village Party Branch)

Position	Division of labor
Secretary of the Village Party Branch	Village Comprehensive Work, and Financial Management
Director of the VRC(Vice Secretary of the Village Party Branch Concurrently)	Village Comprehensive Work, in charge of, Village Construction, Production Safety, Fire Protection, Agriculture, Water Conservancy, Contact Village Groups
Vice Secretary of the Village Party Branch	Assist the Party Branch Secretary, in charge of, Branch Organization Construction, Grassroots Governance, Villagers Petition
vice director of the VRC	Assist the Director of the VRC, contact with A, B villagers groups, Villagers Petition, Education, Environment Protection, Medical Treatment and Health
vice director of the VRC	Assist the Director of the VRC, contact with C, D villagers groups, Helping the Overseas, Militia work, Community Security (in the suburban villages, also have, Residents Management, the Committee work for the Care of the Next Generation and other tasks)
Member of the VRC	Homestead Management, Estate Management, Management of water and electricity (in the suburban villages, also have, Land Management, Enterprise Management)
Member of the VRC	Mediation, Sports, Publicity, Village finance Disclosure and Affairs Opening, Information Management
Member of the VRC	Women Work, Family Planning, Civil Affairs, Social Security, Religion Management
Member of the VRC	Household Registration, Financial Management, Residents Files Management, Agricultural Management, Agricultural Industrialization

*In this survey, we find that ,in Guangdong province, more than 80% of the Directors of the CRC serve concurrently as the community party branch secretary, more than 50% of the Directors of the VRC serve concurrently as the village party branch secretary, so the party branch work division of labor is also listed here, helps to fully show the division of labor of the CRC and the VRC.

Based on the analysis of the two organic Law and the division of labor of the VRC and the CRC, we can found that: between the urban and rural grass-roots social management autonomy organization — the VRC and the CRC, the biggest difference is their organization norm and function design are

different, the first significant point is endowing the management authority of the community economy or not, this problem affects that whether the urban and rural grassroots can get homogeneous autonomy quality or not. The function design of the VRC includes controlling the village collective economy, it make the VRC not a pure autonomous organization; however the CRC does not manage the community economic, its core function is making sure of the services and protection of community residents' life and welfare. This survey found that: Many VRCs are actually busy in developing village economy, ignoring some important but not urgent matters such as "rural political democracy construction, community ideological and cultural construction, women and children development, rural social security" and so on. The institutional reform of changing the VRC of the villages in city or in outskirts to the CRC in Guangzhou, Shenzhen and other cities, have provided an idea and solution for the Guangdong VRCs' changing path in the future. That is the VRC give the power of economy management to the Community Corporation, which was transform from the Village Collective Economic Organization, gradually change into the CRC, only responsible for community self-governing tasks. It will help the rural grass-roots autonomous organizations have clearer and more concise functions, the VRC should quit from the historical stage, the CRC become the legal autonomy organization both in the urban and rural, by combining the institution and unifying the execution of them.

The second significant difference point between the VRC and the CRC is its staff embedded in the community or not. This problem mainly affects the VRC and the CRC staffs' selection, usage, evaluation, training, flowing, motivation and other fields, decides the VRC and CRC staffs quality and work relationship with the community, which affect the quantity of homogeneous autonomy in urban and rural grassroots communities. That means it is also an important problem need to have the comprehensive design that following the urban and rural harmonious development thinking, we will discuss it in another paper.

3 The promotion value of grassroots social management system innovation for coalescing the crevice between the urban and rural

Having the aborative analysis of the reality and the historical origin of the crevice between the urban and rural, many aspects may be involved, but our project team found through this investigation that the current separate system supply, the urban and rural different social Management system, is an obvious barrier.

(1) The suppression effect of the old different social management system of the urban and rural

Social systems are rules that restrain the society to operate orderly, established on the reality and standardized expression of the existing social relationships, too. Like what North had said: "Systems are game rules of a society, more precisely, they are restrictions set to determine the relationship of people"^[2]. Old systems were formed under the condition at the old time, but because of institutional path dependence and self-locking tendency, they have become a stable repeated and automatically executed behavior patterns.

The different urban and rural social Management systems seriously limited both urban and rural residents activities, formed some significant negative effects: the first one is the old system led to a pervasive administrative culture and social psychology—"praising the city and belittling the village", which resulted in a deep negative influence in group decision and group think of public administration and social management, for example, in the field of supporting primary and secondary industries, strategic arrangement of regional economy, infrastructure construction, social and cultural construction, etc., all have the tendency of emphasizing and invest more on the city; As Rawls said: "The institutional form of the society influences all social members, and to a large extent, it decides what kind of people they want to be, and what kind of people they are"^[3], the weak position of farmers has been formed, and continuously been strengthened and been restricted. The second one is the social control profit of the old system shows an apparently decreasing trend, "the urban-rural different autonomy system" at the period of PRC's foundation is a reflection of social reality at that time, designed for the system to protect urban and rural residents' property rights, interests and living

standard separately but as quickly as possible, because the core goal is to achieve the maximization of the interests of the states stability after a long period of war, about 100 years. At present, the national condition has been thoroughly changed in “quality” compare with 65 years ago, but until now, the urban and the rural have been forced to stand in an contrived systematic opposite situation. In originally, the urban and rural are just geographical distinction of production gather mode, social inhabit mode and economic operation area, but the fragmented social system of urban and rural autonomy became a rigid constraint of urban and rural residents life trajectory, suppressing the free flow and independent development of urban and rural residents, impeding the deepening of market economy and reasonable allocation of manpower in the province, leading to continuous increase of social transaction costs. The third one is the existed old system has formed a strong resistance to the integration of the urban and rural, the friction between “the existing system design” and “the trend of social development” are getting stronger and stronger, the urban and rural economic and social development are in the bottleneck period, residents in the urban and rural are all eager to break the system barrier, to enjoy a homogenous society management services.

(2) Change acceleration of the new social management system

Designing, building, running and changing systems are guided by the dominant values of current social, which reflects the primary historical task of social development and the most basic social order. At the time of the PRC founded, social stability is the top priority task and that is the reason why the new China established different but effective social management system only based on the traditional pattern of social control as soon as possible. The realistic conditions of very few island-like developed cities and vast unenlightened rural area at that time, determined the China could only adopt different system of grassroots autonomy.

At present, the China has experienced 65 years of development and changes with new social relations that have been formed, the top priority task of national management has shifted from “society stability” to “society development”, the work pattern of local government has shifted from “control the Market and the Society” to “serve the Market and the Society”. In the five “Balanced Development Strategy” that the Centre People’s Government had issued, “the urban and rural balanced development strategy” is the first of the five strategies that becomes the new mainstream social value and the harmonious development of all the people becomes the biggest impetus of the social institutional change. As the link point between social development and institutional change, the urban and rural residents are not only the important subject to innovate institution but also the important object to benefit from new institution. We found that 96.9% of rural residents who are investigated are eager for enjoying a unified autonomy system, homogeneous self-management quality and same living standards of the urban and rural areas, actively express their subjective will and value pursuit, and show their concern for problems of “land contract, homestead management, village collective property management, village affairs opening, community decision participation, equality of men and women” in the process of transforming the VRC to the CRC. This is basically same with Wei Ji-fei’s research conclusions in several items^[4]; city residents also express their high concerns to participate in community management and improvement of autonomy quality, 93.4% of respondents willing to participate in community affairs, but new way and new method for the participation of residents in community self-governance need to be enacted by new institution at present.

Institutional change has always been established on the basis of the development of the real person, aimed at resolving “the contradiction of development of differences between the majority and minority, the order and freedom, the stability and variability of institution and between the fairness and efficiency”^[5], the innovation of urban and rural social management system do response to the urban and rural residents’ demand of harmonious society development as well as the positive interaction between people and institution in the real which can play a continuous acceleration on the urban and rural harmonious development.

(3) The urban and rural concordant social management system design

Institution innovation usually carried out on two paths: the first one is to modify the existing old institution framework and rules content which prevent from meeting the development of productive forces in order to eliminate system friction resistance; the second one is to add new institution

framework and rules content which can promote the development of productivity to increase system promotion power.

To promote harmonious development of urban and rural area, social management system innovation should follow these two paths step-by-step: The first step, the Centre People's Government should revise and merge the "Law of VRC" and the "Law of CRC" and set up a new "Organization Law of Community Resident Committee" to change the current status of the VRC and the CRC as the self-government organization separately in rural and urban areas, to unify them to the Community Resident Committee(CRC)(or CMC, the Community Management Committee), and adjust its management functions to meet the needs of the urban and rural grassroots self-governing. The second step, according to the development trend of modern society, at the time when setting up the new "Organic Law", the autonomous organization function of the Community Residents Committee should be strengthened by regulations design full of envisioning change with consideration about scientific participation path of the House Management Company, the House Owners Committee, the Community Corporation, the agricultural economic cooperation organization and other social organizations in community autonomy, to lead the rural community construction by system innovation surpassing the social status, to inject development acceleration into the rural community management so as to catch up with the development pace of urban community. Meanwhile, those problems had exposed in the urban community management should be normalized in the new Organic Law to improve the quality of urban community management synchronously. The combination of these two steps will result in a complete system innovation process, as Paul Ricoeur had said: "the ultimate meaning of the system is to provide services for human through the system"^[6]. The urban and rural residents obtain the homogenous and good social management service as soon as possible is not only an important symbol of the integrating development of urban and rural areas but also is the ultimate value of the innovation of social management system.

4 The research conclusion and prospect

(1) The Research Conclusion

① Based on the present situation of the domestic urban and rural grassroots self-governing, the government and the society in China must recognize that they must pay attention to the negativity of management system hysteresis and the positivity of institutional change in social development, complying with the social development trend, the systematic innovation that surpass the social present situation can have a tremendous promotion of the development of society, and the transformation of grass-root self-governance under the process will be the ultimate value to the development of the whole society.

② Based on the ideality of the balanced development of urban and rural areas, the government and the society must realize that changing the different social management system in urban and rural areas to a unified system is the first and crucial innovation to develop the urban and rural synchronously, changing the VRC to the CRC or the CMC is the right transform path, then must encourage urban and rural people to actively participate in the specific implementation of the urban and rural development strategy. Exerting the effect of people performing the intrinsic role to promote historical progress is the key significance of institutional change.

(2) The research prospect

At present, there are 25849 grassroots autonomous organizations in Guangdong Province, in which the Rural Resident Committees are 19245, and the City Resident Committees are 6604[7], from the phenomenon that the number of the VRC is far greater than the number of the CRC, we can understand significant heterogeneity of the self-governance of the rural and urban society at the grass-roots level still existed.

Therefore, the "Urban and Rural Balanced Development" is a medium and long-term strategic task, and is the ideality of urban and rural residents to pursue high quality of work and life. The social management system innovation discussed in this paper, is just to integrate the grassroots autonomy system of the urban and rural, only playing a bridge role of rift between the urban and rural on one dimension, but the other more important dimensions, local governance system is still divided and

different between urban and rural areas nowadays, how to reform the local governance system need to do further research in the future.

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Research on the Assessment System of University Teachers Based on Developmental Evaluation

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Abstract Teachers' developmental evaluation follows the principle of people orientation and dynamic management. It pursues for an objective evaluation on teachers' potential and practical values so as to help them increase occupational level and achieve sustainable development in their teaching career. In the reform of Chinese university teachers' assessment system, active efforts need to be taken in changing the traditional reward-punishment evaluation model into developmental evaluation-based model which takes reward and punishment as the auxiliary methods. And more emphasis ought to be put on the developmental evaluation itself and its guiding function for advancing teachers' development.

Key words developmental evaluation, university, teacher, assessment

1 Introduction

Personnel system reform in colleges and universities aims to set up a personnel management mechanism founded on a modern university system. And the evaluation system of university teachers is one of the key aspects in the personnel system reform. Therefore, at the time of Chinese higher education entering into the period of connotative development, it is essential to optimize the existing evaluation system of university teachers if we want to make the reform of higher education personnel system more rational and sophisticated and the education quality highly improved. With regards to perfecting the teacher evaluation system, more open and multiple methods need to be explored through keeping to the principle of openness and fairness and taking into consideration the characteristics of teachers' labor, such as its continuity, complexity, creativity and individual autonomy.

In the past decades, teacher evaluation in colleges and universities of China has been using reward and punishment in evaluation of teachers' work value. This summative assessment method lacks supervision over the whole teaching process, neither meeting the requirement of connotative development of higher education, nor adapting to the sustainable development of higher education with Chinese characteristics. Teacher developmental evaluation, beginning in the 1980s, is a formative assessment model that takes evaluating process as its focus and development promotion its goal^[1]. It adheres to subject orientation, pluralistic value orientation and evaluating process orientation, aiming at promoting teachers' development and eventually becoming a major assessment model for university teachers^[2]. In addition, this evaluation model can more scientifically make an objective evaluation on teachers' potential and practical value, thus realizing the ultimate goals of making comprehensive assessment. Then it can help teachers to increase occupational level and achieve sustainability in their teaching career.

Therefore, in the process of reforming evaluation system of China's university teachers, it is important to actively transform the traditional reward-penalty evaluation model into the developmental evaluation-based model that is supplemented by reward and punishment. We need to give more priority to developmental evaluation and make full use of its guiding function. For instance, it can be applied in advanced individual examination, job promotion or demotion, and salary management.

2 The design of developmental evaluation system of university teachers

The developmental evaluation of university teachers is a periodic process. Its evaluation system is a fundamental guarantee for achieving a smooth evaluating process and realizing evaluation goals. "Teacher developmental evaluation system takes objectives of teachers' personal development and

school development into practical evaluation, which can serve as a leading indicator for the future progress of teachers and schools^[3]. Therefore, it is of far-reaching significance to construct and perfect the developmental evaluation system of university teachers.

2.1 The operational procedures for developmental evaluation of university teachers

Teacher developmental evaluation model is characterized by two-way evaluation based on democratic consultation. It is a process of consultation between evaluators and the evaluated about the goals of school development and teachers' professionalization. Its evaluating strategy advocates the process of "response-consultation-consensus", according to which, evaluation is divided into procedures of evaluation target discussion between two-side assessors, evaluation index establishment, evaluation plan determination, evaluation information collection, on-time evaluation implementation, and results feedback. These procedures make up a periodic process, for result feedback is not an ending of developmental evaluation, but the beginning of a new round evaluation.

(1) Evaluation target discussion between two-side assessors. Determination of evaluation targets indicates the beginning of teacher developmental evaluation. At this stage, school leaders, evaluation experts and teachers should jointly determine the target indexes needed in the evaluating process. Most importantly, it is necessary to let teachers understand that the purpose of evaluation is not to offer rewards or punishments, but to promote their professional development and to eliminate their concerns for achieving a harmonious atmosphere of mutual trust.

(2) Evaluation index establishment. Index means a behavior expectation field connected with teacher's work performance^[4]. Evaluation on teacher is an abstract work in nature and it can be shown clearly merely by concrete indexes. The index establishment should be able to fairly and objectively reflect teachers' specific performance and their development potential in professional ethics, teaching and research. For example, for the overall evaluation on teachers, the work can start from such indexes as their teaching level, scientific research ability, interpersonal relationship and social services.

(3) Evaluation plan determination. Evaluation plan shall be formulated according to teachers' teaching cycle or employment period. "The plan should specify evaluation's purposes, methods, contents, time and value orientation"^[5]. In general, evaluation based on teaching cycle will regularly evaluate index about teachers' professional development in the whole academic year. Evaluation based on teachers' employment period will assess their teaching amount, scientific research amount, social services and interpersonal relationship during their tenure. And its evaluation time is elastic.

(4) Evaluation information collection. Information collection is a key step in teacher developmental evaluation. Related evaluation information about teachers can be achieved through classroom observation, information feedback from scientific research apartments, colleagues' and students' evaluation and teachers' self evaluation etc.. After the collection, information should be sorted and arranged to form a suitable information table.

(5) On-time evaluation implementation. When the preparatory work is done, teachers should be evaluated objectively and impartially according to various indexes set in the evaluation plan so as to form comprehensive evaluation results.

(6) Feedback of evaluation results. The purpose of teacher developmental evaluation is to promote their occupational development. Therefore, the evaluation results should be timely given to teachers, which can help teachers in their self reflection, self education, self adjustment and self improvement.

2.2 The index system of university teachers' developmental evaluation

Teacher developmental evaluation system is a concrete manifestation for the development goals of teachers and universities. According to the evaluation system concept and previous research about evaluation on university teachers^[6], a evaluation index system covering four dimensions, such as teaching level, scientific research ability, teacher-student relationship and social service, need to be made.

(1) Teaching level (A) index system

Teaching level is a comprehensive assessment of teachers' teaching and education. Its indexes are shown in Table 1.

Table 1 Evaluation index system of teaching level

Second level index	Third level index	Evaluation level			
		Excellent	Good	Average	Poor
Teaching content(A ₁)	Accord with school education goal(A ₁₋₁)				
	Accord with professional discipline(A ₁₋₂)				
	Rich course content(A ₁₋₃)				
	Reflect the latest discipline frontier theory(A ₁₋₄)				
	Clear blackboard writing and theme(A ₁₋₅)				
	Finish the teaching program(A ₁₋₆)				
	Suitable teaching materials(A ₁₋₇)				
	Conducive to cultural heritage(A ₁₋₈)				
...					
Teaching attitude(A ₂)	Rigorous scholarship(A ₂₋₁)				
	Careful class preparation(A ₂₋₂)				
	Answer questions carefully(A ₂₋₃)				
	Passionate delivering(A ₂₋₄)				
	Check the homework seriously(A ₂₋₅)				
...					
Teaching method(A ₃)	Combination of theory and practice(A ₃₋₁)				
	Combination of the whole and parts(A ₃₋₂)				
	Applying the multimedia technology(A ₃₋₃)				
	Diverse class communication forms(A ₃₋₄)				
	Combine oral delivery and experiment(A ₃₋₅)				
...					
Student cultivation(A ₄)	Guiding in students' learning and research(A ₄₋₁)				
	Care for students(A ₄₋₂)				
	Focus in students' future(A ₄₋₃)				
	Train students with scientific spirits(A ₄₋₄)				
	Good personality education(A ₄₋₅)				
	Care for students' ideology and morality(A ₄₋₆)				
...					
Teaching effect(A ₅)	Organized and infectious(A ₅₋₁)				
	Arouse students' enthusiasm(A ₅₋₂)				
	Improve students' innovative ability(A ₅₋₃)				
	Improve students' scientific research ability(A ₅₋₄)				
	Improve students' learning ability(A ₅₋₅)				
...					

(2) Research capability (B) index system

Scientific research ability is the judgment of teachers' scientific research strengths and potential. Its indexes are generally shown in Table 2.

(3) Teacher-student relationship (C) index system

The index system evaluating relationship between teachers and students is generally shown in Table 3.

(4) Social service (D) index system

Social service evaluation is a process from qualitative to quantitative. The index system is shown in Table 4.

Table 2 Evaluation index system of scientific research ability

Second level index	Third level index	Evaluation result
Published papers(B ₁)	Author sort(B ₁₋₁)	
	Journal level(B ₁₋₂)	
	Impact factors of publications(B ₁₋₃)	
	The number of citations(B ₁₋₄)	
	...	
Published academic monographs(B ₂)	Author sort(B ₁₋₁)	
	Press level(B ₂₋₂)	
	Word number of academic monographs(B ₂₋₃)	
	circulation(B ₂₋₄)	
	...	
Research topic or project(B ₃)	Author sort(B ₃₋₁)	
	Topic or project level(B ₃₋₂)	
	Research funding of topic or project(B ₃₋₃)	
	Evaluation result and award of topic or project(B ₃₋₄)	
	...	
The invention patent(B ₄)	Author sort(B ₄₋₁)	
	Patent level(B ₄₋₂)	
	...	

Table 3 The Evaluation Index System of Teacher-student Relationship

Second level index	Third level index	Evaluation result			
		Excellent	Good	Average	Bad
Relationship between teachers and students(C ₁)	Respect the individual differences of students(C ₁₋₁)				
	Respect students' opinions(C ₁₋₂)				
	Listen to students(C ₁₋₃)				
	Help students face success and failure(C ₁₋₄)				
	Use humor to adjust atmosphere(C ₁₋₅)				
	...				

Table 4 Evaluation Index System of Social Service

Second level index	Third level index	Evaluation result
Teaching and social service(D ₁)	Deliver a study planning lecture for students(D ₁₋₁)	
	Deliver a lecture for the public(D ₁₋₂)	
	Join in volunteer teaching activities(D ₁₋₃)	
	...	
Scientific research and social service(D ₂)	Great social value in scientific research(D ₂₋₁)	
	Big economic value from scientific research achievements(D ₂₋₂)	
	citations(D ₂₋₃)	
	...	
International communication and social service(D ₃)	Take part in international conference(D ₃₋₁)	
	Introduce international talents(D ₃₋₂)	
	Participate in international research (D ₃₋₃)	
	...	
Students' matters and social service(D ₄)	Guide undergraduates in studies(D ₄₋₁)	
	Recommend students to go abroad or summer camp(D ₄₋₂)	
	Be undergraduate class tutor(D ₄₋₃)	
	Deliver freshman lecture(D ₄₋₄)	
	...	

3 The strategy of implementing university teachers' developmental evaluation

Developmental evaluation on university teachers is based on the past, focus on the present and face the future. Its purpose is to realize teachers' professional development and universities' sustainable development. In the process of implementing developmental evaluation, attention should be paid to the organic unity of teachers' personal value, ethical value and professional value, and to the exploration of teachers' potential in teaching and scientific research.

3.1 The establishment of developmental evaluation concept of people orientation and dynamic management

Firstly, teacher developmental evaluation puts people first and sticks to evaluation subject orientation. It is a promotive evaluation method indirectly connected with rewards and punishments. Its basic characteristic is "negotiation", for evaluators and the evaluated jointly participate in the evaluating process, with the aim of promoting development through evaluation. Thus it can be viewed as a two-way evaluation process, emphasizing to appreciate evaluation objects, weaken incentives of various indicators and quantify the evaluation.

Secondly, developmental evaluation attaches great importance on dynamic management and advocates process orientation. "It focuses on the dynamic management of teachers' behavior and pursues for what is suitable teachers' growth and what is appropriate for their development stage"^[7]. Dynamic management mainly evaluates teachers' past work performance, their actual demands and their future development from the development point of view.

Finally, developmental evaluation insists on evaluation subject diversification and value pluralism. Plurality of evaluation subjects is its important feature, which is embodied by the interactive evaluation between university (college) leaders and teachers, colleagues and teachers, students and teachers, etc. The ultimate goal is to achieve comprehensive assessment results. "developmental evaluation, abandoning the quantitative evaluation concept centering on scientificity and objectivity, is a process of integrating various values and a process of multiple subjects participating in the negotiation and building"^[8].

3.2 The formation of scientific teacher evaluation index

University teachers' developmental evaluation index should serve the progress of teachers' professional capability and their sustainable development. This kind of evaluation calls for scientific indexes and cares about teachers' future development and their professional training. In line with comprehensive quality requirements of university teachers, three complementary evaluation indexes, teaching training, teaching style and after-class teaching, need to be added on the basis of three main indexes-- occupation morality, teaching skill and professional ability. Occupation morality and teaching skill are the foundation of being a teacher. "Teaching skill is the index set for evaluating teachers' teaching task and the way to complete it"^[9]. For a qualified teacher, professional ability is the key; teaching training, teaching style and after-class teaching constitute the guarantee. Diverse evaluation indexes not only can effectively examine teachers' performance in all aspects of teaching work, but can make an objective evaluation on teachers. These indexes are of great significance to improve teachers' teaching level and construct scientific teaching evaluation index system which can achieve objective, impartial and comprehensive evaluation results.

3.3 Introduction of the third party evaluation system

Firstly, when introducing the third party evaluation mechanism, we should determine a highly effective evaluation subject with a reasonable structure. During the evaluation, related education experts, education departments and students ought to act as the main assessors. Their evaluation will provide reference for advancing teachers' development.

Secondly, goals and contents of the third-party evaluation need to be determined in order to increase the effectiveness of evaluation. Through conducting follow-up surveys among graduates, we can get the feedback that whether university's management, curriculum and teaching are suitable for students' future career. In return, information about graduates' career development can provide reference for upgrading university's courses and teaching methods, and can promote the development of teacher evaluation system.

3.4 The building of a guarantee system for teacher developmental evaluation

First of all, we need to increase the publicity of teacher developmental evaluation and create a good public environment. “Related surveys show that teacher’s using teaching experience and self-perception to evaluate his class delivery does no good for improving teaching quality and making career plans.”^[10] As a result, colleges and universities must publicize teacher developmental evaluation in a large scale. Through introducing and cultivating academic pioneers, universities encourage experienced academic leaders to guide the young teachers in discipline construction and teaching quality improvement, whose purpose is to create a sound working atmosphere. At the same time, universities should increase opportunities of further training for young teachers and help them make career development plans, including personal development, professional development, teaching development and organizational development.

Secondly, university needs to improve teacher assessment system and explores to set up teacher turnover system. In accordance with the concept of developmental evaluation, efforts should be taken in reforming university’s internal governance structure, innovating the organizational model of teaching and scientific research and building an incentive evaluation system of grading assessment and grading responsibility. In addition, “university requires to fully implement teacher employment contract system and set up a scientific employment target in order to strengthen the assessment and contract management.”^[11]

University needs to improve personnel dispute resolving mechanism for teachers and explores to build up teacher turnover system. The assessment results should be promptly fed to teachers. University ought to solve all the problems and difficulties teachers encounter in their teaching and scientific research so that their ability of teaching and scientific research can be improved. If some teachers are not competent for teaching and scientific research and lack occupational development potential, they will be arranged in other more appropriate work positions or give up being a teacher. Only in this way can the overall quality of teachers be improved eventually.

4 Conclusions

Through research on university teacher developmental evaluation system, we can make an objective judgement on teachers’ actual and potential values. That can help teachers increase their professional level and achieve sustainable development in teaching career. However, there are still some shortcomings in this research, which are presented as follows:

The first is that in the process of constructing teacher developmental evaluation system, we merely evaluate teachers’ teaching ability, research ability, interpersonal relationship and social service, lacking related exploration and research on teachers’ future development demands.

The second is that the work we do is more about theory than practical research. Most studies about teacher developmental evaluation concentrate on theoretical discussion, such as the discussion about its nature, characteristics, standards, system, and methods. But the practical research is rare. The next we need to do is that we must increase the amount of practical research and promote balanced development of theory and practice so that a good situation of theory and practice enjoying joint development is formed.

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Research on the Continuous Usage of Mobile Government in China: From Intention Formation to Behavior Generation

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Abstract As a continuation and development of E-government, the mobile government has many advantages over traditional E-government. The government is actively promoting the popularization of mobile government. But in practice, the continuous usage frequency of mobile government is low. It is not conducive to take the advantages of mobile government, and improve the quality and efficiency of government services. Therefore, this paper based on ECM-ISC, trust theory, and habit theory builds a theoretical model of mobile government influence factors: From intention formation to behavior generation. By the means of the empirical research, it proves that the impact of perceived usefulness on continuous usage intention is not significant. Perceived usefulness and expected validation have significantly positive effects on degree of satisfaction, while satisfaction significantly positively influences continuance usage intention; In addition, trust also has a significantly positive impact on continuous usage intention; Continuous usage intention and habit positively influence continuous usage behavior. At the same time, the habit weakens the influence of continuous usage intention on continuous usage behavior.

Key words Mobile government, Continuous usage intention, Continuous usage behavior

1 Introduction

With the development of internet information technology and the popularity of mobile terminals, the ways of getting information have been dramatically changed. China Internet Network Information Center (CNNIC) released the 39th “China Internet Development Statistics Report”, which shows that the number of Chinese internet users has reached 731 million, of which the number of mobile phone users has reached 695 million up to December 2016^[1]. Access to information or services via mobile devices on the Internet has become an integral part of people’s work and life. The government also conforms to the “trend”, and develops and expands new service means—Mobile government (M-government) based on E-government. M-government refers to the application of wireless information and communication technology to achieve government management and its services of electronic and mobile (Dai Lei, 2011^[2]) M-government has some obvious advantages such as the mobility, timeliness, interaction, portability and low cost, but the government can not guarantee that users accept and continue to use it in the process of using mobile devices to get services (Zhu Duo-gang and Guo Jun-hua, 2016^[3]). Therefore, it is the focus of the current government and academia to explore the influencing factors of the public adoption of M-government, implement the corresponding countermeasures and to maximize the effect of M-government. The use of M-government is divided into initial adoption and continuous use. Initial adoption is the first step in the use of M-government, and continuous usage is the determining the ultimate success of M-government. Therefore, this paper is based on the previous research, and takes the continuous usage of M-government as the research object. Research on the sustainable use of M-government: From intention formation to behavior generation, this paper aims to provide helpful reference for promoting the continuous utilization of domestic M-government.

2 Theoretical basis and research hypothesis

In previous researches on the continuous usage of M-government, most literatures often equate continuous usage intention with continuous usage behavior. Thus, the black box between the will and the behavior is ignored. The purpose of M-government is to continue the use of the people, and intention may be a factor in influencing behavior, both of which are not the same. Therefore, to make up for the shortcomings of previous studies, this paper divides the continuous usage of M-government

into two stages: Intention formation and behavior generation of continuous use. By the means of these two differences but mutually affected stages, a thorough analysis and more comprehensively understand the formation mechanism of M-government continuous usage behavior can be made.

2.1 Stage of continuous use intention formation

Based on the continuous usage of information systems research, the classical theory or model adopted by most previous scholars came from the initial adoption. However, with the deep development of further study, some scholars found that the theory or model of initial adoption was not high enough to explain the continuous usage behavior after the adoption, and the research value was low (Davis F.D., 1989^[6]). Bhattacharjee firstly broke through the theoretical framework of the initial adoption of information system in 2001. He applied expectancy confirmation theory (ECT) which was widely used in consumer behavioral and technology acceptance model (TAM) to build a new model of information system continuous usage (ECM-ISC, as shown in Figure 1), and confirmed by empirical research. As a continuation and development of E-government, M-government is also a kind of information system, whether the ECM-ISC model also applies to M-government needs further exploration. Theoretically, before public use M-government, they will form an initial expectation about the function and effect of M-government. At the same time, in the actual use process or after use, they also will produce an empirical perception. They will do the comparative between expectations and empirical perception. The results of comparison are expectation confirmation, the higher degree of confirmation, the more conform to the expected realistic, and even beyond expectation. By affecting the user's satisfaction with M-government predict whether the public will continue to use the service of M-government. Therefore, this paper presents the following 4 hypotheses based on the ECM-ISC model.

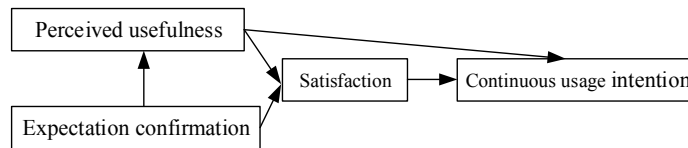


Figure1 ECM-ISC model (Bhattacharjee, 2001)

H1: User's expectation of M-government positively affects satisfaction.

H2: User's expectation of M-government positively affects perceived usefulness.

H3: User's perception of M-government positively affects satisfaction.

H4: User's perceived usefulness of M-government positively affects continuous usage intention.

H5: User's satisfaction of M-government positively affects continuous usage intention.

The trust theory was firstly proposed by Simmel, which has now become the focus of many disciplines and applied to research different information systems. Trust is an extremely important factor in the continuous usage intention of M-government. With the development of the internet, M-government provides convenience to the public, but personal privacy, network security has become a major concern for users of M-government. Many scholars have already shown that in the Internet age, people accept or not accept, continue to use or no longer use m-government. In addition to their own information system needs, as well as the advantages of information systems. The trust is also the impact of its continuous use a decisive factor (Teo, Srivastava and Jiang, 2008^[7]; Carter, Weerakkody and Phillips, 2016^[8]). The public in the process of use M-government, if they believe that M-government is safe, and the M-government information more comprehensive, real, authoritative, convenient or easy to handle, that their willing to continue to use M-government will become stronger. Yang Xiao-feng also confirmed that trust will affect the public's willing of continue to use E-government in a research of public continuous usage E-government (Yang Xiao-feng, 2009^[9]). Based on this, the following hypotheses are proposed:

H6: User's trust for M-government positively affects continuous usage intention.

2.2 Stage of continuous usage behavior generation—The moderating effect of habit

The habit theory was proposed by Verplanken, which is a kind of spontaneous mental activity based on past experience of the users. This psychological activity often has the characteristics of repeatability, spontaneity, environmental stability, goal-oriented (Chen Yu and Lu Yang, 2009^[10]).

Habit was used to research of psychology category in the previous time. With the deepening of the research, scholars have found that the habit has an important influence on the user's behavior of continuous usage, based on the characteristics of habit and the long-term and developmental nature of continuous usage. Habit on the role of continuous usage has a direct effect, indirect role (mediating role) and the role of regulation of the three roles, and even some scholars point out that continuous usage is an increasing habitual behavior (Chen Yu and Lu Yang, 2009^[10]). They also confirmed that user's habit may has three effects on continuous usage behavior, which include direct effects, indirect (mediating) effects and moderating effects. Some scholars even point out that continuous usage is a increasing habitual behavior. Subsequently, a large number of scholars at home and abroad have introduced the habit into different information system, such as learning information system, to study the influence of habit on behavior of continuous usage. Limayem and other scholars believe that the continuous usage behavior is not only affected by the intention of users, but also with increasing frequency of use, user will form an automatic habitual behavior to use again. Although the habit theory has been widely studied in various types of information systems, and confirmed its important role in continuous usage intention and behavior. Unfortunately, although E-government scholars have realized that habits play an important role in the continuous usage of E-government. There is no substantive research on this. Does the habit have similar effects on other systems in the M-government system? Which still needs to be verified by mass quantitative data. Based on this, this paper applies habit as moderator variable to propose the following hypothesis:

H7: The habits of M-government users weaken the impact of continuous usage intention on continuous usage behavior.

H8: The continuous usage intention of users positively influences continuous usage behavior.

H9: The habits of M-government users positively affect continuous usage behavior

2.3 Research model

Integrating the research hypothesis which comes from two stages of user's continuous usage intention formation and continuous usage behavior generated, and then we proposed a research model for the continuous usage of M-government (as shown in Figure 2). In Figure 2, PU indicates Perceived Usefulness; EC indicates Expectation Confirmation; CS indicates citizen satisfaction; CUI indicates Continuous Usage Intention; CT indicates Citizen Trust; CH and CUB indicate citizen habit and continuous usage behavior, respectively.

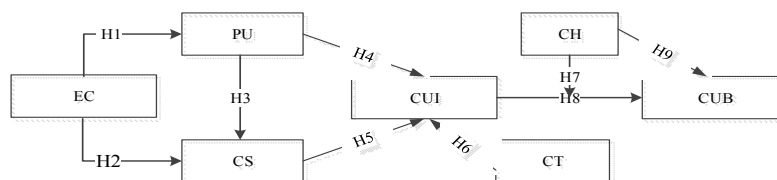


Figure 2 Influencing factors model of continuous usage of M-government

3 Research design

3.1 Questionnaire design and data collection

In this paper, there are 7 variables in the model. Based on the existing research at home and abroad, we sum up the most closely related scales, and also define the variables in the proposed model. Finally, the preliminary test items of each research variable are designed to form the initial questionnaire. The questionnaire includes two parts, one is personal basic information (gender, education level, age, occupation, income, political face, daily use time of mobile equipment, whether he/she has been used is using M-government); Second part includes 7 measurement items. These variables are scored by the Likert 5-point scale, "1" and "5" indicate the STRONGLY AGREE and STRONGLY DISAGREE, respectively. After the initially designed questionnaire, a pre-survey and collected 106 pre-survey questionnaires are conducted. According to the pre-survey results and 2 experts' suggestions, we modify some poor results and form the final formal questionnaires. Eliminating invalid and never use or are using M-government questionnaires. Finally, 243 valid

questionnaires are got with an effective rate of 77.88%. In these questionnaires, men and women account for 43.36% and 56.64%, respectively; Age is mainly concentrated two age stages: 18-24 and 25-34 years old, accounting for 76.54%; Most of the respondents have undergraduate or higher education level, accounted for up to 62.55%. The result of survey sample similar with situation of the CNNIC releases by the Chinese internet user's statistics.

3.2 Data analysis

3.2.1 Reliability and validity test

The reliability and validity of the collected data are tested by SPSS 22.0 software. The reliability test shows that the Cronbach α value is 0.876, and the KMO value is 0.82. The Bartlett spherical test is approximately 7191.083, and the degree of freedom is 351, the significance is 0.000. It indicates that the reliability of the problem is higher, and factor analysis can be carried out.

3.2.2 Correlation analysis

SPSS 22.0 is applied to analyze the variables in the questionnaire data, in order to carry out a preliminary test for these hypothesis. According to Table 1, the correlation of the seven variables is significantly correlated at 0.01 level. Therefore, nine research hypotheses are preliminarily confirmed: Perceived Usefulness and Expectation Confirmation (.772**); Perceived Usefulness and Satisfaction (.795**); Perceived usefulness and intention of continuous usage (.681**); Expectation Confirmation and satisfaction (.711**), satisfaction and intention of continuous usage (.693**), trust and intention of continuous usage (.733**); intention of continuous usage and habit (.872**), continuous usage behavior and continuous usage intention (.875**).

Table1 Correlation analysis matrix

	PU	EC	CS	CT	CH	CUI	CUB
PU	1						
EC	.772**	1					
CS	.795**	.711**	1				
CT	.666**	.671**	.585**	1			
CH	.713**	.570**	.648**	.616**	1		
CUI	.681**	.690**	.693**	.733**	.872**	1	
CUB	.697**	.661**	.708**	.727**	.846**	.875**	1

* Significant correlation at .05 level (bilateral). ** Significant correlation at .01 level (bilateral)

3.2.3 Regression analysis

By the means of the correlation analysis of variables in the model, it can be found that the 7 research hypotheses have been preliminarily validated. In order to further verify the hypothesis and model, this paper uses hierarchical regression analysis to test the relationship between independent variables and dependent variables. The specific steps as follow: (1) Satisfaction as a dependent variable, EC and PU as independent variables for regression; (2) Take CUI as dependent variable, PU, CS, and CT as independent variables for regression; (3) Take CUB as a dependent variable, and CH, CUI as independent variables for regression analysis. In order to observe the result of regression analysis more intuitively, we put the analysis result (include three steps) into Table 2. In Table 2, the variance inflation factor (VIF) in a reasonable range ($0 < VIF < 10$), there is no multicollinearity between variables. When taking continuous usage behavior as a dependent variable, the coefficient of regression (R^2) is 0.825, it shows that the proposed model could explain 82.56% about the continuous usage behavior. At the same time, the probability of significance is $0.000 < 0.001$, and the regression model reached a significant level.

Subsequently, we validated whether the habits have a moderating effect on the continuous usage intention and the continuous usage behavior. The specific steps as follow: (1) Take CUB as dependent variable, CUI and CH as independent variables for regression; (2) Take CUB as dependent variable, CUI, CH, interactive item between CUI and CH as independent variables for regression. The regression results are shown in Table 3. According to the results of the empirical test, the interactive item between CUI and CH as independent variables for regression is significant. It shows that the CH has moderate effect. Comparing the model 1 with model 2 and can find that the CUI has a significantly

positive impact on CUB (0.661 ***) before joining the interactive item. However, the positive effect of the CUI on the CUB is reduced 0.336, after joining the interactive item. It can be shown that the CT can negatively regulate the effect of the M-government user's CUI on CUB.

Table 2 Regression analysis data summary

Dependent variables	PU		CS		CUI		CUB	
Independent variables	Sig.	VIF	Sig.	VIF	Sig.	VIF	Sig.	VIF
EC	.000	1.000	.000	2.572	.0027	3.014	.356	3.467
PU			.001	2.370	.0651	3.921	.189	5.006
CS			.000	1.539	.000	2.949	.002	2.226
CT			.012	1.042	.004	2.051	.000	2.601
CUI							.000	7.105
CH							.000	5.585
R ² change	.609		.657		.650		.825	
Sig. F change	309.657***		190.235***		235.663***		150.971***	

Table 3 Regression results of habit adjustment effect

Variables	CUB			
	Model 1		Model 2	
	B	Sig.	B	Sig.
CUI	0.661***	0.000	0.347***	0.000
CH	0.412***	0.000	0.472***	0.000
CUI*CH			0.361**	0.014
Adjust R ²	.564		.647	
R ² change	0.083			

Based on the above analysis, the expectation confirmation has significantly positive impact on perceived usefulness and satisfaction can be found, so both hypothesis H1 and H2 are correct; PU has significantly positive impact on CS, so hypothesis H3 also is correct. However, PU has no significant effect on the CUI, hypothesis H4 is not correct. The CT and CS have significant positive impact on the CUI, hypothesis H5, H6 is correct; the CUI and CH have obviously positive impact on the CUB, both hypothesis H7 and H8 are correct. CT negatively regulate the effect of the M-government user's CUI on CUB, hypothesis H9 is correct. On the whole, the all hypotheses are validated excepting hypothesis H4 (PU has significant positive effect on the CUI).

4 Research conclusions and revelation

4.1 Conclusion

By the means of the correlation analysis, regression analysis and adjustment effect test, the following conclusions can be drawn. In the stage of intention formation: (1) Expectation confirmation has a significantly positive effect on perceived usefulness and satisfaction. That is to say, there are various expectations before public use m-government, and if the expectation confirmation is higher, the M-government will be considered more useful in the use of M-government. User's satisfaction with M-government will be higher, emotional will also be more recognized M-government. The results of this study are also validated by some researches of attitude and satisfaction on other information systems such as E-government (Chen Yao, Shao Pei-ji, 2010^[4]; Moez, Sabine, Christy, 2007^[5]); (2) Perceived usefulness positively affects satisfaction, which has been proved by many studies, and it is the core of public satisfaction with M-government. For those information systems that should have some functions but not have, its satisfaction must be poor, the user's satisfaction with the information system must be poor. On the contrary, in the process of using the M-government, if users feel it is usefulness that they also have a good emotional attitude (satisfaction) to the M-government. (3) Satisfaction has a positive impact on the continuous usage intention. Satisfaction plays an important factor on the research of continuous usage. As public have more way to get information than past time and they tend to choose the information systems which make them easier, more efficient, and

affordable and other self-interest to use. M-government as a continuation and development of E-government, it has much advantages than E-government such as mobility, convenience, low cost, and so on, which make the public have a better experience in the use of M-government. And the public also prefer to continue use M-government than other information system. Many studies also point out that public felt that the more satisfied with the information system, the stronger intention to continue using it. (4) Perceived usefulness has no effect on the mobile E-government user's continuous usage intention, this study is contrary to the results of the past researches that the perceived usefulness has a positive effect on the continuous usage intention in other information systems. The reason may be that the mobile E-government has some unique features and people think that mobile E-government can be used as entertainment or leisure time reading. Therefore, the usefulness perception of public is not so strong, and the use of M-government is also dispensable to them, the intention to continue using mobile E-government is weaker. (5) Trust has a significantly positive influence on the continuous usage intention. That is to say, the more you trust the mobile E-government, the more you want to continue use it. This trust suggests that the public accepts mobile E-government in their subconscious, and believe that mobile E-government can meet their needs in terms of government affairs. Thus, they will continue to use mobile E-government without hesitation.

In the stage of behavior generation: (1) The continuous usage intention positively influences the continuous usage behavior. People are more likely to act on things they want to do than they do not want to do. The stronger of the intention which people want to continuous use mobile E-government, the more likely to use it, when you need to inquire about government information or transact government affairs. (2) Habits tend to affect the continuous usage behavior, as when people using the mobile E-government form a habit. The users will be more willing to choose their familiar way to meet their own needs, and this behavior is even unconscious. In other word, when people need government information and deal with government affairs, they will firstly use their mobile phones or other mobile devices to check or process their needs. These habits are not only referring to use mobile E-government, but also include the habit of using mobile devices. Obviously, mobile phone has become an indispensable part of people's daily life in the mobile internet era. For instance, when one wants to eat food, he/her often uses mobile phone to search and place an order; When one wants to go to an unfamiliar place, he/she often unconsciously takes out their cell phones to check the line and take a taxi; When one wants to go shopping, he/she uses their cell phone to buy everything their want. The habits of using mobile phone which formed in their life will also affect people to use mobile phones to obtain government information or deal with government affairs. (3) Habit can negatively regulate the effect of the mobile E-government user's continuous usage intention on the continuous usage behavior. The main reason is that the intention is conscious, but the habit is unconscious. Once the habit is formed, the higher consciousness is no longer required, and the behavior can be responded directly. The conclusion has been confirmed by the research of Wang Zhe on the investigating the influencing factors of continuous usage behavior in Social Q&A: the case of zhihu.com (Wang Zhe, 2017^[11]).

4.2 Contribution and prospect

This paper takes mobile E-government continuous usage behavior as the research object, and constructs a theoretical model based on ECM-IS, trust theory, and habit theory to study the intention formation and behavior generation of mobile E-government continuous usage. And by the means of empirical research, we confirmed that the continuous usage intention is significantly affected by expectation confirmation, perceived usefulness, satisfaction, and trust. Moreover, the paper also introduces the habit factor as the adjustment variable to analyze the relationship between the intention and continuous usage behavior. It makes up the misunderstanding that takes the intention as behavior in past study, and enriches the theoretical system of continuous use of mobile E-government. However, this paper has some limitations, such as the model of influence factors that affect the intention formation and behavior is not deep enough, continuous work should be done to investigate more influence factors in future.

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Investigation of Land Expropriation Compensation in New-type Urbanization and Countermeasure Research—Take Hubei Case in China Judgments Online as the Sample

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Abstract In the beginning of the 21st century (year of 2007), the proposal of new-type urbanization has promoted the development of urban and rural integration and collectively-owned land expropriation has been intensified accordingly. But there are a lot of problems in the process of land expropriation which have even caused a series of social conflicts. The author has discovered through the investigation of Hubei case in China Judgments Online that, the focus of land expropriation disputes are mainly on land expropriation compensation, the reason of which is mainly land expropriation compensation standards are not reasonable, land-expropriated farmers have disagreements on allocation schemes, etc. Thus, reasonably establishing the standard of land expropriation compensation and setting up multi-channel dispute settlement mechanism of rural land expropriation compensation can help these disputes be solved in a fair and just way, help resolve social conflicts and guarantee land-expropriated farmers' legal rights.

Key words New-type urbanization, Land expropriation, Land compensation

1 Survey background and sample

1.1 Survey background

Since the proposal at the 16th National People's Congress of the People's Republic of China in 2003, the concept of urbanization has developed from "taking the road of urbanization with Chinese characteristics" into "new-type urbanization" determined at the 18th National People's Congress of the People's Republic of China. New-type urbanization refers to urbanization way of scientific and harmonious development in which the basic principles of people first, making overall plans and taking all factors into consideration are complied with to promote urban modernization, city clustering, city ecological development, and rural urbanization, and comprehensively improve the quality and level of urbanization.

The "new" of new-type urbanization requires that we should transform from the objectives of the number of city and urban area into the objectives of healthy and scientific urbanization and improvement of urban culture and public service.

In recent years, as new-type urbanization accelerates, land expropriation is in full swing in rural areas. Land expropriation refers to that the government transforms land of collective ownership of farmers into state-owned land according to the procedures and authority prescribed by law for the sake of public advantages, with rational compensation and proper resettlement of the rural collective economic organizations and farmers whose land has been expropriated. Land is essential to the solving of rural problems. Hence, it is necessary to improve land expropriation to promote stable and healthy new-type urbanization.

1.2 Survey sample

I, for purpose of studying land expropriation compensation disputes in Hubei Province, surveyed and analyzed 188 civil and administrative cases related to land expropriation compensation in Hubei Province from 2013 and 2016 from the China Judgments Online.

2 Focal point of land expropriation dispute in rural areas in Hubei Province: land expropriation compensation

Analysis of the cases shows that the point in dispute and appeal point of most civil and administrative cases related to land expropriation dispute are about land expropriation compensation, such as farmers' refusal to accept the compensation distribution scheme of collective economic

organization, land expropriation compensation standard and scope, and so on. Besides, in the period from 2013 to 2016, the number of land expropriation disputes in Hubei Province took on a year-by-year increase trend.

Table 1 Data of civil and administrative cases of land expropriation in Hubei Province (2013-2016)

Civil case	2013-2014	2014-2015	2015-2016	Total
Dispute related to identification of membership qualification of rural collective economic organization	1	6	10	17
Famers' refusal to accept the compensation distribution scheme of collective economic organization	3	18	19	40
Dispute related to transfer of land use rights	4	10	20	34
Dispute related to land compensation arising from house for rent	0	3	5	8
Total	8	37	54	99
Administrative case	2013-2014	2014-2015	2015-2016	Total
Dispute related to definition of purpose of land expropriation "public advantages"	0	3	3	6
Dispute related to legality of the procedure of land expropriation	1	6	36	44
Dispute related to standard and scope of land expropriation compensation	0	13	24	36
Dispute arising from act under coercion	0	1	2	3
Total	1	23	65	89

3 Analysis of causes of land expropriation compensation dispute in Hubei Province

3.1 Uncertainty of the right subject of land expropriation compensation

Since 1982, the household contract responsibility system with remuneration linked to output has been implemented in rural areas, under which parents and children act as co-contractor of land with household as a unit. Some children of farmer family leave the collective economic organization, change their residence registration and obtain non-agricultural registered permanent residence for various reasons after being an adult, and the contracted land remains to be cultivated by their parents. After their parents die, the contracted land is cultivated by those young men staying in rural areas. Dispute related to the distribution of land expropriation compensation given by the government as prescribed by law arises among the children of farmer family. Besides, some rural women migrate from the original collective economic organization for marriage or divorce, but don't obtain contracted land in the new collective economic organization. After land expropriation, the original collective economic organization insists that such women actually have been divorced from the production and living of the original collective economic organization. In other words, their life foundation has been divorced from the original collective economic organization, so they have lost the membership qualification of the organization. But the emigrants insist that since they have not changed their residence registration, they are still members of the collective economic organization. Thus, dispute related to land expropriation compensation arises.

3.2 Prevalence of private land transfer

In 2012, the area of cultivated land transfer in Hubei Province reached up to 547, 600 hectares, accounting for 16.2% of the cultivated land area. With respect to the area of land transfer, the ratio of land transfer of Ezhou, Wuhan and Huangshi is relatively high, reaching approximately 35%, followed by that of Xiangyang, Xiaogan, Xianning, Xiantao, and Tianmen, about 20%^[1]. According to a typical survey, most land transfer transactions in Hubei Province are conducted in the form of private transfer, so it is urgent to transform land transfer into the mode dominated by the government^[2]. Most members of rural collective economic organization, for residence change or other needs, usually transfer or exchange their contracted land to or with others under verbal contract or written agreement without eyewitness or handling related registration formalities. In such case, dispute tends to arise in relation to the land contract right in the case of land expropriation, in which both parties usually claim land expropriation compensation.

3.3 Irrational compensation standard

Take the example of Hubei Province. According to Article II of the Circular of the Price Bureau of Wuhan and the Land and Resources Management Bureau of Wuhan on the Location Compensation Standard for Expropriation of Land of Collective Ownership and Housing Demolition, “the compensation standard for Class I house site location is RMB2,280/m², that of Class II house site location is RMB19/m², and that of Class III house site location is RMB1,500/m².”^[3] Since the economic development level varies from place to place in Wuhan, the compensation standard for land expropriation in different sub-districts of a single city greatly differs. But throughout the province, the difference will be greater. In fact, if the compensation standard for rural cultivated land expropriation as specified in Article II of the Circular is implemented, and compared with the current housing price in Wuhan, it is easy to see even though the compensation is fully paid to the land-losing residents, their housing problem cannot be completely resolved.

Table 2 Housing price in different districts of Wuhan

Rank	District of Wuhan	Average price (yuan/m ²)
1	Wuchang District	15100
2	Jiang'an District	14221
3	Jiangnan District	13018
4	Hongshan District	12960
5	Qiaokou District	12715
6	Hanyang District	10945
7	Qingshan District	9823
8	Dongxihu District	8755
9	Jiangxia District	7966
10	Caidian District	6630

The Land Management Law explicitly provides that the living standard of the land-losing residents should not be lowered due to land expropriation, and the government should guarantee that the living standard of the land-losing residents is not lowered while giving compensation.

3.4 Dispute arising from distribution scheme

The parties involved in such kind of dispute mainly include members of collective economic organization and group of villagers. The distribution of land expropriation compensation falls into the scope of village self-governance, the subjects entitled to compensation distribution, distribution shares, and the parties to obtain compensation should be subject to discussion at villagers' meeting, and go to the vote based on the discussion. Thus, village collective organizations, after receiving compensation, should convene a villagers' meeting in accordance with Article 17 of the Organic Law of Village Committees to develop a scheme of equal distribution of land expropriation compensation among all economic organization members in the region. But it is difficult to meet the needs of everyone. One collective organization usually consists of dozens of households and more than 100 people. It is scarcely possible to reach an agreement on the distribution scheme. There always are some people considering the distribution scheme to be unequal or their distribution qualification is deprived of, then rejecting to accept the distribution scheme reached through group discussion, and then filing a lawsuit at the court. In real life, the “tartars” who strongly refuse to obey the decision on land expropriation of the government actually refuse to accept the distribution scheme or the standard of land expropriation compensation rather than the decision of land expropriation. It is urgent to solve such contradiction.

4 Approaches of resolution of land expropriation compensation dispute in rural areas in Hubei Province

4.1 Clarify the identification standard of collective economic organization member

Dispute in relation to land expropriation compensation arises frequently due to failure to clarify the identity of rural collective economic organization member. To solve this problem, a rapid and effective method is to clarify the identification standard of collective economic organization member,

namely the standard for obtaining and cancelling the identity of collective economic organization member.

The identity of collective economic organization member can be obtained in two ways, namely birth and joining. As to those who obtained the identity of collective economic organization member, at least one of their parents is the member of the collective economic organization. Alternatively, some members obtained the identity of collective economic organization member by joining in the form of marriage, adoption or household registration change.

Based on the principle of people first, there are three criteria for determining the cancellation of the identity of collective economic organization member: death (a natural person's legal capacity shall terminate upon his/her death); obtainment of member identity of another collective economic organization (which is based on the unique principle of member identity of collective economic organization); obtainment of non-agricultural registered permanent residence, which marks that the person has been included into another guarantee system.

4.2 Standardize the issuance of certificate of contractual operation right of rural land

The certificate of contractual operation right of rural land is a legal document for farmer obtaining the right to contracted management of collectively-owned land, and also one of the important evidences for trying and adjudging disputes at court. Hence, the information indicated on the certificate must be valid, real and clear. The government shall check the bound copy of land contract kept on file regularly, collect related land data and information anew, timely correct the problems of nonstandard record in the certificate of contractual operation right of rural land, or indiscriminate or wrong issuing of certificate of contractual operation right of rural land, and inform related contractors. Local governments should put down the ownership and area of rural land, and timely reissue certificate of contractual operation right of rural land to those who fail to receive such certificate, to ensure that all contracts are on record and all contractors are provided with the certificate of contractual operation right of rural land.

4.3 Rationally determine the standard for land expropriation compensation

Collectively-owned land is collective property of farmers, which should be expropriated with full compensation at market value in the principle of exchange of equal values. The market value (including the own value of land and the appreciation of land) of land should be considered at the time of determining the relevant compensation standard, to balance the benefits of the government and residents. The determination of compensation standard can be conducted in combination with the economic development level and the actual situation and based on consideration of multiple factors, so as to determine a rational and effective compensation distribution scheme and enhance the confidence of residents in the government.

To scientifically determine the standard for land expropriation compensation, in addition to the original value of land, the location of the expropriated land and land supply and demand also should be considered, so as to determine the land expropriation compensation standard based on the value of the expropriated land in urbanization^[4]. To truly guarantee the rights of the land-losing farmers, in addition to raising the land expropriation compensation standard, the scope of land expropriation compensation needs more attention and concern^[5]. The government should consider both direct and indirect losses to the land-losing farmers at the time of determining the land expropriation compensation standard, such as dismembered land loss, adjacent loss, and necessary expenses for land expropriation^[6].

4.4 Establish a multi-mechanism of resolution of land expropriation compensation dispute

The resolution of such disputes is explicitly provided by law: any land-losing resident who considers the land expropriation compensation standard determined by local government by law to be unscientific may make a report to the people's government at county level or above for mediation, or may apply for administrative adjudication to the people's government approving the land expropriation decision if dissatisfied with the mediation result^[7]. It is thus clear that the channel for resolving such disputes is narrow in real life, which is not good for guaranteeing farmers' rights.

So far, in addition to the letters and visits system, another two ways of resolving longitudinal land expropriation disputes in rural areas have been developed—administrative remedy and judicial remedy. Administrative remedy is classified into administrative reconsideration and administrative adjudication,

and judicial remedy is a lawsuit system. To resolve land expropriation compensation distribution dispute properly, a multi-mechanism of dispute resolution should be established, to resolve social contradictions and promote social development.

4.4.1 Improve the judicial relief system

Firstly, the scope of accepting cases related to rural land expropriation compensation should be clearly defined, otherwise divergence is liable to occur when the court accepts such cases, and the court and local government are liable to “pass the buck” mutually. Secondly, respect should be given to the right of villager autonomy. Land expropriation compensation scheme should be subject to group discussion of villagers and fall into the scope of village self-governance. Hence, the court should recognize the compensation distribution scheme adopted at villager’ meeting via voting once confirming that the procedure of developing the compensation distribution scheme is valid.

According to the statistics of the State Bureau for Letters and Calls, 60% mass group petitions are related to land, and 40% of the total petitions are related to land dispute, 84.7% of the petitions related to land dispute arose from land expropriation compensation dispute, and the number of disputes arising from land expropriation and housing demolition reaches about 4 million a year^[8]. On May 1, 2015, the Supreme Judicial Court published regulations, providing that the case-filing register system shall be implemented, and any case or appeal falling into the scope of accepting cases must be filed and accepted. From May 2015 to December 2015, the number of cases filed and put on record by courts all over the country reached 9,944,000, representing a year-on-year growth of 29.54%; and the ratio of cases filed immediately reached 95%. Since the alteration of the case-filing system, the number of cases has substantially increased, bringing huge stress to the people’s court. Considering that there are a large number of cases related to land expropriation compensation dispute, local governments are suggested to develop green pass to try simple cases rapidly, so as to prevent cases from accumulating^[9].

4.4.2 Improve the intermediation mechanism

People’s mediation committee is one of the effective measures for handling dispute among the people in China, which is based on village committee and acts under the guidance of the county and township governments. On one hand, people’s mediation committee has the following advantages, including high work efficiency, showing full respect to both parties concerned. On the other hand, the parties of dispute usually are members of the same rural collective organization, between whom the relationship is not too bad. Hence, the farmers who are unwilling to file a lawsuit at the people’s court may resort to people’s mediation committee for resolution of land expropriation compensation dispute.

4.4.3 Improve the arbitration system

Mediation and arbitration for dispute related to contract operation of rural land refer to a legal system in which a rural land contract operation dispute arbitration committee established by law mediates and arbitrates dispute related to contract operation of rural land neutrally according to facts and laws, to resolve dispute related to contract operation of rural land^[10]. Considering the particularity of rural land expropriation dispute, the arbitration system in relation thereto also should be improved. Arbitration for dispute related to land expropriation compensation requires arbitrator with professional knowledge to resolve land expropriation compensation dispute according to the application of parties concerned^[11]. In combination with the actual situation of rural areas, for the sake of members of collective economic organization, any party involved in dispute of rural land expropriation compensation may resort to arbitration for dispute resolution without an arbitration agreement. Besides, to prevent too much intervention of government right in cases of land expropriation compensation dispute and confrontation of administrative adjudication against judicial review, arbitration is recommended, provided that arbitration should be subject to the jurisdiction of the people’s court. Any party who has objection to the arbitration result also may file a lawsuit at the people’s court. Actively promoting the implementation of arbitration system is helpful to create more channels for resolution of land expropriation compensation dispute.

5 Conclusions

To sum up, rural land expropriation system as the core of China’s land management system plays an important linking role between urban land system and farmland use system. As an institutional

arrangement, land expropriation system should fully consider multiple factors, make equilibrium assignment of state interests and farmers' interests, make up for the legal gap in rural land expropriation compensation, consummate rural land expropriation compensation system, establish sound dispute resolution approaches such as litigation, administrative reconsideration, arbitrament, arbitration and conciliation, so as to help better settle down land expropriation compensation disputes and facilitate harmonious development of society.

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Research on Administrative Culture of the Rule of Law in China

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Abstract Administrative culture of the rule of law is the inherent requirement of the rule of law. It's an important basis for administration by law. It includes four basic elements: supremacy of law, fair and justice, good law and good governance, regulation of administrative power and protection of civil rights. These four elements comprehensively reflect the basic goal of legal administration culture. The basic goal is implanting the spirit of law and request of law into administration culture, removing all the factors of ignoring and breaking the rule of law, building up the basic theoretical framework of conceptual level, institutional level, behavioral level, and at last adapting and promoting the rule of law. Therefore, we should perfect the system of administrative laws and regulations on the basis of legal administration values, and comprehensively promote the level of administration by law. Only in this way can we achieve the constructional goal of legal country and legal government in pursuit of good law and good governance.

Key words Rule of law, Administrative culture, Legalization of governance, Cultivation

1 Introduction

From ruling the country by law and building a socialist country under the rule of law enshrined in the constitution, to the Decision of the 18th Central Committee of the Communist Party of China (hereinafter referred to as CPC) in promoting the national governance system and governance capacity modernization and promoting the construction of rule of law in China, and then to the Fourth Plenary Session of the 18th Central Committee of CPC proposed to further promote the “rule of law”, these are enough to prove that the rule of law has become the will of the whole nation and the basic way of modern state governance. While the rule of law has become a common mode of national governance, the government at the core of the national governance is facing more and more intense competition. In order to establish the authority and credibility of the government under the competition and pressure and to realize legalization of governance, the cultivation of the administrative culture of the rule of law is no doubt to adapt to the basic requirements of this environmental change.

2 Scientific connotation of the administrative culture of the rule of law

Administrative culture of the rule of law is a comprehensive promotion of the strategy of ruling the country by law and is the spiritual energy and intellectual support to achieve the goal of building a socialist country under the rule of law. From the meaning of the word, the administrative culture of the rule of law, an organic combination of the rule of law and the administrative culture, is based on the rule of law. The so-called administrative culture is referred to the integration of a unique cultural pattern by the national administrative organization material facilities, organization systems, and administrative organizations and personnel who should have common ideas, values, thinking patterns, mental state, behavior standard and way of life^[1]. As the basic form of the administrative culture, the administrative culture of the rule of law has changed the past administrative culture based on the traditional concept — “power above the law” and “man-governing than law-governing”. It highlights the status and importance of the rule of law, and finally forms the administrative subject acting in accordance with the concept of value and behavior norms. As the government's spiritual guide and code of conduct, to fully understand the connotation of the administrative culture of the rule of law needs to grasp the four elements: supremacy of law, fairness and justice, good law and good governance, regulation of administrative power and protection of civil rights.

2.1 Supremacy of law

Supremacy of law is the core idea of the administrative culture of the rule of law, which requires that all administrative organs and staffs should do within the scope permitted by the Constitution and law, resolutely safeguard the dignity of the Constitution and the law, handle affairs strictly in accordance with the law and bear the corresponding legal responsibility for their actions. Supremacy of

law never allows any person to suppress the law with any excuse, to put personal views above the law, and to bend the law for personal gains. As Constitution is the fundamental law of the country, the rule of law must be acted in accordance with the Constitution. Supremacy of law can test whether a country is the basic standard of the rule of law, and judge whether a government is one of the basic symbols of the modern government.

2.2 Fairness and justice

Fairness and justice is the essence of law, the core of public administration, the ultimate goal of governance modernization, the lifeline of the rule of law and the intrinsic cornerstone of maintaining social sustainable development. As the important carrier and safeguard mechanism of fairness and justice, administrative culture of the rule of law requires that the administrative body under the guidance of the concept of fairness and justice ensure social, political and economic interests to be equally and reasonably distributed in all members of society with the realization of equal rights, equal opportunity, equal rules and equal process.

2.3 Good law and good governance

“The law is the rule of Jack; good law is the premise of good governance”. Governing the country according to law is the essential feature and the basic direction of the contemporary national governance. Administrative culture of the rule of law is the core and soul of the government administration according to law. “Good law and good governance” is the fundamental way of leading the administrative personnel to establish the spirit of administration of the rule of law. And it’s the basic goal of administrative culture of the rule of law, which can effectively ensure “good law” to bring together the social consensus and to promote “good law” to “good governance”. So what is “good law”? According to Aristotle’s viewpoints in the discourse of the meaning of the rule of law, the established law has been universally complied and the law that is obeyed should itself be well formulated^[2]. That means obeying the good law. In modern society of the rule of law, good law must be enacted and passed to safeguard the legitimate rights and interests of the broad masses of the people. But for the government at the core of the national governance system, it requires not only static administrative legislation, but also dynamic law enforcement with good governance^[3]. Only organic combination of “good law” and “good governance” can we truly achieve the state power to return to the society and realize the maximization of public interest.

2.4 Regulation of administrative power and protection of civil rights

Regulation of administrative power and protection of civil rights are the essence of the rule of law and the fundamental embodiment of the national modernity^[4]. Integrating the spirit of the rule of law into the construction of administrative culture and adhering to the value orientation of serving the people are not only the essence of the construction of the administrative culture of the rule of law, but also the essence of the national governance. In the democratic society ruled by law, the formation of the administrative culture of the rule of law strictly limits the administrative power, while empowering the citizens with the basic rights guarantee. That is, any administrative organ in the exercise of power must be based on constitutional law, and assume the protection of the constitution of the basic rights of citizens of the legal responsibilities. In the process of building administrative culture, administrative culture of the rule of law, which is truly established, is mainly embodied in the regulation of administrative power and the protection of civil rights.

3 Value implication of the administrative culture of the rule of law

At present, China is in a critical period and deep water area of reform and opening to the outside. With the overall transformation of the society and the continuous, rapid and sound development of economy, the construction of service and law-oriented government needs for advanced administrative culture’s leading and support. To promote the rule of law and government management modernization, this advanced administrative culture is administrative culture of the rule of law.

Administrative culture of the rule of law is ideological guarantee of the rule of law and the construction of the rule of law. As the goal of modern administrative culture innovation, administrative culture of the rule of law is able to maximize the formation of the rule of law consensus in the whole society, expand the consensus under the rule of law respecting difference, and promote the consensus

of the rule of law with tolerance and variety to build a solid cultural foundation for formation and development of governance system. On the one hand, administrative culture of the rule of law is internalized in the law of administrative body heart. Even in the absence of any specific legal norms, as long as culture factors of the rule of law are rooted in the heart, the dignity of the law will be safeguarded initiatively and the spirit of the law be reflected without needing to be repeatedly stressed. On the other hand, the administrative culture of the rule of law which is popular group thinking and concept of the rule of law is a product for the development of the rule of law for a long time with relative stability. Also it is not easy to be changed because of the large numbers and show very strong strength. Once it is formed, it will be internalized into the heart. Administrative subject and administrative counterparts will act consciously according to law, abide by relevant laws and regulations, and safeguard the dignity of Constitution and law. Ultimately it will restrict the administrative power effectively, and make the legitimate rights and interests of citizens be effectively guaranteed.

Administrative culture of the rule of law is the important basis of administration according to law and government ruled by law. It is the basic requirement and proper meaning of governing the country according to law. Among them, government ruled by law is the goal. It requests the government to provide more public services positively, to safeguard social order, to resolve social contradictions, to solve social disputes and to protect the rights of citizens^[5]. Administration according to law is the basic prerequisite and fundamental guarantee for building the government ruled by law. Whether the government administrates according to law, how the level of administrate according to law, and the quality of its staff, not only determine the success or failure of basic strategy for building the country of the rule of law, but also determine the realization of the purpose of serving the people by administration ultimately^[6]. To further promote administration according to law, only a complete legal system, high quality administrative personnel and complete executable program are not enough. Also the matched administrative culture of the rule of law must be nurtured and the concept of the rule of law must be implemented. Administrative culture of the rule of law is the administrative culture of legal governance, which has changed the wrong views—“power above the law” and “man-governing than law-governing”, and eliminated the traditional administrative culture that violates and ignores the component of the rule of law spirit. It advocates the administrative power to be awarded the right to exercise, supervise and monitor effectively^[7]. All the administrative activities shall be conducted within the framework of Constitution and laws. The “deviant behavior” transgressing the law is not allowed. The abuse of administrative power behavior is not also allowed. The government, as the perpetrator of executive power and implementer of laws and regulations, should take the lead in the strict law enforcement and set a good example for administration according to law. Only in this way can we regulate the operation mode of the governmental power with strict law enforcement and a law-abiding vision, build fair and strict administrative culture environment and eventually make all administrative behaviors be brought into the track based on the rule of law with healthy development.

Administrative culture of the rule of law is the endogenous motivation of governance module and governance capability under the rule of law. Administrative culture of the rule of law is the cultural foundation of governance under the rule of law, and also the most reliable source of power for government reform. Even to some extent, the strength of the concept of the rule of law and the level of the rule of law decide the propulsion to the success of government management system and management ability under the rule of law. As an important part of governance system under the rule of law, administrative culture of the rule of law is the environment and soil of the government under the rule of law to ensure the effective operation and sustainable development of governance system. While with the change of the operation mode and management mode of the government, administrative culture of the rule of man has been unable to meet the needs of the government. Administrative culture of the rule of law must be cultivated by taking full advantage of predictability, operability, relief and other advantages. Only in this way, the problems and contradiction in the social transformation can be resolved effectively.

4 Theoretical framework of administrative culture of the rule of law

Administrative culture of the rule of law is not only the spiritual connotation of comprehensively promoting the rule of law, but also the important spiritual guidelines and codes of government public management. It runs through the whole process of public administration. The basic goal is to integrate the concept, consciousness, requirements and action elements of the rule of law into administrative culture. The basic theoretical framework includes conceptual level, institutional level and behavior level.

4.1 Administrative culture of the rule of law from the conceptual level

Administrative culture of the rule of law from the conceptual level fully reflects people's understanding and evaluation for the rule of law spiritually. It includes the spirit of the rule of law, the consciousness of the rule of law, the thinking of the rule of law, the habit of the rule of law, the consciousness of the rule, the moral heritage of the rule of law, etc. Thinking of the rule of law is the condensation of all contents. Only when the spirit of the rule of law, the concept of the rule of law and consciousness of the rule of law are condensed into one person's thinking of the rule of law, can they fulfill the function as supposed. So it's important to consciously improve and use thinking of the rule of law to deepen reform, promote the development, solve contradiction and maintain stability ability^[8]. As an important concept, perspective and way of thinking of government governance, thinking of the rule of law advocates to apply regulations and means of the rule of law to observe, understand, analyze and deal with the problems. So this can provide an effective method for analysis, thinking, judgment and settlement of all kinds of management problems, and have a prerequisite effect on the formation of the administrative culture. But this does not mean that it's the only thought in today's governing. Governing a state involves many aspects, and every aspect often requires multiple thinking to consider^[9].

4.2 Administrative culture of the rule of law from the institutional level

Administrative culture of the rule of law consists of the relevant administrative laws and administrative law mechanism. It's the administrative culture phenomenon that can be most easily understood and recognized by administrative subject and administrative relative persons. The spirit and values of the rule of law are the sediment of complete administrative law system and perfect administrative legal mechanism, which not only shape the behavior of administrative subject, but also make the administrative subject develop behavior of the rule of law and form stable habits of the rule of law through the effective implementation. At present, basic and main laws in legal departments of law have been formulated. The corresponding administrative or local regulations are complete. Scientific harmony and unity has been overall achieved in the internal legal system. Substantive change has been realized from the "there laws" to "there good laws". At the same time, to promote the country ruled by law and guarantee the effective implementation of the administrative laws and regulations, it needs a series of institutional decisions, such as implementing the power list system to eliminate rent-seeking power space, improving the decision-making mechanism, actively implementing government legal adviser system, establishing lifelong accountability system of major policy decisions and responsibility track-down system, deepening reform of the administrative law enforcement system, strictly implementing employment with certificates and qualification management system, insisting on fair and civilized law enforcement, establishing even perfecting administrative discretionary power system, fully implementing the responsibility system for administrative law enforcement, etc. The establishment and improvement of the system of these administrative laws are to provide a powerful legal system guarantee for administrative culture of the rule of law from the spiritual level.

4.3 Administrative culture of the rule of law from the behavioral level

Administrative culture of the rule of law from the conceptual level is the guide of public administration. The institutional level integrated into the spirit of the rule of law and thinking of the rule of law is the guarantee of public administration. The behavioral level combing the concept and the system is the process of getting the legal cognition and legal evaluation externalized by a specific administrative act finally. Administrative culture of the rule of law from the behavioral level contains the norms of the rule of law of administrative organs and work style of government staffs. It's the

behavioral way of solving problems by the administrative organs and staffs using thinking of the rule of law on the basis of provisions of the administrative law. It's applied in governing behavior, which is the way of "rule of law". Rule of law is the opposite of the non- rule of law (the rule of man). It mainly has three meanings. Firstly, specific issues are dealt with according to the law rather than case by case. Secondly, problems are dealt with according to the law with independence and autonomy without being affected by factors such as morality, religion, and politics. Thirdly, the core of the rule of law is the use of legal methods, even if the legal adaptation is needed, and it has to be measured under spirit of the rule of law with contingency in social situations^[10]. If the strategy of governing the country by law wants to get a comprehensive and effective implementation, we must adhere to the use of scientific and reasonable way of the rule of law. The scientific and reasonable way of the rule of law mainly includes the way of participation in democracy, power restriction, right relief, due process, and accountability.

5 Cultivation of administrative culture of the rule of law

The rule of law is the basic way of governing and the inevitable trend of human political civilization including civilization of governance development. Without the rule of law, there is no modern country governance under the rule of law and any social stability and development guarantee. Although the legal system has been basically completed and "laws" framework has been basically established, the behaviors in the government governance such as practicing favoritism, power rent-seeking, power replacing law and words repressing law, are still difficult to keep within limits. Even illegal profit growing trend arises. In this background, we should build administrative cultural values of the rule of law from the conceptual level, improve and perfect the system of administrative laws and regulations from the institutional level, and comprehensively promote administration according to law from the behavioral level. We should put the spirit of the rule of law and the requirements of the rule of law into the administrative culture, and clear all factors ignoring and contrary to the rule of law^[11].

5.1 Building administrative cultural values of the rule of law

Administrative cultural values of the rule of law are the core and essence. They reflect the value orientation of administrative culture. In the context of comprehensively promoting administration according to law and building the government ruled by law, cultivating administrative culture of the rule of law must be premised administrative cultural values of the rule of law.

(1) Cultivate belief of the rule of law

Cultivating belief of the rule of law is to provide the spiritual support for government of the rule of law, public base for governance by law and the personality accumulation for the administrative culture of the rule of law. In terms of basic meaning, belief of the rule of law is that people show sincere respect, conviction and identity of freedom, equality, fairness, justice, order and other spiritual values. It's a kind of convincing sense of identity and belonging. However, the heartfelt identity is not mechanically recognition and admiration for articles of law. It's based on the right cognition of the rule of law for connotation of the rule of law and spirit of the rule of law. Here, the correct cognition of the rule of law is the precondition of belief formation in the rule of law. Therefore, we should strengthen publicity education of the rule of law and improve the disposition of the rule of law of the whole people especially the administrative subject. Governance body of the government must list education of the rule of law as the important content of civil service training, promote administrative culture of the rule of law, impart legal knowledge, change wrong understandings on legal attitude of pragmatism and instrumentalism of the administrative subject, and know rationally about rights law relations and accurately enforce the law^[12]. In terms of social level, legal propaganda education should be enhanced. The past emphasis on specific laws and regulations of the practice of propaganda and explanation should be changed. The education of citizen's spirit of the rule of law and idea of the rule of law should be strengthened. People are guided to set up correct thought of righteousness and benefit, concept of rights and obligations, obey the law voluntarily and safeguard their own legitimate rights and interests.

(2) Cultivate administrative concept of the rule of law

At the same time, the administrative concept of the rule of law, as the basic way of the embodiment

of administrative culture ideas of the rule of law, is the precursor and guidance of “to make public administration obey the rules of good governance”^[13]. So cultivating the administrative concept of the rule of law will be the spiritual pillar of comprehensively promoting administration according to law and building the government ruled by law, which has a great impact on the value orientation and behavior patterns of government action. The administrative organs and their staffs should firmly set up the administrative concept of the rule of law and cultivate the administration of the rule of law, democratic administration, service administration, efficient administration, public administration, responsible administration consciousness. Then they put administrative duties requirements into their actions within their faith throughout the administrative activities. Meanwhile, the country should accelerate the establishment of a sound mechanism of administration of the rule of law to provide social soil for cultivation of the administrative culture of the rule of law, thus to improve administrative culture identity and belonging of the rule of law through the development of market economy, promotion of the rule of law spirit, cultivation citizen’s democracy participation and perfection of the masses benefit expression mechanism.

(3) Stick to thinking of the rule of law and way of the rule of law

Sticking to the thinking of the rule of law is the fundamental core of administrative culture of the rule of law. It’s based on the idea of the rule of law and the spirit of the rule of law to know things, judge between right and wrong and think about problems. It affects information selection and behavior orientation of the people. Under the guidance of thinking of the rule of law, the way of the rule of law is the behavioral way and method to solve the problems by using legal logic and legal values. It’s the concrete embodiment of thinking of the rule of law in practice. Thinking of the rule of law and way of the rule of law specify the concrete way to cultivate administrative culture of the rule of law from both thought and action two aspects. In terms of thought, the administrative subject is intensified to learn governance theory of government and knowledge of the rule of law. The rule of law is internalized into belief and ideas through learning both the basic legal knowledge and the practical application of knowledge. In terms of action, administrative subject should strictly abide by the administrative procedure and administrative system arrangement with the consciousness of power under the strict supervision of the law; adhere to the statutory duties authorization by law, resolutely correct mediocre tyranny, sloth administration and slack behavior. Nonfeasance and disordered feaance is corrected. Arbitrary intervention for social and civil rights is resolutely prohibited.

5.2 Improving and perfect the system of administrative laws and regulations

Perfect administrative legal system is the basic premise of government under the rule of law and the hard power of administrative culture of the rule of law. Although the legal system made up of multiple levels of legal norms such as laws, administrative regulations and local regulations has been formed, there will be inevitably many new situations and new problems in the process of comprehensively deep reform. This requires timely development and revision of relevant laws and regulations, in line with the law of social development and the spirit of the times. Ultimately the connection of legislation and reform policies will be realized. Under the development goals of administrative culture of the rule of law, the existing system of administrative laws and regulations should be improved through a combination of establishment, reform, repeal and release. The timeliness, systematicness, pertinence and effectiveness of the laws and regulations should be strengthened. Firstly, the pace of administrative legislation shall be sped up to fill the blank of “good laws” in the category of legal administrative system. Secondly, we should take the government functions transformation as a breakthrough point, and amend or repeal administrative laws and regulations which do not conform to the national general objective of comprehensively deep reform and lag behind the times development trend. Finally, we should strengthen the work on people’s interpretation of the law. If people don’t understand the law in time after it was passed, the law enforcement effect will also be affected.

5.3 Comprehensively promote administration according to law

In China’s legal system, about 80% of the law, 90% of the local regulations, and almost all of the administrative rules and regulations are carried out by the administrative organs^[14]. As the performer of most laws and regulations, the administrative organs are the main force of administrative culture construction of the rule of law. The level of administration according to law determines the degree of

administrative culture construction of the rule of law. Therefore, the administrative organs shall be based on the total goal and the guiding spirit. They should implant the spirit and requirements of the rule of law into the administrative behavior, to meet the demand of further promoting administration according to law and speed up the government construction of the rule of law.

As for the spirit and requirements of the rule of law in performing administrative duties, the administrative organs should adhere to the principle of unified authority and integration of power and responsibility. Any duties explicitly stipulated by law should be performed strictly in accordance with the statutory power limits and procedures. The administrative organs have no choice on the implementation of the law when facing personal feelings, sector interests and local interests. They must really do it according to the law, not according to high-ups, power or money. At the same time, where the law is not stipulated or stipulated unclearly, the administrative organs should adhere to the principle of law without authorization, and not make such decisions affecting the legitimate rights and interests as administrative punishments and administrative compulsory measures.

As for the spirit and requirements in treating administrative relative persons, the administrative organs should insist that protecting the legitimate rights and interests of citizens is their first duty. Citizens' rights to know, to participate and to express are guaranteed through the sound and perfect system of administrative information disclosure, unless they refer to state secrets, commercial secrets and personal privacy. Meanwhile, the administrative organs should strengthen the consciousness of being efficient convenience for the people, severing the people and benefiting the people. They should simplify administrative procedures to improve office efficiency through the establishment of administrative service center "online", the delegation of relevant administrative power, the introduction of new and high technology, and the simplification of the civil work processes.

As for the spirit and requirements of the rule of law in administrative power specification, the administrative organs should establish and perfect government administrative power list system as soon as possible, based on speeding up the transformation of government function. The power is shut in the cage of the system. The corruption of power variation is prevented. The administrative organs should improve the system of administrative accountability, formulate administrative accountability measures, and make clear accountability subjects, accountability objects, accountability procedures, and accountability ways, to build perfect legal system of administrative accountability. Moreover, they should strengthen variant accountability of the state organs of power, news media, and the public, to make the administrative power operate under the framework of the rule of law ultimately.

6 Conclusions

Administrative culture of the rule of law is the spiritual connotation of comprehensively promoting the rule of law. Administration according to law is the supreme goal of administrative culture of the rule of law. Only by strengthening the construction of administrative of the rule of law, building administrative cultural values of the rule of law, and establishing the supreme authority of law, can we achieve the goal of pursuing "good law and good governance". Only by improving and perfecting the systems of administrative laws and regulations, can we provide enduring institutional support, spiritual security and good subjective conditions.

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Differences between Top - level Designs and Local Paths in the Central City Work—A Textual Analysis Based on the Outline of Eight National Central Cities of China

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Abstract At the peak of China's urban development, the Central City Work Conference held in December 2015, and the United Nations Habitat III *The New Urban Agenda* established in November 2016, put forward new requirements about the development of China under the new normal state, which has important historical and practical significance for the development of China. Based on the analysis of the words frequency of the Central City Work Conference and *The New Urban Agenda*, and the interpretation of the text of the latest master plan of China's eight central cities, this paper reveals that the urban development of China should continue to carry out scientific planning for the mainline thinking of "people-oriented, livable, suitable to industry and sustainable development", and conform to the new trend of urban development, the new form of urban work and the new requirements of people under the new normal state.

Key words Top - level designs, Local paths, Differences, Mainline thinking

1 Introduction

The city is the carrier of a country's politic, economy and culture. The level of a country's economic development depends on the work of the city. The city carries a longing for mankind's good life and also examines the level of economic and social development. The strength of the city highlights the strength of the country and people's sense of happiness. A city is a bridge between the country and its people, which represents the image of the country externally and places people's well-being internally. There are more than half of the population living in cities, so the development of China and the people's sense of happiness depend on the development quality of cities. Since the Reform and Opening Up, China has experienced the world's largest and fastest urbanization process. The urbanization rate increased from about 18% in 1978 to nearly 55% in 2014. The urban resident population increased from 170 million to 750 million people (Zhou Lan and Cui Shu-ping, 2016^[1]). The trajectory of the data changes reflects that China's urbanization is entering into a new stage. It has proved that China's urban development achieve a lot. The development of China cannot do without urbanization and the improvement of people's happiness index is inseparable from urbanization. Of course, there are some urgent contradictions and problems exposing in the process of the urban development. For example, a large number of agricultural transfer population is difficult to integrate into urban society in a short time(Wu Liang-yong,1999^[2]); industrial agglomeration is not synchronized with the gathering of population; some cities expand in the shape of pie; some urban special develop disorderly, the population is exploding; value city construction too much and despise management services; the environment pollution has intensified; residents' sense of living has become lower. All these sound the alarm to the extensive urban development(Yao Shi-mou, Chen Wei-xiao, Peng Li-hua and Chen Xiao-fei, 2016^[3]). To grasp the city which is like the locomotive is the premise of the China's perfect development, and to improve the urban planning system and the modernization of the urban construction is the basis of modern construction and achieving building a well-off society.

2 Analysis of words frequency in the central city work conference and the United Nations *the New Urban Agenda*

The contents of the central city work conference are the holistic planning that the central government made for China's future development, which are based on the past development. And it is clear that the future urban planning must adhere to the routes of "people-oriented, livable, suitable to

industry and sustainable development”. The Central City Work Conference has pointed out the direction for China’s urban development, which fully embodies the purpose of our government—to serve people and guide the cities of our country to the world. *The New Urban Agenda* is a programmatic document for the United Nations to keep sustainable urban development in the next 20 years, which emphasizes the basic idea of “the city everyone enjoys”. That is, to build a “people-oriented” city needs a more comprehensive analysis of the tasks and challenges in the process of urban development. Plan from the overall, change the planning idea of department division and pay attention to the vulnerable groups; carry out interaction and cooperation actively to achieve a various and common governance network model; Urban planners, builders, government officials should improve the sense of responsibility, go to the field to study and deepen the understanding of the problem, and have courage to carry the flag of innovation and reform; establish a network information system, strengthen the monitoring and supervision and establish data systems by using large data platform; strengthen the forecast of the development, improve the e-government system, focus on the wisdom of the masses, and promote social citizens to participate in urban planning actively. *The New Urban Agenda* is like a lighthouse in the sea, pointing the way forward for future urban development.

Based on the contents of the Central City Work Conference and *The New Urban Agenda*, this paper analyzes the words frequency of these texts and finds out the keywords and their frequency in the Central City Work Conference and *The New Urban Agenda*, as is shown in Figure 1 and Table 1. We have classified and done statistics of the numbers of the words frequency, and find the words can be divided into four categories: people-oriented, livable, suitable to industry and sustainable development. Through the analysis of these keywords in two text, we can find that the urban planning in the future must focus on “human needs”.

Table 1 Keywords of the central city work conference and the New City Agenda

People- oriented	144	Livable	134
The public	29	Harmony	23
Right	21	Safety	24
Guarantee	24	Culture	31
Space	34	Entertainment	20
Environment	36	Service	36
Suitable to industry	120	Sustainable	104
Employment	27	Ecology	26
Industry	21	Environmental protection	25
Economy	27	Resource	21
Job	18	Intensiveness	17
Innovation	27	Future	15

3 The interpretation of the master plan contents of the eight national central cities

The national central city is the vanguard of all cities in China, and is the model of other cities, which has an important strategic position in the development of cities. It internally leads the development of other cities and drives the development of the surrounding cities, while externally shows China’s overall appearance, and participates in the competition and cooperation of all cities in the world. The national central city is prepared by the State Council in *The National Urban System Planning*. It has the function of leading and radiating in the national urban system in the aspects of economy, politic and culture. At present, there are eight national central cities in China, namely Beijing, Tianjin, Shanghai, Guangzhou, Chongqing, Chengdu, Wuhan and Zhengzhou.

In order to reflect the development direction of the eight national central cities, this paper interprets the contents of the latest master plan of the eight national central cities, as is shown in Table 2.

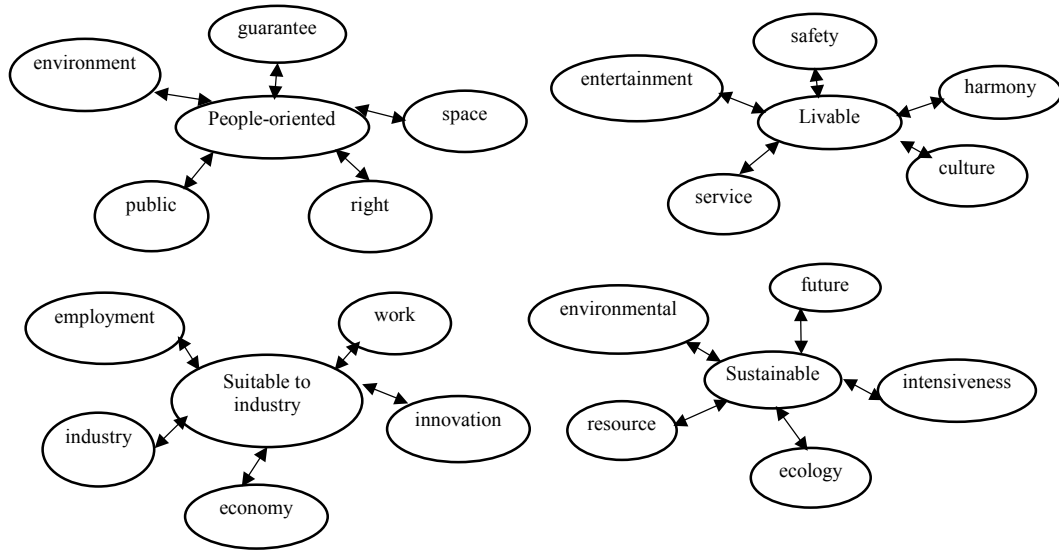


Figure 1 Keywords of the central city work conference and the New City Agenda

Table 2 The interpretation of the overall plan of the National Center cities

City project	Location	Traffic	People's livelihood	Industry	Environment
Beijing	The city of the world	Efficient and convenient, fair and orderly, safe and comfortable, energy saving and environmental protection	To increase the investment in science and technology, education, culture and health, and expand the market	Distinctive, function-complementary and layout- reasonable	To build a complete ecological barrier and to adhere to the combination of protection and prevention
Tianjin	International port and Garden City	The modern integrated transport system that is fast, efficient, environmental and safe	To integrate public service resources, improve the facilities' layout of education, health, science and technology, culture and sports	To build high-level industrial structure and to take improving the system of independent innovation as purpose	To build a regional integrated ecological network, and to create a ecological urban environment actively
Shanghai	The city of innovation, humanity and ecology	International hub city with an integrated transport system that is safe, convenient, green, efficient and economic	To meet the public's multilevel and diversified public service facilities needs	Global science and technology innovation center and international financial and cultural center	To adhere to ecol- priorities and to establish a low carbon development model
Guangzhou	The city that belongs to everyone	To establish an integrated transport system, which takes the air and sea transport as the main part, and land transport as the basic	To improve the public service facilities, and increase the investment of public service	To create a good business and entrepreneurial environment and complete the south center that is suitable to entrepreneurship and employment	To form a framework of "one ring, one area, three cores, and web corridor"

City project	Location	Traffic	People's livelihood	Industry	Environment
Chongqing	The economic center of the western of China and the upstream of the Yangtze River	To achieve the target of "four hours around and eight hours out of the sea"	To improve the development of public service facilities, such as science and technology, education, culture and health	To take high-tech industry and modern manufacturing industry as leading and take modern service and agriculture as the basis	To enter into a ecological virtuous circle, and to improve the quality of environment
Chengdu	The city that is ecological and pastoral in the world	To build a city that is multilevel, diversified and urban-rural integrated	To improve the development of public facilities, such as culture, health, education, science and technology	To coordinate the first, second and third industries and to change the mode of development	To combine the protection and the prevention
Wuhan	The leading city in the central part of China	To build an integrated transport system that is orderly, low consumption, fast and efficient	To build multilevel and diversified public facilities	To adjust the industrial structure and integrate the new and old industries	To combine the construction and restoration of ecology
Zhengzhou	International aviation metropolis and the core zone of economy growth in central plains	To build an integrated transport of aviation, high-speed railway and railway	To build the public service facilities system that is regional and fully covered	To build the industrial structure that is coordinated	To build a green city

As is shown in Table 1, the top design, based on the public, right, security, space, environment, harmony, culture, entertainment, service, employment, industry, economy, work, innovation, ecology, environmental protection, resources, intensiveness and future, indicates that the future of the city should be people-oriented, livable, suitable to industry and sustainable. As is shown in Table 2, the national central cities have made their development direction clear in the aspects of location, traffic, people's livelihood, industry and environment, and have demonstrated that they are moving towards the top design (people-oriented, livable, suitable to industry and sustainable) to a certain extent. Comparing Table 1 and Table 2, we can see that there is a big gap between the specific planning content of national center cities and the top design.

From the perspective of being people-oriented, only Beijing, Shanghai, Guangzhou and Chengdu mentions the city of the world, human city, everyone enjoying Guangzhou and pastoral city, while Tianjin, Chongqing, Wuhan and Zhengzhou still emphasize the development of economy. As is shown in Table 1, in the top design of the text, the words of the public, right, guarantee, space and the environment is mentioned 29, 21, 24, 34 and 36 times respectively. Comparing with it, Beijing, Shanghai, Guangzhou and Chengdu doesn't mention people-oriented on the micro, while Tianjin, Chongqing, Wuhan and Zhengzhou doesn't mention people-oriented not only on the micro but also on the macro. Shi Nan, the famous scholar of China Town Planning Association, once said that in the past that the high-rise building means urban modernization, so urban scholars only learn the appearance of foreign urban development when construct the city painstakingly, but it turns human needs is the return point of urban construction. Human being is the main and the most active factor in the city, so the core of urban development lies human being. Urban planning not only means that "people-oriented" is reflected when locating the city, but also means reflected in the specific planning content. Every part, every project and every corner of city planning should reflect "people-oriented".

From the perspective of being livable, each national center city is aimed at being effective, fast, green and traffic-comprehensive, and is increasing investment in science, education, culture, health and

sports in terms of people's livelihood planning. It can be seen that the national center cities are making a lot of efforts in the aspect of being livable. In recent years, "city repair" has been put on agenda, which means improving the infrastructure and public service. As is shown in Table 1, the word of "security" appears 24 times in the text of top-level design, but the element of security in the notional center cities doesn't appear from the perspective of urban development goals of top-level design. Every aspect of urban work, as long as is multiplied by insecurity, the results will be zero. "There is throwing on the head, no cover on the well, and too much worry about living", some citizens once complained. Every corner of the city should be safe. This is the very first for a city. It is internationally recognized that the safety of the city is the cornerstone of a livable city. A city is not safe is equal to zero. "The livable city means an urban culture at a high level", said Fan Jie, director of the Center for Sustainable Development of the Chinese Academy of Sciences. Urban culture includes urban history, style, content, morality, the folk customs, and order. Only a city with culture can be a living and livable city. Culture is an important content of urban development, and it is even an important manifestation of urban personality (Tong Zhong-xian and Liu Xiao, 2015^[4]). The organic combination of contemporary use of historical space and the creative development of cultural industries is the trend of international urban development. If we want to cultivate and develop contemporary activating functions and compatible use, we must comply with the related requirements of protection plan for historical information. (Zhou Lan, 2011^[5])

From the perspective of livable to industry, the national central cities are directing at industrial structure, layout, environment and rational development, which shows that the national central cities are standing on the urban development in industrial planning, without taking the employment of the public into account. As is shown in Table 1, the element of employment appeared 27 times in the top-level design, obviously there being still some distances between it and the requirements of top-level design. "People is the basis of a country, and the food is the basis of people". The city is people's city. People living in the city need basic physiological needs, which can not be separated from economic income which is inseparable from not only industry but also employment. We should give priority to urban environmental carrying capacity and urban resources when making urban planning and construction. That means the industrial structure should be adjusted and the industrial economy should be recyclable. The government must give full play to the development of the industry by macro-control. And it should formulate industrial policies to guide industries to lay out rationally, complement each other and develop healthily so as to achieve full employment and improve people's living standards. Urban planners and builders should take level and area into account, so that the industrial development can be targeted and focused. At the same time, we should pay attention to cooperating with the surrounding areas and combining our strengths and weaknesses with the advantages and disadvantages of the surrounding. And we should pay attention to the division of labor between different industries to form a good and circular industrial collaboration system.

From the perspective of sustainable development, each national central city is emphasizing the construction of ecol-city and the combination of protection and prevention, but they ignore taking efforts in the utilization and intensiveness of resources. As is shown in Table 1, the words of resource and intensiveness respectively appear 21 and 17 times, which clearly shows that the intensive use of resources is very important and is the basis for the protection, prevention and construction of ecol-city. The concepts of green, ecology, low-carbon and resource conservation and recycling are not only the current social hot words, but also the trend of future urban development (Zou De-ci, 2011^[6]; Qiu Bao-xing, 2012^[7]; Gu Chao-lin, Tan Zong-bo and Liu Wan, 2009^[8]). Only establishing the concepts of "smart growth" and "compact city", and adhering to natural law and environmental development can prevent the city expanding like a pie and assimilate good water, good mountains and good scenery into our city. From the perspective of globe, urban planning and construction has a common trend in developed countries—improving the urban ecological environment, so we must pay attention to the protection of urban ecology. Similarly, the sustainable development of the city is difficult to complete only by the planners of the city, but need the whole society to make a force. Individuals should take practical action to support the urban construction and development to make it more beautiful, so urban sustainable development can be likely to be a reality.

4 Conclusions

Urban planning is the vane of urban development, guiding the direction of urban development, containing the basic content of urban construction, and embodying the urban development tactics and strategies. Urban planning and construction should adhere to the thinking of taking people as the center of the development and adhering to satisfying people, and should be around the masses' sense of satisfaction and gain. It not only reflects that the city planning and construction is to serve people, but also reflects the wisdom of people to draw planning and construction. In the new era of urban development, we should aim at improving the cultural quality and spatial pattern of the city, insisting on the protection and innovation of the city's history and culture, creating a modern city with its own characteristics, modern and traditional culture combined, and taking an innovative new way with Chinese socialism characteristics. To construct a sustainable, healthy and modern city (Fang Chuang-lin, Yao Shi-mou and Liu Sheng-he, 2010^[9]; Xu Xue-jiang, Zhou Yi-xing and Ning Yue-min, 2009^[10]) is very important to guide and lay out urban industrial structure. Urban industrial development should take the road of innovation, have a scale effect in industrial layout, adhere to developing with the local conditions, pay attention to upgrading industrial quality, and rationally guide the employment. Every step of urban can not be at the expense of the ecological environment. Urban planning and construction should always adhere to the idea of sustainable development. Urban planners must emphasize the importance of ecology not only in the planning, but also in the construction to avoid unnecessary damage. Governmental departments must make the importance of urban planning clear in the performance evaluation to avoid the disjoint of planning and implementation.

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Research on the Evolution of Grassroots Party Organization's Operational Logic and the Construction of Its Service Supply Mechanism *

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Abstract Grassroots party organizations are the leading forces of grassroots governance. This article focus on the study of grassroots service-oriented party organizations and the plight of primary service supply, from the perspective of the function of modern party and the dimension of historical logic, examine the evolution and entanglement of the operational logic of grassroots party organizations: the logic of revolution, the logic of stability and profit and the gradual transformation of service logic. The historical logic and fundamental impetus of the construction of grassroots party organizations lies in the need for the increasingly divided and complicated integration of society in the construction of modern state in our country. The core target of the grass-roots party organizations is to lead and support the people as masters of the country, and to build and enhance people's democratic capabilities. Therefore, it is urgent to carry out interests' integration, institutional integration and value integration. The grassroots party organizations are the core of leadership and political core of the grassroots people. They should construct the linkage mechanism between the grassroots people's livelihood and the grassroots public service supply, and construct the institutional mechanisms for the grassroots party organizations to integrate into the society and provide effective service.

Key words Grassroots party organizations, Operational logic, Service function, Grassroots service supply mechanism

Introduction

In May 2014, the General Office of the CPC Central Committee issued "the Opinions on Strengthening the Construction of Grassroots Service Party Organizations", which made special strategic arrangements for the construction of grass-roots service-oriented party organizations. The policy orientation of the governance mechanism of the grassroots party organizations oriented to the service function, which is based on the deep thinking of the plight of grassroots party organizations and grassroots service supply since the new period, it reflects a kind of directional thinking and efforts to further deepen the construction of grass-roots party organizations. This article intends to discuss the supply mechanism of the public service in the service-oriented grassroots party organizations from the following aspects: Firstly, attaching importance to the evolution of the operational logic of the grassroots party organizations and its function, and examining the grassroots service-oriented party organizations from the historical logic; Secondly, exploring the social integration function of the grassroots party organizations, and carrying out the integration of interests, institutional integration and value integration; Thirdly, paying attention to the endogenous motivation of grassroots service. Constructing the linkage mechanism that exist in the grassroots party organizations, the livelihood needs of grassroots people and the supply subject of grassroots public service. Forming the construction mode about grassroots party organization of the embedded services.

1 Problem presentation: the construction of grassroots service-oriented party organization and the plight of grassroots service supply

In recent years, the construction of grassroots service organization has attracted the attention of

* Financed by National Social Science Fund "Advancing the Study about Institutionalization of Grassroots Consultation based on the Innovation Practice of the Chengdu Council"(Project No.: 15BZZ006); by Ministry of Education Humanities and Social Sciences Research Project "The Study on the Influence of Compulsory Education on Students' National Identity in Western National Autonomous Region from the perspective of People's Livelihood Politics"(Project No.: 14XJC810001).

domestic and foreign scholars, such as political science, public management, Marxist theory, sociology and law, and has gradually become an important topic in the study of the Communist Party of China. This is related to how the grassroots party organizations play the role and function of the fighting fortress of the market economy, moreover, it is also closely related to the public demand for the grassroots party organizations to provide better quality of public services in the new situation. Grassroots party organizations are a very important backbone of grassroots social governance, The Communist Party of China has extended its power to the bottom of the society through the embedding of these grassroots organizations, the dispersion of ideology and the refinement of operational mechanisms, so that the voice and policy of the party can be covered and penetrated into all corners and departments.

At the theoretical level, on the one hand, the existing research more focuses on the position, role and function of the Communist Party of China in China's economic development and administrative reform. On the other hand, while recognizing the relationship between the construction of grass-roots party organizations and grass-roots governance, there is no sufficient attention to how the grassroots party organization's governance mechanism can give full play to its service-oriented function, nor does it construct a valid theoretical model to explain the actual operational status and real picture of the service of the grassroots party organizations.

At the practice level of grassroots service supply, in the past decade, the supply of grassroots service has made a series of achievements, the grassroots people have gained a sense of continuous improvement, the social satisfaction has been improved continuously, and the society has shown a basic harmonious situation, but the grassroots service supply is unbalanced, uncoordinated, unsustainable in some areas, therefore, the service structure also need to be further optimized, service supply capacity still has the enhanced space, grass-roots public service supply pattern and cooperation situation has not really formed, grass-roots service supply system mechanism issues need to be straightened out and resolved.

Some local party committees and governments and grassroots party organizations have been exploring and summarizing new governance models with local characteristics. For instance, some places have begun to focus on grass-roots party organizations in the public service supply and social governance to play the interests of expression, comprehensive interests, integration of resources, the overall situation and coordination of the parties and other functions, new forms of governance, new methods and new practices have become influential and demonstrative effects.^[1] For example, Chengdu "cooperative party building" in the non-public enterprise party building innovation, Shanghai regional party construction, Guangzhou migrant workers management service innovation, Hangzhou social composite subject; also through " multipartite mediation", "grid management", "Public works department", and "all-response" and other forms, and through the organization of embedded, institutional absorption and value to lead the way to reorganize the legitimacy of authority and consolidate the leadership.^[2] From these cases and the process of practice, the theoretical research level of grassroots party organizations in the grassroots public service supply mechanism and power operation mechanism and other aspects of research have lagged behind the development of practice. In view of this, from the perspective of establishing and improving the governance mechanism of the grassroots service-oriented organizations, this paper probes into the evolution of the historical logic of the grassroots party organizations, the core objectives and the effective linkage mechanism between the grassroots party organizations construction and the grassroots service supply subject.

2 The logical evolution of grassroots party organization's governance society: revolution-maintenance and profit-service

The Communist Party of China (CPC) is an elite party. In order to fulfill the important commitment of the people and to fulfill its important historical mission of fulfilling the great rejuvenation of the Chinese nation, CPC has been mobilizing, propagating and organizing grassroots people to participate in the revolution, construction, reform and opening up and socialist modernization. At every stage of each period, grassroots party organizations can establish awareness of the situation, and accomplish their important tasks well. Because of the change of the mission of the state center, the

asymmetry of information and the lack of supervision, the grassroots party organizations have different logistic logic in the exercise of power and behavior. They are revolutionary logic, maintenance and profit logic and service logic.

In the era of revolutionary logic dominated, CPC has achieved legitimacy through the revolution, and has maintained its objective inevitability in the process of modernization. Grassroots party organizations are important representations of “political parties to the countryside”, which serve as an important institutional arrangement and organizational structure for the integration of grassroots interests. “The difference between the revolutionary state power and the previous state power is that the state machine after liberation always by means of another informal state authority: the Communist Party of China. Party organizations and formal state institutions at all levels parallel to the commune level, and then down, the party branch instead of the state organs in the production brigade”, the Chinese Communist Party establish grassroots party organizations in the country after the founding of New China, “The Communist Party establish the party organization in the rural areas during the struggle against the Kuomintang, the two sides struggled to promote their own grassroots development to the depth of society. But only after the 1949 victory of the Communist Party can the Party fully establishes the Party’s institutions in the new liberated areas.”^[3] The revolutionary logic of the grassroots party organizations has been experienced the suppression of counter-revolution, the “three anti-five anti”, the socialist transformation, the Great Leap Forward, the “the four cleans movement”, and the Cultural Revolution. In the grassroots society, the role of the fighting fortress is applied to the revolution, its institutional arrangements, behavioral logic and power operation are to break the old order and shock the traditional social order arrangements.

In period of stable logic and profit logic double variation. After 1980s, China began to gradually shift from a planned economy that allocated resources by the power to a socialist market economy that was allocation of resources by the market, from the homogeneous nature of the agricultural society gradually to heterogeneous urban society, the transformation of state governance from irrational revolution to rational governance. Under the impetus of the industrialization, information, urbanization and agricultural modernization, grassroots social interests gradually divided, the social structure gradually changed, grassroots society has undergone big differentiation, big flow and big change, resulting in a lot of social contradictions, so, grassroots governance is facing a huge challenge. As the core of the grass-roots governance in the post-revolutionary era, the grassroots party organizations faced the test of the market economy and the reform and opening up, replacing the logic of the revolution with the logic of stability and profit. Aiming to the mass incidents and a large number of social contradictions, in the slogan of “Stability supersedes all”, in the macro “pressure system” and micro-assessment of the case of one-vote veto, grassroots party organizations only control the society through the “The carrot and the stick”^[4] and other means, gradually deep “embedded” in economic and social development process, directly intervene in economic activities or alternative enterprises as the main body of economic development, and then become a “corporate government”^[5]. The purpose of grassroots party organizations that maintain social order is to develop the economy, the development of the economy is to better maintain social stability, so as to better exercise the power to play the core role of the party leadership. After three decades of market economy and the baptism of reform and opening up, some of the consequences of grassroots governance have gradually emerged. The phenomenon of “three rural issues”, “black socialization” and “bully” are involved in governance, public power alienation and other Social chaos; Grassroots party organizations have weakened the organization, the loss of solidarity grassroots, cohesion grassroots, on behalf of the people’s qualifications and ability. Grassroots party organizations have weakened the organization, and lost the unity of grassroots, cohesion grassroots and the qualifications and ability on behalf of the people.

Service logic will give birth to the era. As we all know, modern political parties are derived from social differentiation. The important function of modern political parties is to serve as a bridge between the state and society, to carry out comprehensive interests and the expression of interest, modern political parties are mainly to serve the people in order to have the value of existence. The logic of modern parties is different from government: The former mainly through the value of lead, cohesion consensus, policy design and other ways to contact the masses, organize the masses, serve the masses

and mobilize the masses, in order to function adequately of party organizations, while the latter mainly through the public power to build a good and orderly public life. However, China's political system has shown a "party-state isomorphism" power allocation. The will of the people are the biggest politics. The main reason for the success of the Chinese Communist revolution is that grassroots party organizations can serve the masses, mobilize the masses and keep flesh and blood ties with the masses. As the ruling party of Marxism, the biggest political advantage of The Communist Party of China is to closely contact the masses, the biggest danger is isolated from the masses. Throughout the history of the Communist Party of China come to the basic conclusion: when the grassroots party organizations really serve the masses, rely on the masses, believe the masses, the cause of the party will be able to grow and develop, and the grassroots party organizations will also grow and develop; On the contrary, the party in the people's prestige and status would be damaged, the cause of the party will not be able to develop smoothly. Compared with the central and local party organizations, grassroots party organizations are closest to the grassroots, so they can fully understand the grassroots people think and interest needs, and then deal with grass-roots affairs of the most experienced and most authoritative, at the same time, they clearly know what is politics, what is Governance, and firmly get a clear right and wrong feelings and standards. Therefore, their ruling function is relatively weak, and the service function will take the lead, and the service center of gravity will sink to the grass roots, which will eventually become the mainstream development trend of grass-roots governance. The service logic of the grassroots party organizations will eventually replace the logic of the revolution, maintain stability and profit logic.

3 The construction of social integration mechanism of grassroots party organizations service supply

Over the past four decades, China has pushed forward the reform and opening up, economic development and social vitality to create the "Chinese miracle". With the continuous development of economy and society, the modern elements continue to increase, the trend of integration is increasing, but the social elements are becoming more and more active, the social structure is deeply divided, the pursuit of interests shows diversification trend, the field of ideology is complicated, the relationship between the state and the grassroots occurred in the corresponding adjustment and evolution: Grassroots governance presents a situation of multi-governance and social republics, reflecting the implication of pluralistic integration in modern state construction.^[6] The diversification of the subject of grassroots public service supply includes grassroots party organizations, administrative organizations, public institutions, autonomous organizations, private enterprises, social organizations, volunteers, philanthropists, social energetic and elite. As a member of these groups, grassroots party organizations must be detached from the barrier of interest networks, presenting their autonomy and playing the core role of leadership and politics, also being deeply embedded and integrated into these groups. Grassroots party organizations are embedded in each of these organizations, leading and cooperating to provide public services to the grassroots people, which is "integrated services". Facing the increasingly complex and complicated situation of public service supply, it is necessary to establish a modern social integration mechanism for grassroots public service supply. The grassroots party organizations have the natural advantages in organization and system, and can play an important function of interest integration, system integration and value integration in the aspect of grassroots public service supply.

Interest conformity. With the deepening of reform and opening up and the gradual establishment of the socialist market economic system, the diversification of grassroots interests and the emergence of heterogeneous society, interest adjustment and change has become an important theme of the new period, the problem of interests has become the core of various contradictions and an important manifestation of contradictions among the people. It requires that the social integration mode of grassroots party organization change from ideology-dominated to interests-dominated. Now the grassroots public service supply has been present some phenomenon that invalid service overloaded, service structure is irrational, official wishful thinking and not good evaluation and so on. The main body of grassroots public service supply will be a variety of benefits disputes and winding. In the

grassroots public service supply, grassroots party organizations should be in accordance with the principle about the overall situation and coordination of the parties before the decision-making. It must extensively investigate and consult public opinion, expand the participation of grassroots people, understand the structure and quality of people needs, change the past that kind of high above, regardless of whether the people need the concept of reward service, establish and improve the information communication and feedback mechanism with the people, and fully respect the rights of the people, so that grassroots people participate in standardization, order, institutionalization, making public service supply closer to the masses, grassroots level and reality. In the decision-making, it should use the important form of socialist consultative democracy, and collect the wisdom according to the principle of democratic centralism. Xi Jin-ping stressed that, "A lot of decision-making and work involving the interests of the people mainly be in the grassroots level. In accordance with the requirements of consultation with the people and consultation for the people, we must vigorously develop grassroots consultation and democracy, and focus on consultation among the grassroots. All decisions involving the vital interests of the people should fully listen to the views of the masses, through various means, at all levels, all aspects of consultation with the masses".^[7] Significant decision-making can be implemented by the minority majority voting system, and the decision-making will be scientific and democratic. After the decision-making, it must listen extensively to the reflection from classes, groups and every grassroots people, in particular, pay attention to listen to the views and recommendations of stakeholders; Do the original propaganda and implementation of the party's line, principles and policies, Don't out of tune, Don't out of the original flavor. Make decisions, think about the problem and do everything should take the broad masses of grassroots people's fundamental interests as the starting point and the foothold. It should solve doubts, win the hearts of the people, attract the masses, and timely amendments and correct mistakes. Grassroots party organizations should absorb extensively private enterprises, social organizations, volunteers, social elites and other groups into the grassroots public service supply system, these groups which get into the grassroots public service must have their own interest demands and related requirements, grassroots party organizations must properly coordinate the balance, adjust the integration, properly handle the relevant interests of the network, so that the grassroots people really share and benefit from these services.

System integration. Huntington believes that modern political parties play a very important role in the level of political institutionalization, "The political system in modernization is stable, which depends on the strength of its political parties, and whether the strength of the party is strong depends on the power of its institutional people's support, and its strength just reflects the scale and institutionalization of such support. Those countries that have actually reached or can be considered to be politically highly stable at least have a strong political party".^[8] Grassroots governance is the basis of national governance, "thousands of threads above, a needle below", the higher authorities and various government organizations need extend and sink the policy tools to the grassroots level, which need grassroots organizations to implement. Since entering the new century, China has entered a new era of industry-agriculture and urban-rural relationship in which it promote agricultural development by industry, city drive village, workers and peasants are all reciprocity, the unity of city and countryside. At present, there're some problems that system is not smooth, the mechanism is not uniform, uncoordinated operation and other issues in grassroots public service supply system. Grassroots party organizations are the core of leadership and fighting fortress at the grassroots level. It is necessary to strengthen the system construction, promote the innovation of institutional mechanisms, adhere to the source management, the governance according to law, the system governance, the legal integration model, the grassroots governance system and the modernization of governance The only way, but also the grassroots party organizations long-term unremitting adherence and the pursuit of the basic objectives. Firstly, integrate the social conflict mediation mechanism. China has entered into the critical period, the reform period and contradictory highlighting period, a large number of contradictions occur at the grassroots level, the difficulty to resolve the contradictions are at the grassroots level. Now there are some phenomena that the institutions are too scattered and the system is not smooth in social conflict mediation mechanism. Perfect the grassroots autonomy system under the leadership of the grassroots party organizations, Develop vigorously socialist consultative democracy. Reform and

integrate letters and visits system to promote judicial fairness. Grassroots party organizations should change their way of working which are the centralized assignment, excessive reliance on administrative pushing and the commencement of legal procedure through letters and visits. They need integrate the scattered letters and visits institutions and establish the full-time party committee social letters and visits work agencies. At the same time, the solution about letters and visits issues of law and litigation involved should brought into line with the government by law, and which problems should be dealt with by the judiciary according to the procedures according to the procedures, so as to achieve the protection of the legitimate rights and interests of the masses and the maintenance of judicial authority of the unity. Use synthetically the combined effect of the mechanism of interest adjustment, law regulation, moral adjustment, democratic adjustment, the adjustment of ideological and political work and people's mediation, so as to achieve maximum effect. Secondly, integrate public service platform, so as to achieve one-stop service. Grassroots governance is the cornerstone of national governance, whether the grassroots public service system is good or bad depends on the quality of grassroots public service platform construction. "13th Five-Year Plan" pointed that "Improve the urban and rural community integrated service management platform, promote the organic convergence of public services, convenient services for the people and volunteer service , so as to achieve one - stop service". Grassroots party organizations should reflect the purpose of serving for the people and play the core role of leadership. They should be the whole to promote and integrate the construction of the platform that is about public services, convenient services for the people and volunteer service. They pay attention to fine service construction, accurate to the home, accurate to people, to enhance the level of public service and its quality. Thirdly, emphasize and lead the orientation of modernity of the grassroots public service system. Grassroots service system presents some features with multi-level multi-type and multi-style. However, under the background of modern state construction, grassroots service system should reflect the implication of modern countries. Grassroots party organizations should play a leading role in making the grassroots service system reflect the value concern and ideal picture of modern state: The legal-rational legitimacy of the source of power, the rationality of power allocation, the legalization and transparency of power operation. Reflect the responsiveness and accountability. Have the effectiveness of governance. Grassroots service system and the concept of modern state governance must be consistent.^[6]

Value integration. People are not only "economic man", but also "social people". The motive of human behavior is not only influenced by economic factors, but also influenced by politics, ethics and culture. People need good public order, and public order is based on value sharing. Ideas and values are the forerunners of action. At present, the grassroots public service supply has a certain degree of value dislocation and distortion: The equality of socialism and the fair value are ambiguous. In the civilized tradition, social structure, economic form and political operation and other aspects, different wishes and actions meet each other halfway and are the shift. The viewpoint to the people and the masses of grassroots party members and cadres is indifference and so on. Many grassroots affairs can't be solved by mere money, nor by the top-down administrative orders, but by the grassroots backbone, which is highly dependent on the masses' trust. First, Make use of new development concept to guide the construction of grassroots public service supply system. Development concept is the overall situation, the fundamental management, the direction of the tube, long-term. The five development concept of "Innovation, coordination, green, open, sharing", is a profound change about China's overall development, means that a fundamental change in the traditional ideas and ways of development, must also be accompanied by the liberation of ideas, the concept of renewal and changes in working methods. The new development concept want to land and practice, the key lies in whether the understanding and the action of the grassroots party organizations and party members and cadres are in place. Grassroots party organizations should profoundly change the behavior of the way, guide all the work of grassroots governance with the new development concept, always grasp the direction of progress in the ideological, understanding and action, achieve the unity of knowledge and practice and lead the development. Second, take advantage of socialist core values to integrate grassroots public service system. The socialist core values are the greatest common divisors of the people all over the country at this stage, with strong appeal, cohesion and guidance. Grassroots party organizations should

take the people as the center, take serving the people wholeheartedly as the purpose, utilize socialist core values to reimplement the social integration, return to the function of the party is the bridge between the state and society, return to the “initial heart” of scientific socialism, construct and establish new political ethics.

4 The linkage mechanism of grassroots party organizations supply subject construction

The linkage mechanism between the grassroots party organizations and the grassroots service providers is an important part of the construction of the grassroots party organizations since the 18th CPC Central Committee. The “Opinions on Strengthening the Construction of Grassroots Service Party Organizations” issued by the General Office of the CPC Central Committee pointed out that “grassroots party organizations should drive mass organizations, autonomous organizations and social organizations to carry out services and coordinate public services, market services and social services that all face to grassroots. Carry out in-depth the party building, with construction, group construction and women’s construction activities that take the service as the theme, fully play the role of mass service organizations”. “13th Five-Year Plan” pointed out that “improve the urban and rural community governance system, clarify the boundaries of authority of the grassroots government and community organizations according to the law, establish the linkage mechanism of community, social organizations and social workers”. The establishment of linkage mechanism is one of the important mechanisms for effective interaction between grassroots party organizations and grassroots service providers.

From the current relevance of grassroots party organizations and grassroots service supply subject, which mainly face two major problems: First, how much breadth and intensity are grassroots party organizations embedded and integrated into the mass organization, autonomous organizations and social organizations, which is worthy of our further torturing? Second, how to deal with the role of grassroots party organizations and the functional positioning of mass organizations, autonomous organizations and social organizations, which is worthy of our further study. Its common performance can’t form the linkage mechanism between grassroots party organizations and these organizations, which is difficult to form a concerted effort and synergy. The main problem is that the functional orientation of the grassroots party organizations is not accurate and the dislocation is serious. Now they must reposition the function and role for the grassroots party organizations, change the phenomenon which is dislocation and offside. Since the 18th National Congress of the CPC, the central government has asked the grassroots party organizations to adapt to the changes and needs of service object, service content and service mode, to optimize the organization and expand the organization coverage. They put forward a series of specific requirements, so as to achieve where are the masses, there are party organizations to provide services. These demands seem to be exhaustive and meticulous, but China is a very large country, the social mobility is increasing, grassroots party organizations want to penetrate and embed into these social organizations and mass organizations, the difficulty and complexity of the work could be imagined. In the satisfaction investigation of a city high-tech zones neighborhood party organizations construction, the author found that grassroots party organizations faced many challenges: Grassroots party members and cadres can’t cast aside to join the grassroots party organization construction work. Due to institutional mechanisms are not smooth, the interests of the division and conflict exist in different grassroots party organizations. Management and organization construction of mobile party members. The conflict between the actual situation of grassroots party organizations and the data reported should be solved urgently.

Huntington argues that political parties are modern political forms of organization. “The function of political parties lies in organizational participation, integrating different interests and acting as a bridge between social forces and government. In fulfilling these functions, the party must reflect the logic of politics rather than the logic of efficiency.”^[8] We always put grassroots party organizations confused as grassroots government or grassroots administrative organizations, they are rushed in the first line in the face of anything about grassroots governance. Grassroots party members and cadres in the face of complex social contradictions are always using administrative means and even violent machines, take it for granted which could cut the Gordian knot and replace the political logic with the

logic of efficiency. Some people also mistakenly put the grassroots party organizations as a general social organization, not to mention grassroots party organizations have their own interests, there isn't precisely that the correct understanding and grasp the problem of modern political parties what it is, what to do and how to do. Grassroots public service supply system must be built in the grassroots party organizations as the core of the leadership, the interests as the link. They must absorb the social elite, economic elite and cultural elite through effective means, expand the mass base of grassroots party organizations, and consolidate its class base. Fully understand and integrate the interest demands of each organization and its members, and mobilize its enthusiasm initiative and creativity. Establish a big pattern about services that are all involved in administrative organizations, autonomous organizations, mass organizations, social organizations, market companies and grassroots people. And set up grassroots service supply system leading group or committee. Integrate the pluralism through the modernity, to bring the diversified subject of grassroots services supply into the integration process.

5 Conclusion: construction of grassroots service party organization and grassroots service supply system

Grassroots service-oriented party building is a systematic project. Due to the inertia of history, the dependence of path and the way of thinking, the logic of the grassroots party organizations is deeply marked with the logic of revolution, the brand of maintaining stability and profit, and it is difficult to realize the real transformation of grassroots service organization in a short time. Therefore, the construction of grassroots service-oriented party organizations needs a long time for the work for and perseverance. And the grassroots service-oriented party building is urgent, long-term and arduous.

Firstly, in accordance with the overall situation, the grassroots party organizations should use their own organizational advantages, ruling advantages and institutional advantages, and effectively integrate the existing grassroots service supply system. It is based on the integration of interests, focusing on the interests of the integration of the traction, so as to form and improve the synergies of interest integration; In addition, institutional integration as the key, pay attention to institutional mechanisms, the formation of coordination and operation, efficient operation of the effective mechanism; More importantly, the value of integration as the core, pay attention to cultivate cohesion inspiration, remind of the party organization and socialism "initial".

Secondly, the grassroots party organizations should take benefits for traction, pay attention to functional positioning and role conversion. At the same time, it also should pay attention to their core role in the grassroots leadership and political role, play the role of fighting fortress, to enhance their own autonomy and detached status, but also deeply embedded and integrated into the administrative organization, autonomous organizations, mass organizations, social organizations and grassroots people. It need to explore and stimulate endogenous motivation, improve the organizational system, improve service capacity, accurate service supply, optimize the service structure, improve service quality, drive and lead the grassroots service supply system in the direction of modernization.

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Research on the Influencing Factors and Countermeasures of Water Shortage in Beijing, China*

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Abstract Water is important resource for human being and economic development. With the development of urbanization and the continuous increase of population, the economy has developed rapidly, and the utilization of water resource in various industries has risen sharply, so that the water shortage crisis restricts the sustainable development of economy seriously. It is threatening the survival and security of people, so it is an important measure for the protection of the ecological environment to ensure the rational use of water resources. Therefore, the data of water resources in Beijing statistical yearbook 2016 is selected as the sample, and then the paper analyzes the risk of water shortages. Firstly, the index system of risk is established, it studies the influencing factors of water shortage in Beijing from demand, supply and industrial structure. In this paper, the gray correlation analysis is used to explain the reasons for water shortage in Beijing, the water shortage rate is used as the reference sequence, and the nine influencing factors in the index system of risk are the comparative sequence, the influence degree of each factor is analyzed by the ranking of the correlation degree between the comparative sequence and the reference sequence. It is concluded that the main factors affecting the water scarcity in Beijing are precipitation, population and reclaimed water, these factors mainly come from environment and society, it will cause physical and economical scarcity. Secondly, according to the importance of these factors, the three indexes are used as the evaluation criteria to establish the function of shortage risk degree in order to analyze the water shortage quantitatively. In 2015, the degree of water shortage in Beijing was 5.33, which indicates the water scarcity is serious. It promotes the supervision and management of water shortage risk effectively. Finally, cluster analysis is used to cluster the water shortage risk, the risk of water shortage is divided into three levels according to the degree of shortage, we can get a practical prediction method through the empirical analysis. And then the paper puts forward the corresponding suggestions from population, precipitation, reclaimed water and industrial structure.

Key words Water resources, Shortage risk, Influencing factor, Index system of risk

1 Introduction

China is one of the countries with the most serious water problems in the world. At present, more than 400 cities are short of water in more than 600 nationally constituted cities, there are about 110 cities with severe water shortage. It is up to 200 billion yuan that water shortage contributed to the economic losses, water shortage has become the primary factor restricting the Chinese food security, economic development and social stability, therefore, the risk assessment of water shortage has become a research hotspot in the field of water resources. Beijing as a large city with high-speed economic development and dense population, it is typical water shortage city, what's more, the seasonal distribution of rainfall is very uneven, so the per capita share of water resources is less than 300 m³, this is about 1/8 of the country's per capita share, and about 1/30 of the world's per capita share, That is far below the internationally recognized lower limit of 1000 m³ per capita standard so it belongs to the area of serious water shortage. In addition, The city's annual total discharge of sewage is 1.6 billion m³, the utilization rate of reclaimed water is less than 60%; in recent years, the discharge of sewage in Beijing is also increasing, and the problem of water pollution is becoming more and more serious. Improving the rate of sewage treatment and rationally developing and utilizing water resources

* Financed by Shaanxi Social Science Fund Project "Interactive Development of Producer Services and Manufacturing Industry in Shaanxi Province" (Project No.: 2014D36); by Xi'an Soft Science Project "Study on the Industry Transfer of Xi'an" (Project No.: SF1408-1), and by Xi'an Soft Science Project "City-industry Intergradation Path of Xi'an under the Background of New Urbanization"

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are the problems that need to be solved urgently in the management of water resources in Beijing. On the basis of considering the availability of data and the convenience of research, this paper takes Beijing as an example to explore the reasons for water shortage, and analyze the extent of its shortage, finally it puts forward mitigation measures.

2 Literature review

In recent years, people's awareness of the importance of water resources has been increasing, and scholars at domestic and abroad have studied the water shortage increasingly. At present, the shortage of water resources has not yet formed a clear risk evaluation index system and risk shortage model at domestic and abroad, but it has gradually become the focus of academic research from the previous qualitative research to quantitative research. TANG Hong and others used the analytic hierarchy process and the grey correlation method to construct the comprehensive measuring index system and the coordinated development model, and comprehensively analyzed the mutual coupling relations between the urban development and the water resources development and utilization^[1]. Zhang Yun-xia used fuzzy mathematics to construct the membership function, and then calculates the subordinate degree of the risk value of the water resources according to the membership function, so as to judge the risk grade of the water resources in Beijing^[2]. Zhou Yong-jun used the DDEMP method that is based on the data of Beijing's population and water supply in 1990-2012 years to predict the population, total water resources and water consumption of Beijing in 2025^[3]. Hong Si-yang and others explored the optimization strategy of the three productions structure from the perspective of water resources allocation, LMDI decomposition method was used to quantitatively analyze the driving force characteristics of water structure change of the third industry in Beijing, it calculates the water use coefficient of each industry sector based on input-output method, and carries out the cluster analysis of water use characteristics and industry correlation^[4]. Han Yu-ping and Ruan Ben-qing evaluated the economic losses caused by water scarcity by establishing an input-output model to analyze and calculate the shadow price of water resources^[5]. Tong Shao-yu used the analytic hierarchy process from the amount of resources of water resources, water supply capacity, efficiency and social adaptation ability index system to construct the comprehensive evaluation of water shortage, According to this, it evaluated the water resources shortage degree and its cause^[6]. Qian Long-xia and others established a model of water shortage risk loss to simulate the randomness and economic benefits of water resources that is based on the maximum entropy principle (MEP) and data envelopment analysis (DEA)^[7]. Gong Yan-bing proposed similar cloud comprehensive evaluation model of water shortage risk, it used the normal cloud model to describe the risk assessment of city water shortage quantitatively under the condition of single index by considering the risk rate, vulnerability and recovery index^[8]. Zhang Mi and others used the grey relation to analyze the scarce factors of water resources in Beijing, and put forward concrete measures aiming at the scarcity of physics and the scarcity of economy^[9].

The related research literature on the water shortage risk is very fruitful in the aspect of theoretical research and empirical methods, but they haven't made a systematic and comprehensive analysis of the risks, These studies lack systematic research and prediction at the theoretical level. This paper considers the risk assessment index system of water shortage and the construction of risk shortage model systematically, then it identifies the main risk indicators from the selection of risk indicators, according to the importance of the influencing factors, it establishes the risk degree function of the shortage, and analyzes the degree of water shortage quantitatively, finally the article puts forward the solution according to the results, and provides the decision-making basis for the sustainable development of water resources in Beijing.

3 Judgment of the main risk factors of water shortage risk in Beijing

3.1 Establishment of risk index system for water shortage

This paper is based on the data of Beijing water resources from 2001 to 2015, it explains the causes of water shortage in Beijing by using the grey relational analysis method, and analyzes the influence degree of each factor by the rank of correlation degree. Through consulting the related data

of the statistical yearbook and the Journal of the paper, it is found that the scarcity of water resources is closely related to the balance of supply and demand, and is also affected by society and environment. Therefore, this paper studies the causes of water shortage in Beijing from three perspectives: demand, supply and industrial structure^[9].

(1) the point of view of demand. Population, living water, production water and ecological water are considered. The faster the population grows, the more demand of water will increase, which will lead to an increase in water scarcity.

(2) the point of view of supply. Considering the two factors of natural water supply and cyclic water supply, we select precipitation and reclaimed water index to study the scarcity of water resources.

(3) the point of view of industrial structure. With the constant transformation of industrial structure, the saving of water resources will be more and more effective. Therefore, the proportion of the three major industries will have an impact on the utilization of water resources.

This paper selects 9 indicators which is Beijing city population, living water, industrial water and ecological water, precipitation, reclaimed water and three major industries share, it collects indicator data for 2001-2015 in the statistical yearbook, as shown in Table 1, and then it uses the grey relational grade analysis to analyze the main causes of water scarcity in Beijing.

Table 1 The risk index system of water shortage in Beijing

Year	Demand index				Supply index		Industrial structure index		
	Population (permanent resident)/10000	Domestic water /billion m ³	Production water /billion m ³	Ecological water /billion m ³	Precipitation /mm	reclaimed water /billion m ³	First industry share /%	Second industry share /%	Third industry share /%
2001	1 385.1	1.2	2.66	0.03	338.9	0.2	2.1	30.7	67.2
2002	1 423.2	1.08	2.3	0.08	370.4	0.2	1.9	28.9	69.2
2003	1 456.4	1.3	2.22	0.06	444.9	0.21	1.6	29.6	68.8
2004	1 492.7	1.28	2.12	0.06	483.5	0.2	1.4	30.6	68
2005	1 538	1.34	2	0.11	410.7	0.26	1.2	28.9	69.9
2006	1 601	1.37	1.9	0.16	318	0.36	1.1	26.8	72.1
2007	1 676	1.39	1.82	0.27	483.9	0.5	1	25.3	73.7
2008	1 771	1.47	1.72	0.32	626.3	0.6	1	23.3	75.7
2009	1 860	1.47	1.72	0.36	480.6	0.65	1	23.1	75.9
2010	1 961.9	1.48	1.65	0.4	522.5	0.68	0.9	23.6	75.5
2011	2 018.6	1.56	1.59	0.45	720.6	0.7	0.8	22.6	76.6
2012	2 069.3	1.6	1.42	0.57	733.2	0.75	0.8	22.2	77
2013	2 114.8	1.62	1.42	0.59	578.9	0.8	0.8	21.7	77.5
2014	2 151.6	1.7	1.33	0.72	461.5	0.86	0.7	21.4	77.9
2015	2 170.5	1.75	1.04	1.04	458.6	0.95	0.6	19.7	79.7

Source: Beijing statistical yearbook –2016

3.2 Ranking of various influencing factors based on the grey relational analysis

(1) Reference sequence: water shortage rate = (total water consumption -total water resources) / total water consumption, the practice has proved that the index is often used to describe the degree of water shortage in regional water resources system. Therefore, the 2001-2015 year water shortage rate which is shown in Table 2 is used as a reference sequence^[10].

This paper selected 2001-2015 years in turn, corresponding to first to fifteenth years, The water shortage rate for k is defined as $x_0^{(k)}$, of which $k = 1, 2, \dots, 15$, the reference sequence is expressed as

$$x_0 = \{x_0^{(k)} | k = 1, 2, \dots, 15\} = (x_0^{(1)}, x_0^{(2)}, \dots, x_0^{(15)}) \quad (1)$$

(2) Comparative sequence: because there are 9 related factors in the risk index system, the relevant factors for the year is $x_i^{(k)}$, the comparison sequence is

$$x_i = \{x_i^{(k)} | k = 1, 2, \dots, 15\} = (x_i^{(1)}, x_i^{(2)}, \dots, x_i^{(15)}) \quad (2)$$

Table 2 The water resources of Beijing in 2001-2015

Year	Total water resources	Total water consumption	Water shortage	Shortage ratio
2001	19.2	38.9	19.7	0.51
2002	16.1	34.6	18.5	0.53
2003	18.4	35.8	17.4	0.49
2004	21.4	34.6	13.2	0.38
2005	23.2	34.5	11.3	0.33
2006	22.1	34.3	12.2	0.36
2007	23.8	34.8	11.0	0.32
2008	34.2	35.1	0.9	0.03
2009	21.8	35.5	13.7	0.39
2010	23.1	35.2	12.1	0.34
2011	26.8	36.0	9.2	0.26
2012	39.5	35.9	-3.6	-0.10
2013	24.8	36.4	11.6	0.32
2014	20.3	37.5	17.2	0.46
2015	26.8	38.2	11.4	0.30

Source: Beijing statistical yearbook –2016

(3) Dimensionless: In order to eliminate the influence of the actual units on the calculation of the correlation degree, the reference sequence and the comparative sequence are treated in a dimensionless way, since there are many indexes in the comprehensive evaluation, the processing method of extremum can be used to calculate the correlation accurately between them. The method is to define the maximum value as another value divided by the maximum in the sequence. The minimum value is defined as the minimum in the sequence divided by the other. The new sequence is still represented by $x_i^{(k)}$ for convenience, that is

$$x_i^{(k)} = \begin{cases} \frac{x_i^{(k)}}{\max_k x_i^{(k)}} & \text{Maximum value index} \\ \frac{\min_k x_i^{(k)}}{x_i^{(k)}} & \text{Minimum value index} \end{cases}$$

(4) By using the following formula, the formic acid comparison sequence x_i corresponds to the reference sequence, and the grey correlation coefficient of x_0 at k is equal to:

$$\varepsilon_i^{(k)} = \frac{\min_i \min_k \Delta_i^{(k)} + \alpha \max_i \max_k \Delta_i^{(k)}}{\Delta_i^{(k)} + \alpha \max_i \max_k \Delta_i^{(k)}} \quad (3)$$

In the formula $\Delta_i^{(k)} = |x_0^{(k)} - x_i^{(k)}|$, α is the resolution factor, $\alpha \in [0,1]$, where $\alpha = 0.5$ is defined. The correlation degree of the comparison sequence to the reference sequence x_0 is

$$\varepsilon_i = \frac{1}{15} \sum_{k=1}^{15} \varepsilon_i^{(k)} \quad (4)$$

(5) Ranking of grey relational grade analysis: if the correlation degree between the comparative sequence and the reference sequence is larger, the influence of this factor on water shortage is higher. We can get the ranking of all factors related to grey relational analysis by the MATLAB programming, as shown in Table 3.

From the results of correlation ranking, the main factors affecting the water scarcity in Beijing are precipitation, population and reclaimed water, and the living water and industrial structure are second. These factors mainly come from the two driving forces of environment and society, which will make physical scarcity and economic scarcity of water resources.

Table 3 Ranking of various influencing factors based on the grey relational analysis

Influence factor index	Ranking	Influence factor index	Ranking
Precipitation	1	Third industry Share	6
Population	2	Second industry Share	7
Reclaimed water	3	Ecological water	8
Production water	4	First industry Share	9
Domestic water	5		

4 An empirical analysis of water shortage risk model

Risk analysis of water shortage is based on risk analysis and identification. Considering all kinds of influencing factors, the function of risk degree is established to measure the risk quantitatively. According to the grey relational analysis of Table 3, the results show that the three indexes, precipitation, population and reclaimed water have the greatest impact on water shortage. Therefore, the construction of the function takes the three indicators as the evaluation criteria^[11].

4.1 The establishment and solution of model

$$L = \frac{P}{k(Y+W)} \quad (5)$$

$$k = \begin{cases} 1.0 & Y \leq 200 \\ 1.0 - 0.1(Y - 200) / 200 & 200 < Y \leq 400 \\ 0.9 - 0.2(Y - 400) / 400 & 400 < Y \leq 800 \\ 0.7 - 0.2(Y - 800) / 800 & 800 < Y \leq 1600 \\ 0.5 & Y \geq 1600 \end{cases}$$

Among them, L is the degree of water scarcity, P is the population, Y is precipitation, W is reclaimed water, and k is the coefficient related to precipitation.

The extent of water scarcity achieved by Excel is shown in Table 4.

Table 4 The degree of water shortage

Year	Y	k	P	W	L
2001	338.90	0.93	1385.10	2.00	4.37
2002	370.40	0.91	1423.20	2.00	4.18
2003	444.90	0.88	1456.40	2.10	3.71
2004	483.50	0.86	1492.70	2.00	3.58
2005	410.70	0.89	1538.00	2.60	4.16
2006	318.00	0.94	1601.00	3.60	5.29
2007	483.90	0.86	1676.00	5.00	4.00
2008	626.30	0.79	1771.00	6.00	3.56
2009	480.60	0.86	1860.00	6.50	4.44
2010	522.50	0.84	1961.90	6.80	4.42
2011	720.60	0.74	2018.60	7.00	3.75
2012	733.20	0.73	2069.30	7.50	3.81
2013	578.90	0.81	2114.80	8.00	4.45
2014	461.50	0.87	2151.60	8.60	5.27
2015	458.60	0.87	2170.50	9.50	5.33

4.2 Classification of water shortage risk

This paper uses the pedigree clustering method to quantify the variable (water shortage degree -L) through the analysis of the data, and evaluates the risk of water shortage in Beijing for 2001-2015. The risk categories are shown in Table 5.

Results analysis: it calculates the water shortage degree of Beijing, In 2015, the resident population of Beijing was 21.705 million, the precipitation was 45.86 billion cubic meters, the

reclaimed water was 0.95 billion cubic meters, and the water shortage degree of Beijing in 2015 is calculated to be 5.33 by substituting it into the function expression.

Table 5 The table of water resources shortage risk category

Risk level	Year	Water shortage	Risk assessment of water shortage
Low-risk	2003,2004,2008,2011,2012	$L < 4$	Negligible risk
Medium-risk	2001,2002,2005,2007,2009,2010,2013	$4 \leq L < 4.5$	Marginal risk
High-risk	2006,2014,2015	$L \geq 4.5$	More serious risks

The degree of water shortage in Beijing in 2015 is 5.33, which indicates that water resources are scarce and serious. This agrees with the facts and shows that the model can be put into practice. The establishment of the risk function can quantitatively study the degree of risk, which is conducive to the supervision and management of the risk of water shortage.

5 Conclusions and policy recommendations

This paper constructs the index system of water scarcity risk from three aspects of demand, supply and industrial structure which is based on objective facts, and studies the main influencing factors of water shortage in Beijing, the main factors affecting the water resources shortage in Beijing are precipitation, population and reclaimed water by using the grey relational grade analysis method; these factors mainly come from the two driving forces of environment and society, which will make physical scarcity and economic scarcity of water resources; according to the importance of influencing factors, it establishes the degree of shortage risk function in order to analyze the degree of water shortage quantitatively, it calculates the shortage degree of water resources in 2015 is 5.33, which is a serious shortage level. The government should take timely preventive measures to avoid the risk, and then it puts forward the following suggestions according to results.

(1) Control the population quantity and stabilize the demand of water resources. The government should encourage the population to move with the industry, the number of Beijing residents is controlled in a reasonable range, we should follow the natural population growth rule, in order to stabilize the demand of water resources, it's necessary to stabilize the low fertility level and the level of population migration. The government should take the establishment of the new security zone as an opportunity to further promote the joint development of Beijing, Tianjin and Hebei, control the population size, ease the function of non capital in Beijing, and explore new models for optimizing development in densely populated areas.

(2) Increase precipitation and ensure water supply. Firstly, meteorological departments can increase precipitation by using artificial rainfall technology; secondly, the government should increase Beijing's city green area and forests to reduce the loss of water resources and regulate the temperature. In addition, evaporation of plants reduces evaporation and increases humidity and precipitation.

(3) Alleviate the imbalance between water supply and demand by the reuse of reclaimed water. The relevant departments should rationally introduce high-tech water resources recycling treatment technology to save water and recycle water. and introduce the conservation oriented production equipment, it is available that using low pressure pipe irrigation, sprinkler irrigation, micro irrigation and other measures to reduce emissions at source and control requirements. Besides, it's important to take comprehensive measures to clean production and save water to reduce environmental pollution through individual projects, the reuse of reclaimed water can improve the utilization of water resources. It is necessary to reasonably build water supply network system and layout water conservancy project, ensure the effective implementation of water diversion project, and vigorously promote the construction of sewage treatment and recycling facilities. The relevant departments should improve water supply quality, and ensure water supply safety.

(4) Optimize the industrial structure to improve the utilization rate of water resources. It is necessary to increase investment in innovation industries, increase the proportion of the third industries, and eliminate and transform backward high water consumption technologies, equipment and

enterprises. The government should restrict the development of enterprises strictly with high water consumption and high pollution so as to improve the overall efficiency and comprehensive competitiveness of the industrial economy. The relevant department should enhance the people's awareness of water-saving to realize the optimization and upgrading of the industrial structure. The optimization of industrial structure is closely related to the rational allocation of water resources. The optimization of industrial structure in the future should be based on the concept of circular economy development, and optimizing the internal structure of industries can improve the utilization rate of water resources. It should adapt and grasp the new normal state of economic development to promote the regional and economic development in the northern region, and bridge the economic gap between the capital and its surrounding industrial and rural areas. The government takes supply side structural reform as the main line, and fosters new engines of innovation and drive development, what's more, it should adjust the urban layout and optimize spatial structure of Beijing, Tianjin and Hebei. Thus, the water shortage risk and fragility of capital circle could be greatly improved, and ensure the sustainable development of the economy and society of the capital circle.

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Synergetic Path of Rural Poverty Governance in China—Take Village M in Wuling Mountain Area as an Example

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Abstract During the stage of China's poverty alleviation, it is extremely necessary to establish the system structure of cross-border coordination of government. However, this collaborative governance model itself makes the paradox of performance reduction in the actual collaborative process. This paper tries to remove the collaborative paradox as a breakthrough. From the analysis of internal tension of goals, power and interests level, we introduce poverty alleviation as a specific field, take Village M which has the successful cooperation of alleviating poverty as an example and explore possible paths of the collaborative governance in China's rural poverty areas. The possible paths of removing the collaborative paradox are as follows: making goal coordination to overcome target differences, promoting the depth of inter subjectivity to achieve complementary advantages and using compatible benefits to increase benefits and effectiveness.

Key words Collaborative governance, Collaborative paradox, Rural poverty alleviation and solutions

1 Introduction

The type of Chinese poverty alleviation is gradually transforming from the blood-input type to collaborative one. Interest conflicts and information asymmetry among the participants have the actual effect of collaborate alleviation on poverty (Xu Cai-hui, 2016^[1]). There exist the contradiction between government management and villagers' autonomy and the contradiction between government leading and social participation (Li Kun and Ye Xing-jian, 2015^[2]). However, poverty alleviation itself is not a zero sum game between government and society, thus reasonable adjustment of the relationship between the government and the country (Gong Liu-ji, 2016^[3]), and the mechanism of poverty alleviation resources negotiated between the main mechanism of integration innovation (Liu Jie-long, 2015^[4]) is necessary for government and countryside to get to an effective coordination mechanism and enhance the performance of poverty alleviation.

The poverty alleviation war is facing a series of new challenges and problems mainly because those poor people live in the concentrated destitute areas, which has deep poverty, wide poverty range and diversities of causes of poverty demands. Rural poverty alleviation is a comprehensive proposition of governance which cannot do without sincere cooperation, precise strategies and the effective mobilization of resources. However, cooperation has its own internal contradictions, reflected in the core goals consistent with the uniformity and difference of goals, power equality and power centralization, personal interests and public interests (Li Rui, 2016^[5]). What's more, the heterogeneity of poverty alleviation in China intensifies the cooperative governance dilemma.

In the complex Chinese policies of poverty alleviation and the rural culture segment, it is an inevitable trend to rely on the collaborative governance of government, market and country to solve the problem rather than any force alone. However, there are inherent contradictions that restrict cooperative practice. How can we avoid these contradictions in order to avoid failure? Deep understanding of the problems associated with cooperation may help to find an effective path to synergy. Therefore, this article tries to clarify the internal contradictions of cooperation, and take the Village M, which is successful cooperative governance, as an example, to find the synergy path of China's rural poverty governance.

2 Analysis framework

As a high degree and high quality of coordination (Thomson & Perry, 2006^[6]), its internal contradictions are obvious which is attributed by a Tsinghua University scholar named Li Rui into dimensions of objectives, power and interests. These internal tensions are the core structure for

collaborative governance and form a collaborative paradox: the collaborates intended to improve the governance performance finally reduced its achievements.

Table 1 The manifestation, hypothesis and solution path of synergetic tensions

Synergy tensions	Main performance	Premise hypothesis	Solution path
Target tension	Contradictions between goal congruence and goal difference	<ul style="list-style-type: none"> • Goal congruence is a necessary prerequisite for synergy because of differences themselves leading to organizational conflict and prejudice cooperation. • The goal difference exists in the multiple subject coordination around the public topic. 	Shaping issues and expanding consensus
Power tension	Contradiction between power equality and power centralization	<ul style="list-style-type: none"> • The similarity of status and power between organizations is an important condition for successful collaboration. The imbalance of power will inevitably lead to the control of other organizations by other organizations. • The distribution of power among organizations can not be completely equal. And the basis of effective coordination is concentration of power. 	Clear division of labor and complete mutual empowerment
Interests tension	Contradiction between individual interests and common interests	<ul style="list-style-type: none"> • The goal of collaboration is to accomplish tasks that a single organization can not accomplish, which requires cooperation to produce a common interest greater than the sum of the individual actions of the organization. • Individual benefit is an important system guarantee to stimulate organization participation. 	Creating public value and realizing benefit sharing

The collaborative paradox of Li Rui has universality not only in the west but also in China with a similar dilemma. However, among Chinese governance of poverty alleviation and the situation of concentrated destitute area, the paradox of cooperative governance has not been overcome and even gets worse. This paper tries to hold the cooperative paradox as a breakthrough point, introduces specific poverty alleviation field and takes the successful village M as an example to explore the effective path of China's rural poverty cooperative governance.

3 Solution to the paradox of poverty alleviation cooperation in rural areas

The current situation and paradox of the implementation of collaborative governance in the world has been recognized and studied by scholars. However, in reality, there are still many successful cases of cooperative governance between government and society, which show that there is an effective way to overcome the coordination paradox. A village named M is one of the villages among the Chinese concentrated destitute areas which achieved significantly (achieve the whole village out of poverty during a short period of 6 years) under the cooperative governance network of government and the village and then became a model of local poverty alleviation. The success of village M is not an accident because of having solved the collaborative internal contradiction in practice. The complex field of information, knowledge, power and demand in rural poverty alleviation makes the solutions full of characteristics.

3.1 Making goal coordination to overcome target differences

Early research on organizational goals takes the objectives as single and homogeneous, and the high-level goals come from a simple sum of low-level goals. Eden and Ackermann broke through the simple and general antecedent logic, and put forward the concept of "target system". The organization objective may have "low order conflict and higher order consistency". Is the synergy still possible in reality? The synergy model of the M village proves it. With the different goals between the government and the village, the cooperative cooperation is still achieved.

In the case of village M, not everyone values the goal of "poverty alleviation". When it comes to the same thing, it is more common of the coordination of their goals rather than getting the same goals. Since 2007, the core objective of the government of Wulong has been to promote economic

development and enhance GDP through tourism. With the hope of “do less and get more”, there is not enough time and effort to respond to the “poverty” problem. While the goal of Village M is getting out of poverty, the value of tourism of Village M was not in the plan of the district government in 2007. With aims at different layers, “target cooperation” has been achieved. The villagers opened the farmhouse to increase their income, which promotes economic development as well. Infrastructure gets improved under the goal of developing local tourism, which also helped Village M so that villagers are more willing to express their demands to the government. At the same time, the government puts less material and financial support to the Village M, instead, it lets it create value by itself.

All of these challenge the hypothesis of O’Leary & Vij (2012) who said “the same goal is a necessary prerequisite for synergy”. The rural poverty alleviation can bypass the paradox and transform from “target uniformity” to “target cooperation”. Although there are significant differences in the ultimate goal, the cooperation in different stages is beneficial for each other and avoids the divergence of governance arrangements, task priority, organizational culture and value preference differences. Then objectives and strategies become complementary. This kind of goal coordination reduces the coordination transaction cost effectively, especially the cost in the operation process, which has helped to solve the contradiction of “target uniformity” and “target cooperation”, which is the most important contradiction in collaborative governance.

3.2 Promoting the depth of inter subjectivity to achieve complementary advantages

The strength of the organization and cooperation was negatively correlated (Agranoff & McGuire, 2004^[7]). However, in poor heterogeneity, information asymmetry, lack of local knowledge and great pressure, although the government holds the most power and resources, the single force is not enough to solve the poverty problem and cooperation is a must. The distribution of power and resources of government is too concentrated, which is easy to cause distrust of inter organizational cooperation, or is the cause of conflict and absorb (O’Leary and Vij, 2012^[8]) and affects the effective cooperation among them. How to cooperate with other participants in poverty alleviation is a problem that needs to be solved.

The power imbalance causes dominant positions of some organizations, which have the dominant position to control other participants (Agranoff & McGuire, 2004^[7]). Thus the similarity among organization’s status and power is an important condition for successful collaboration. However, the poverty alleviation practice in Village M challenges this hypothesis. The key to its success is precisely the coordination of power and resources under diversity between the government and the rural organizations, rather than the similarity. The classical organization theory also believes that interdependence caused by decentralization of power and resources is the key to promoting inter organizational cooperation (Agranoff & McGuire, 2004^[7]; Thomson & Perry, 2006^[6]), the difference is one of the most important potential resources (Feldman & Quick, 2009^[9]), which is particularly prominent in Chinese rural poverty. Local knowledge in rural areas is quite vital.

Purdy (2012) distinguished three different types of power cooperation which has important enlightenment on solving collaborative power paradox in the governance. He distinguished the statutory power, resources power and discourse power^[10]. There is no doubt that government has the statutory authority, it’s responsible for poverty alleviation in the Village M, infrastructure construction, construction investment and other illegal law enforcement. While the enterprises have completed the technological transformation of vegetable planting into the village, ecological and agricultural sightseeing zone construction of micro resources allocation and production tasks. As time passes, power shifts to the advantage of critical resources and information (Li Rui, 2016^[5]). In the rural poverty control, the rural hidden resources advantages (local knowledge, relations and experience) are more prominent, and the rural areas are more responsible for the social mobilization and policy advocacy functions of poverty alleviation work, which forms a highly complementary, inclusive and deeply embedded relationship among resources, capabilities and relationships, providing a solution for the coordinated paradox of rural poverty governance.

3.3 Using compatible benefits to increase benefits and effectiveness

Synergy requires that the benefit of cooperation be greater than the sum of the benefits of individual action in order to gain synergy advantages and achieve the tasks that a single organization

cannot do by itself. Wood and Gray divided the interests in the process of collaborative into three ones: shared interest, differing interest and opposing interest. Shared interests and differing interests are in cooperative coexistence and the conflict between the two interests will weaken the effectiveness of collaborative governance. If there is only common in interests to guide, self-enforcing and strengthening the incentive is quite hard to achieve (North, 1990^[11]).

In fact, the struggle for interests in poverty alleviation is not that large. However, the incentive under the Nash equilibrium is particularly important. Olson is more instructive to define compatibility interests which means that the number of people who increase the distribution of interests will not affect the interest share gained by each member. The cooperative poverty alleviation Village M's practice shows that the villagers opened the farmhouse to increase their income and promote economic development as well. Under the target of developing tourism of local government, the improvement of infrastructure, farmhouse subsidies and training also feeds the Village M back. Mutual benefit after internal satisfaction and actual benefits with the increase strengthens ties to each other. In rural poverty alleviation, compatibility benefits mean that when the villagers feel good, the local government also feel good with the benefits outweigh the costs. when common interests can be shared, the participants will not refuse to cooperate, so as that cooperation will reach and get both the benefits and effectiveness of the governance.

4 Conclusions

Model of collaborative governance in M village's experience is to make goal coordination to overcome target differences, promote the depth of inter subjectivity to realize complementary advantages and use compatible benefits to increase benefits and effectiveness. The government has realized the transition gradually from the instructing to guiding and cooperation finally. The governance has overcome more difficulties than single actions by themselves in cross-border collaboration of rural poverty alleviation (Ansell & Gash, 2008^[12]), and then obtain the remarkable performance of poverty alleviation.

In this paper, we have promoted three aspects of the academic cognition: First of all, if there is no goal consensus of the highest level, as long as a "target cooperation" exists, the coordinated action will function and improve the performance of collaborative governance; Secondly, highly complementary in resources, ability and relationship including mutual tolerance and the depth of embedding is the key of the collaborative governance. Besides as the time of poverty alleviation goes on, the power will be transferred to village gradually which owns the advantages of key resources and information; Finally, when common interests can be shared, the participants will not refuse to cooperate, so as that cooperation will reach and get both the benefits and effectiveness of the governance.

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Analysis on the Problems and Countermeasures of E-hailing Service

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Abstract As an innovative product of “Internet+” era—car-hailing service has appeared on the stage of society. To a certain extent, the appearance of car-hailing service is becoming a new way to meet the public demand of high quality, diversification and personalization. It is developing in a faster way and also attracts investment from more and more form sponsors. Therefore, it has caused a lot of conflicts within the interests of taxi drivers, problems of government supervision, and social contradictions. In this paper, we focus on several topics to analyze, such as: Whether the car-hailing service is legal or not; What kind of legal regulation should be used; How to promote the development of car-hailing service etc. On this basis, we suggest the relevant governmental departments and managers to introduce the relevant laws and policies as soon as possible, to promote the application of legitimate car-hailing service, ensure the safety, and make differential development come true.

Key words Car-hailing service, Supervision, Legal, Countermeasures

1 Introduction

According to the latest report of *www.chinanews.com* in April 2016, the demand of car traveling is increasingly diversified, networked and fragmented in China. In this context, a lot of demands will be replaced by online car-hailing services. According to the *2016 China Car-hailing and Car Rental Market Analysis Report* jointly released by international research institution Roland Berger and Capital Car-Rental^[1], China’s overall travel demand was about 2.8 billion times per day and the potential demand being expected to be truly converted into network car-hailing was about 90 million times per day, and as of 2020, the potential travel demand of car-hailing or tailored taxi market will be about 110 million times per day, and the corresponding market size will be about 1.1 trillion times/year. The report also proposed that wisdom travel reflecting respect and special enjoyment was the core content to promote a variety of travel business.

This also attracts a large number of private owners to swarm into the ranks of online car-hailing. As online car-hailing is not the traditional taxi, it also plays the same role as the taxi and causes a certain shock to the taxi owners’ interests and supervision. Therefore, how to define the legitimate operation of online car-hailing and how to regulate the existing taxi market have become the important issues in the current urban governmental management.

2 The situation of online car-hailing

The emergence of online car-hailing does ease the citizens’ difficulties in taking a taxi and going on a journey as well as the other problems in big cities and greatly reduces travel costs. However, it is also important to see that the participation of many private cars has resulted in the drop of many regular taxi drivers’ “legal” income. Therefore, it is strongly resisted by taxi drivers. The government also takes different attitude towards online car-hailing, so tailored taxi drivers have to operate in the “edge”.

2.1 Most passengers are keen to use online car-hailing

Through a network questionnaire survey among 3,578 Internet users, as of June 5, 2015, the statistical data is as follows^[2]:

In summary, through the statistical data, it is clear that most passengers have the experience of enjoying online car-hailing service, and the use frequency is more than 40% of the statistical data. This also confirms that the emergence of online car-hailing facilitates the public travel to a certain extent, which makes passengers more willing to use tailored taxi service. Tailored taxi enjoyed some characteristics such as good service, convenient payment and simple operation, the major car-hailing platforms also use subsidies to compete for the consumer market. Therefore, taking online car-hailing service, nowadays, has become a new fashion of consumption.

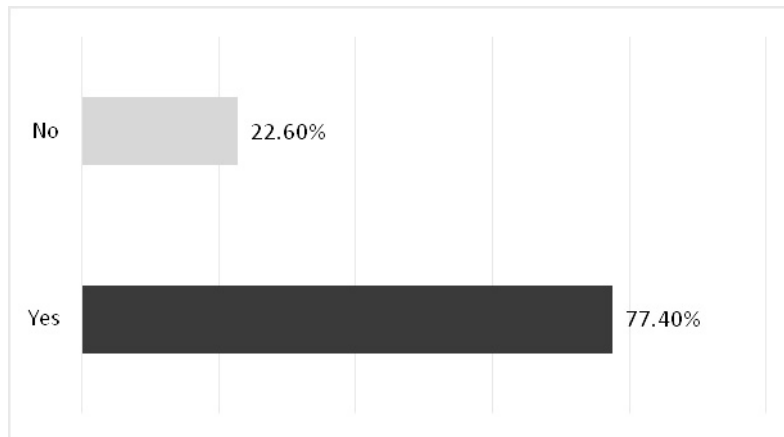


Figure 1 Comparison about whether people have enjoyed tailored taxi service

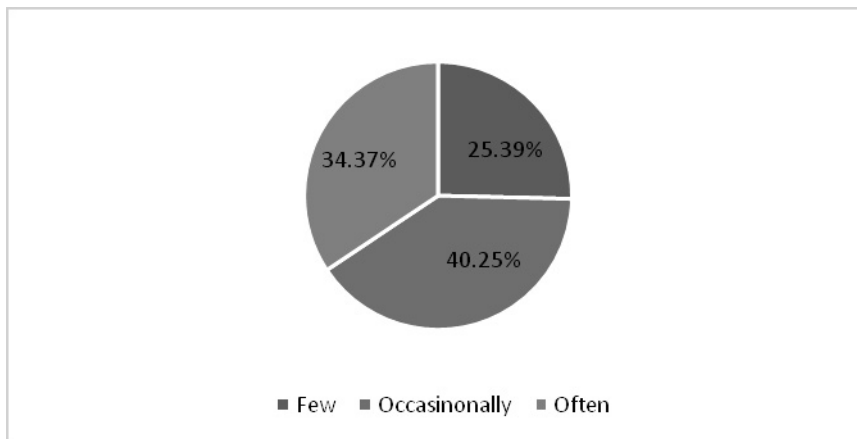


Figure 2 The frequency of choosing tailored taxi service

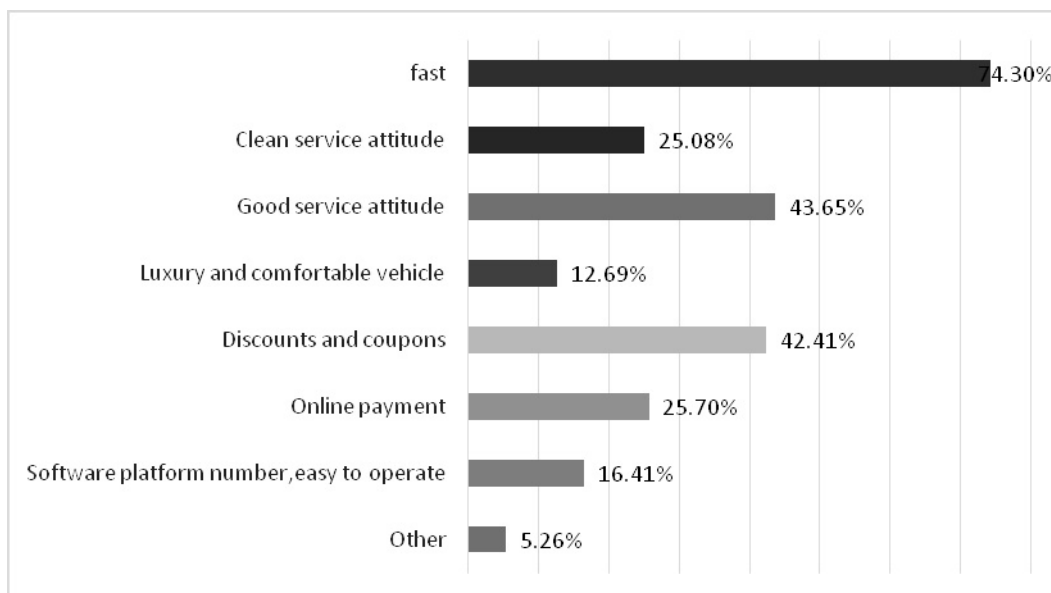


Figure 3 Summarization of the reasons for choosing tailored car service

2.2 Regular taxi expresses strong resistance to tailored taxi operations

According to *New Order of Travel—China's Tailored Taxi Industry Analysis Report* released by China International Capital Corporation Limited in July 2015^[3], the number of unlicensed taxi in Beijing has reached 100,000, which is significantly higher than that of regular taxi (66,000). Moreover, there are many unlicensed taxi flowing into the tailored taxi market. For example, in Beijing, the starting price of regular taxi is 13 yuan or 2.3 yuan/km, while the lowest starting price of tailored taxi is 0 yuan or 1.8 yuan/km. Therefore, online car-hailing soon forms a “market competition” with regular taxi and has gradually extended to ride sharing, substitute driving, bus and various sectors of transport services.

Tailored taxi drivers do not accept the “unified” management and have more freedom to choose orders. In addition, the absolute superiority in price and vehicle quality leads to a significant reduction in the number of passengers traveling by regular taxi. Common problems of regular taxi, such as rejection to take passengers and difficulty to complain poor services also affect passengers’ options, thereby ultimately damaging the interests of taxi drivers. Therefore, the emergence of online car-hailing brings the taxi drivers a more deep feeling of the psychological gap and is strongly resisted by taxi drivers, and there are even taxi driver rally protests, strikes and other events in many cities.

2.3 The attitude of the government to tailored taxi is ambiguous

Previously, two news set off a debate on the network. One is the official on-line operation of the Shanghai taxi information service platform jointly constructed by the Shanghai Municipal Transportation Commission, representatives of the four major taxi companies and Didi. This is the first cooperation between the third party ride software and the official. The other one is that soon after Jia Tao, the deputy director of the Civilization Office of Beijing Haidian District, said that the Civilization Office of Haidian District would carry out further cooperation with Didi Chuxing about “green travel”, Didi was questioned by the Beijing Municipal Commission of Transport and other departments for suspicion of their illegal operation. So far, there has been a serious divergence in the local governments. One party recognizes the innovation service model of tailored taxi, while the other party identifies tailored taxi as “illegally operated” vehicle. Only in 2015, Beijing Traffic Law Enforcement Corps investigated 207 tailored taxis from Didi^[4].

In summary, the relevant government departments have not given a unified definition about whether online car-hailing is legal. Therefore, how to regulate the tailored taxi management has been plaguing the competent authorities. On the one hand, they have to face the protests of regular taxi drivers. But on the other hand, the general public warmly welcomes its emergence. How to cope and manage online car-hailing has become a key issue which is needed to be urgently solved by the government.

3 The legal problems of tailored taxi

As a new thing, the effective management of online car-hailing has no rules to follow. The main reason is that there is not a relatively perfect basis for legal supervision at the government management level. At present, online car-hailing faces the following problems:

3.1 Tailored taxi does not have operational qualifications

According to Article 4 in the *Measures for Investigating, Punishing and Banning Unlicensed Business Operations* (State Council of the People’s Republic of China, No. 370), the use of network platform and mobile phone software to book car rental is an illegal operation. *The Notice of Beijing Municipal Commission of Transport on the Prohibition of Car Rental Enterprises to Provide Convenience for the Illegal Operation* provides that private vehicles or other non-leased vehicles shall not be used for car rental business. *The Measures of Beijing Municipality on Administration of Automobile Chartering and Leasing* clearly pointed out that vehicles under operation shall be owned by car leasing operators and shall meet the more complex security technical specifications of private cars.

Obviously, online car-hailing is actually providing taxi service to passengers while providing services such as door to door, pay according to the times used and charge based on the mileage. Many of the illegal drivers being investigated are social vehicles, and the law enforcement officers have not

seen the conclusion of a custom contract between the car owners and leasing companies. This also makes a lot of unlicensed taxis without the operation qualification to become a part of the market operation through the tailored taxi platform. Thereby, it is gradually “being legalized”.

3.2 Security risks in tailored taxi operation

First of all, the regular taxi drivers must undergo a rigorous professional training before working, and the charge standards shall be implemented in accordance with the provisions of the Price Bureau. Currently, most of online car-hailing, however are private cars. Although major platforms have declared that they have a strict car driver audit mechanism, in front of the current price war pattern, to maximize the driver resources, occupy market share and reduce operating costs and for other considerations, it is inevitable for them to reduce the market access threshold, resulting in a lot of failure of audit and training systems.

Secondly, online car-hailing drivers are not entirely under the supervision of the government and the internal management structure is relatively complex, both of which lead to a list of security issues. According to the taxi industry market survey report, in early June 2015, 35% of the tailored taxi passengers have been asked by the drivers for their phone number, 4% of the passengers have received harassing SMS from tailored taxi drivers, and 84.1% of the passengers did not know how to apply for claim after an accident. This data does not include individual criminal offenses. By that analogy, even if the proportion of security risks is only 1% or even 1‰, the security risks are still worrying under the huge technology of the current and future tailored taxi development.

3.3 The quality of tailored taxi drivers need to be improved

Regular taxi driving is a profession and must undergo rigorous training and management, so regular taxi drivers are more skilled in general business and their service is more thoughtful. But many of the online car-hailing drivers are not professional drivers, and many drivers flow into this industry accompanied by the influx of interests. Coupled with the growing size of the tailored taxi market, the drivers' quality and service weakness are gradually exposed.

For example, many passengers often complain that tailored taxi drivers do not recognize the roads and only drive through the navigation software, which lead to take the wrong road and waste a lot of time. Moreover, China's traffic travel market is optimistic due to the contradiction between supply and demand, leading to that many giants continue to spend heavily in cultivating the market. Now tailored taxi drivers can get the reward subsidies of 500-1,000 yuan as long as they can work in the rush hours in the morning, noon and evening. Therefore, many tailored taxi drivers are busy grabbing orders and subsidies and have ignored the service link. How to enhance the business quality of online car-hailing has become an important issue in online car-hailing management.

3.4 The contradiction between regular taxi and tailored taxi is prominent

People's Daily once pointed out that online car-hailing, taxi and passengers were calling for the implementation of taxi management reform in the “sharp comments” column in June 2015. The reason is that in general, tailored taxi orders soar all the way while regular taxi calls on resisting tailored taxi software, and tailored taxi drivers complain while regular taxi drivers complain. Huang Jian-bin, associate professor of the School of Political Science and Public Administration of Suzhou University and public administration postdoctoral, said that, from the surface, online car-hailing indeed grabbed the market share of the taxi industry, thereby triggering the interest conflict between the two sides. In fact, it is a challenge to the traditional passenger service management. Taxi drivers protest and complain tailored taxi grabbing their business by strikes, but they also depend on some car-hailing software to receive orders. At the same time, passengers have quietly conformed to this trend.

Therefore, many government regulators at home and abroad have involved in the reconciliation or management to stabilize the social impact. For example, Uber once was banned in France, Germany and other places, Easy Taxi also announced to withdraw from the Taiwan P.R. China market in 2015, and Didi Chuxing has not been officially operated in Shanghai. But the passengers who have used tailored taxi service express the advantages of tailored taxi, such as “on call, luxury vehicle but low price and courteous service”, which shall inspire the reflection of taxi drivers and managers^[5]. In the context of comprehensively deepening reform, government decentralization and the “Internet +” tide, how to maintain the convenience of taking a taxi while maintaining the interests of the taxi industry is

another difficult problem being placed in front of the government.

4 Strengthen the measures on online car-hailing management

Online car-hailing is a product of “Internet +” era being extended to the taxi industry. Not only does its emergence meet the needs of travelers at different levels, but also brings an innovation in the taxi service model. However, for online car-hailing lacks the support from the relevant laws and regulations and the effective supervision from the government, it is controversial since the date of birth. Because online car-hailing not only provides the passengers with a variety of travel methods, but also innovates the taxi industry services, China should introduce relevant laws and regulation on online car-hailing as soon as possible to better regulate tailored taxi service.

4.1 Improve the laws and regulations on tailored taxi to determine its legal status

First of all, in the press conference held in October 015, the Ministry of Transportation announced *the Interim Procedures for Online Car-hailing Operation and Service Management (Draft)* (hereafter referred to as the “procedures”). The procedures clearly pointed out tailored taxis must be passenger vehicles with 7 seats or less and with *Road Transportation Certificate*, tailored taxi drivers must obtain qualification certificate and restrictions shall be implemented on tailored taxi subsidies. However, although this proves the legalization of tailored taxis, it also sets a very high threshold for private cars to enter the tailored taxi market, which is not good news for car owners who want to subsidize the oil cost and for passengers who want to enjoy the convenience to take a taxi through tailored taxi.

Secondly, at the press conference of the Fourth Session of the 12th National People’s Congress, Yang Chuan-tang, Minister of the Ministry of Transport, also said that it was not legal for private cars to be operated as tailored taxi from the existing laws and regulations. But the treatment of new creatures shall not cease to advance or stick to the rules. We shall allow tailored taxi to get a legal identity through legislation rather than totally banning it^[6]. In April 2016, according to domestic media reports, since the *Interim Procedures for Online Car-hailing Operation and Service Management (Draft)* sought public opinion, after re-arguing, the new procedures are expected to be introduced half a year later.

In summary, to strengthen tailored taxi management, the government shall first determine its properties and give it a clear positioning. The emergence of tailored taxi has been loved by the vast number of consumers. If we do not adapt to the wave of social development and consumer demand and blindly force to retire or punish tailored taxis, it will undoubtedly damage the government’s management image and will not be recognized by the vast number of consumers or completely eliminate tailored taxis. Therefore, in addition to introducing formal laws and regulations as soon as possible, the government also shall adopt the principle of guidance and follow the social development, so that tailored taxis can serve the market in a more standardized manner.

4.2 Improve the tailored taxi management system and define the responsibilities

According to 2016 Q1 China Tailored Taxi Market Research Report released by China IT Research Center, in the first quarter of this year, the transaction scale of China’s tailored taxi market reached 28.45 billion yuan, an increase of 19.1% over the fourth quarter of last year, and the daily order of Didi Chuxing broke through 10 million yuan. This also led to the sudden surge of criminal cases. On the one hand, we accused the nonfeasance of platform and government supervision; on the other hand, we cannot reverse the needs of the majority of passengers.

The above problems derived from which the business platforms did not have the ability and resources to identify the drivers’ qualifications and could only carry out formal review. As regards to whether a driver has criminal record, is familiar with the road or has skilled driving experience, no one can be pasted with a complete “label”. Currently most of the government regulators directly punish, seize and question private car owners, and they basically carry on the taxi management ideas rather than making full use of big data to resolve the current traffic problem of “supply and demand imbalance”. There is no decentralized management of tailored taxi platform.

All in all, to improve and strengthen management, we should firstly proceed with the unified configuration, registration and management of car-hailing platforms, and then require tailored taxi drivers to purchase basic insurance, additional passenger and operational insurances and other

necessary insurance, thereby, to avoid traffic accidents to bringing more impact to drivers and passengers. Moreover, the management and training of platform managers shall be enhanced to allow them to gradually convey it step by step, hence, to improve the overall quality of tailored taxi drivers. Moreover, the government regulators shall take the initiative to assume public services and create a good market external environment through changing people's mind and stopping to intervene the business activities of platforms.

4.3 Increase platform feedback and regulatory channels to enhance passenger satisfaction

Smiling, helping passengers to open the door and move luggage, ride comfort, driving skills and integrity shall be the positioning of many passengers to online car-hailing services and tailored taxi drivers. But with the growing size of the tailored taxi market, the quality and services of tailored taxi drivers began to decline.

The reasons are mentioned in Chapter II. Therefore, in addition to requiring platform operators to strengthen the driver review, they also shall set "red line rules" for drivers. Once illegal behaviors are found, the account of such drivers shall be closed immediately and the cooperation shall be terminated for protecting the interests of passengers. The reaction speed of three channels, namely, APP, telephone and online complaints, shall be enhanced. Government regulators should also require the platforms to strengthen the organization training and self-examination frequency and strive to enhance passenger satisfaction combining with government regulation and punishment.

4.4 The interests of both parties shall be balanced to effectively maintain the stability of the structure of the interest chain.

In fact, it is very difficult to absolutely balance the interests of both parties, because the market is active and free and the taxi industry cannot jump out of this circle. But the external impact and change may force the traditional industry to undergo reform or innovation. This also requires taxi companies to pay more attention to service experience.

In October 2015, the Ministry of Transport issued the *Guidance on Deepening Reform to Further Promote the Healthy Development of the Taxi Industry (Draft)* (hereinafter referred to as "the guidance"). The guidance and the procedures jointly restrict the operation of tailored taxi drivers. In addition to limiting the number of tailored taxi signed platforms, the vehicles' retirement age and price were defined. On the one hand, it increases the operating costs of tailored taxi; on the other hand, it brings a "reassurance" to the taxi industry.

However, as a product of market changes and "Internet +", it indeed saves travel costs and bring a convenient and comfortable ride experience for many consumers, but it poses the threat of survival to the taxi industry. Therefore, in addition to regulating the operation of the tailored taxi market, the new regulations and future policies and management on tailored taxi shall also consider protecting the rights and interests of consumers and ensure the stability of the taxi group so as to balance the interest of stakeholders under the premise of ensuring the stability of social order. The most harmonious state of online car-hailing and traditional taxi shall be an interdependent and healthy competition relationship which allows the development path of difference and integration of tailored taxi and regular taxi.

5 Conclusions

Why does car-hailing service be disputed from the beginning? There are three main reasons: Firstly, it really solves the difficult problem about the traffic trouble and high cost of traffic; Secondly, it has an impact on the interests of the taxi business; Thirdly, under the premise of conforming to the historical development, it promotes innovation for the taxi business. Consequently, we have to re-examine the problems it brings. To resolve the contradiction between taxi service and car-hailing service, we have to put them in the concept of "big service" and develop them by searching for the special stagger competition on its own initiatives. To recognize and respect their differences. It is a new direction of development for tolerance and integration. When we try to formulate relevant policies and regulations, we have to give full consideration to the interests of all aspects, to search for the biggest common interests of common interest.

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Cooperation between Government and NPOs: An Alternative in China's Disasters Governance *

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Abstract In the process of disasters governance in China, government has always been playing a dominant role due to its ability of resources distribution, while NPOs started to step into the governing network. The solution for NPOs' participation in disaster relief is cooperative governance. This theoretical alternative becomes a consensus among the government and NPOs, and has been taken for granted as empirical dilemmas. The author argues that cooperation alternative can be applied in the process of disaster management which neither denies governmental dominant role nor rejects institutional outline. Overall relief resources distribution, necessary regulations, administrative services are requirements for disaster management so that NPOs could enhance their participation capabilities instead of substitutions of government. This paper contributes to understand the empirical relationship between government and civil society and their operational logic respectively in China.

Key words Disaster management, Cooperative governance, NPOs, Requirements

1 Introduction

Historically, major disasters often have led to political unrest, social disorder, or even a threat to the survival of the political regime. For example, the downfall of the old dynasty in ancient Egypt was related to a drought in the Nile Valley in 2180 BC. Droughts, famines and floods shook people's confidence in the social systems and emperors' ruling foundation. In ancient times, numerous peasant revolts were also caused by disasters, and resulted in the collapse of a dozen of empires in China. Good governance can enhance the government's prestige, while poor governance lead to citizens' dissatisfaction or even resentment.

How to effectively respond to disasters is a test of a government's administrative capability, and equally a chance for NPOs' participation capability. For any country, disaster governance is a basic social function of a government. When coping with disasters, the government should and must play a dominant role. Since governance itself implies that multiple actors should participate in disaster management, the function and the relationship between government and NPOs determine the logic of disaster governance. There is an advocating voice that cooperation ought to be a mechanism of multiple actors in disaster governance. This paper illustrates how cooperation can be an alternative in China and lists the potential paths that China can depend on.

2 Government dominance and its role in the process of disaster management

Comparatively speaking, the Chinese government runs an effective disaster management system. First of all, the Chinese government maintains disaster relief agencies. From the beginning, the PRC Central Government has been empowering to the development of disaster management agencies. Currently, China's central organization and leadership agency for disaster relief is the China National Commission for Disaster Reduction led by the State Council: a vice premier of the State Council serves as the director, and this commission is made up of members from 34 ministries, commissions, offices or bureaus of the State Council, the army and the Red Cross. The China National Commission for Disaster Reduction is China's coordination agency for natural disaster relief. Its duties are as the following: (a) to develop the guidelines, (b) to make policies and plans for national disaster reduction work, (c) to coordinate major disaster reduction activities, (d) to guide local disaster reduction work, (e) to promote disaster reduction exchange and cooperation, and (f) to organize and coordinate the nationwide disaster relief work. Nowadays, the office of the China National Commission for Disaster

* Financed by Shanghai Pujiang Program (Project No.:17PJC038).

Reduction sits in the Ministry of Civil Affairs. Therefore, the Ministry of Civil Affairs is the major agency for disaster and emergency relief.

China has preliminarily established the supplies reserve system for emergency relief. It is the government that must play a dominant role in disaster governance, because the government is endowed with sufficient power to allocate resources which other organizations cannot possess. Till now, China has established central-level disaster relief supplies reserve stations in ten cities, they are Shenyang, Harbin, Tianjin, Zhengzhou, Hefei, Wuhan, Changsha, Nanning, Chengdu and Xi'an. Some disaster-prone areas have established local relief supplies warehouses, based on which the relief supplies reserve network has now been formed.

Under China's centralized system, the variety of different government agencies can cooperate closely with each other in disaster governance. For example, after the Wenchuan Earthquake, the central agencies successively published regulations or policies on disaster management: the Ministry of Finance, the State Administration of Taxation, the Ministry of Environmental Protection and other central agencies separately or jointly issued 31 documents within 20 days after the earthquake. However, government dominance in disaster governance does not mean the government must do everything by itself. Even in disaster governance, the government mainly allocates relief resources to the victims in the seriously-hit areas and is unable to pay enough attention to remote or isolated areas. Generally speaking, the government can provide uniform and standard public products to ensure people's basic survival needs and services but cannot provide personalized and specialized care to cater for all, since human needs are comprehensive, diverse and dynamically changing. But disaster governance includes both work of construction and psychological comfort. In most cases, the government reconstructs houses and ensures basic survival needs but cannot care too much about the psychological and cultural needs of the people in the disaster-stricken areas. That is cooperation in disaster management should be expanded to non-governmental agencies.

Theoretically there has never been and will never be an "omnipotent government" in the world. An ideal modern government is "small but strong", i.e., functioning necessarily, strongly and effectively in certain fields. Limitation of government functions in disaster management can be counterbalanced by NPOs. For disaster governance, there is no sole 'correct solution' through the government's handling everything. The government and NPOs complement instead of replacing each other in functions. Only through reasonable division of work, can the government and NPOs provide efficient public goods and services, and thus achieve effective governance. The government should establish platforms for NPOs to participate in disaster management. NPOs are close to the grass roots and people, and they can employ the resources that cannot be mobilized by the government to sensitively and directly respond to people's rapidly changing needs. The effective participation by NPOs ensures the improvement of the quality of public goods and services.

3 NPOs' participation and governmental reaction in disaster relief

NPOs' participation in disaster relief can trace back to the foundation of Central Committee of People's Republic of China. On February 27, 1950. Commission of Political Affairs and Legal Affairs of the State Council convened the leaders of the Department of Internal Affairs, the Administration of the Central Cooperative Undertakings and All-China Women's Federation to inaugurate the Central Committee of Disaster Relief & Production pursuant to the Instructions on Disaster Relief & Production issued by the State Council on December 19, 1949. At the meeting, Dong Bi-wu, vice premier of the State Council, was appointed as director; and Bo Yi-bo (the Commission of Finance and Economy), Xie Jue-zai (the Department of Internal Affairs), Fu Zuo-yi (the Ministry of Water Resources) and Li Shu-cheng (the Ministry of Agriculture) were appointed as deputy directors. Meanwhile, the ministers from the Department of Internal Affairs, Ministry of Trade, and other five ministries consists the leading group members. It was proposed that the State Council appoint one state councilor for political affairs, one member of the People's Supervision Committee, All-China Federation of Trade Unions, All-China Youth Federation also assign the chief leaders as the members of the Central Committee of Disaster Relief & Production. NPOs participate in disaster governance mainly in two ways:

Firstly, the government actively involves NPOs and individuals in disaster governance. The disaster relief guideline reflects the basic principles and policies of the CPC in disaster management. The disaster relief guideline fundamentally determines the orientation, principles and contents of the disaster relief system, as the Central Disaster Relief Committee inaugural statement wrote: “overcome adversity through greater production, economize on resources against natural disasters, people help each other and relieve people by giving them employment instead of outright grants, and supplement with necessary relief”.

Secondly, some administrative regulations and departmental rules contain specific provisions on the involvement of NPOs in disaster governance. For example, in the National Emergency Plan for Natural Disaster Relief promulgated by the State Council on January 10, 2006, the role of NPOs is specifically mentioned three times: “to rely on the masses, and give full play to the role of grass-roots mass autonomous organizations and NPOs”; “to foster and develop NPOs and volunteer teams, and to fully play their roles”; “to irregularly train NPOs, professional emergency rescue teams and volunteer organizations”. During the wenchuan earthquake relief in 2008, these regulations did work: the central agencies successively published regulations or policies on disaster management. Ministry of Finance, State Administration of Taxation, Ministry of Environmental Protection and other central agencies separately or jointly issued 31 documents within 20 days after the earthquake. The key lies in active promotion at the operational level in addition to advocacy at the macro level.

Nowadays, the collaboration between the government and NPOs is widely recognized and generally accepted in China, that is, cooperative governance is a new consensus among authority. Since wenchuan earthquake relief, regulation and deregulation paralleled, a number of governmental documents were issued to deregulate NPOs’ participation, so that the government, NPOs, volunteers and local citizens could closely collaborate in disaster relief and post-disaster reconstruction. Common tasks and the same goals made multiple actors accept the core value of collaboration. This is the very reason why disaster relief and post-disaster reconstruction could run so successfully in China.

4 Collaborative requirements for disaster management

After disaster relief, everything will gradually be on the right track, and the relevant parties should carry out post-disaster construction in a responsible manner for sustainable development. Therefore, it is an inevitable requirement to strengthen the system for collaborative disaster management by the government and NPOs.

NPOs’ capacity construction

The importance of their own growth and development NPOs far outweighs certain institutional environment and political support in disaster governance. The role of NPOs in disaster governance can be clearly defined that the services provided by NPOs should not be the same as those provided by the government and individuals. In terms of primary missions, the government meets people’s emergency needs while NPOs help and cultivate the disaster-hit victims’ ability to achieve sustainable development; in terms of the mobilization mechanism, the government gathers resources within the shortest time and to the maximum extent through political mobilization while NPOs gather resources mainly through social mobilization. In terms of the needs met, NPOs meet soft, humanistic, personalized and diverse needs instead of general or common needs; in terms of the people served, NPOs mainly serve the people not fully covered by the government allowance. Besides clarifying their roles, NPOs should enhance their credibility. High credibility is an important guarantee for NPOs to participate in disaster governance. For sake of this, NPOs need to enhance the openness and transparency of internal information, measures should be taken as providing receipts to those who donate money or material items, and giving details of the actual use of these donations. Meanwhile NPOs need to engage in grassroots communities by means of highlighting their functions, accumulating resources, building brands, solving practical problems, so that the community could be reconstructed as quickly as possible.

Social regulations for NPOs

Regulation is the key dynamics that influence reaction from NPOs in disaster management. In 2009 the People’s Government of Shenzhen Municipality began to carry out the reform of the system

for the administration of NPOs, including the series of major reform measures like reforming the dual administrative system and establishing the direct registration system. As far as the current dual administrative system is concerned, three possible paths can be tried. Firstly, hub NPOs should be established to regulate NPOs, since non-governmental bodies' managing NPOs is better than the government's directly administering NPOs. Special hub NPOs in education, health, sports, research, environmental protection and other fields should be set up for the pre-registration examination of NPOs and the regulation of the activities of NPOs. In a sense, these hub NPOs function as the current competent authorities for professional work and lessen the pressure on civil registration authorities. But these hub NPOs should be non-administrative and non-bureaucratic in operation, and at the same time should be oriented to services and regulation; otherwise, they will be no different from the current authorities. Secondly, the Public Service Organization Development Board should be established to provide comprehensive services for NPOs from registration to termination. It is not only the competent authority for professional work of NPOs but also the registry for NPOs. Independent from the Civil Affairs Bureau but on an equal footing with it, this Board should have extensive authority and receive support in staffing and budget. Last but not the least, certain specific procedures and mechanisms should be improved without changing the current administrative system. For example, civil affairs authorities and NPOs should hold joint meetings to settle disputes through consultations.

There are three paths involving administrative regulation reform: the first path aims at the establishment of hub organization to serve various NPOs, so current administrative system need to be changed. The alternatives include decentralization and deregulation, because hub NPO's empowerment is limited. the second path aims at a higher status for the administrative authorities for NPOs and more autonomous authority in the whole government system, but it also clarifies the administration responsibilities to avoid buck-passing between the competent authorities; and the third path is patching up the existing system and only changes in specific procedures and mechanisms are necessary in practice.

Administrative service for NPOs

Administrative service for NPOs in the process of disaster management can be nurtured incrementally. On the one hand, government try to arouse people's enthusiasm for participation. Everyone is sympathetic in the depth of his/her heart, and the key issue is how to wake up such sympathy. There were many living examples in the wenchuan Earthquake: prisoners assisted prison guards in getting out of dangerous buildings, beggars donated the money they saved up for years. Therefore, the public should be motivated through daily publicity so that more people will provide public services. On the other hand, NPOs participate in the process of disaster management with altruism. Currently, the public are not highly aware of NPOs. According to a survey of a public service organization, the general public, the government and enterprise employees are least aware of NPOs. Many people don't know what NPOs are or what NPOs do, and some even question whether the purpose of NPOs is just to provide public services. A staff member of a public service organization said frankly. The publicity of NPOs can be enhanced by media reports about the activities of NPOs, or relevant information about NPOs released on the official website of the government, or electing outstanding members of NPOs as deputies to the People's Congress or members of People's Political Consultative Conference.

Function border definition and alternative decision

The growth of NPOs in China is an inevitable result from China's economic development and the accompanied social restructuring, and the driving force for the growth is the structure of citizens' social needs. But as a matter of fact, in what social background and to what extent NPOs in China can develop is greatly subject to the government's administrative philosophy and public policies. A sensible strategy for the government is to dialectically define the social functions of NPOs and sensibly guide the development instead of repressing or curbing NPOs. Repressing NPOs is not a rational way since harsh measures will not only undermine the autonomous growth of NPOs but also cause some NPOs to stay unregistered so as to avoid the high-pressure regulation by the government. This is the very reason for the difficulty in obtaining accurate data about NPOs in China. The right attitude towards NPOs is neither to suppress them nor to let them go unchecked; neither be hostile to them nor

despise them. The government and NPOs could become strategic partners in a way that the government drives the healthy development of NPOs, and effectively incorporates NPOs into the whole social governance network. Such relationship not only provides a space, basis and possibility for the growth of NPOs in China, but also promotes the government's own reform and development.

5 Conclusions

The empirical disaster management tells why government can play a dominant role in China. The historical path shows that holistic government has a capacity of resources distribution. That is, government could control the overall situation of disaster relief, and shoulder almost unlimited responsibilities of disaster relief and reduction. Since the Wenchuan Earthquake in 2008, the government realized the irreplaceable existence of NPOs in disaster governance and determined officially to construct co-operational relationship with them.

Cooperation governance refers to a refreshed relationship between the government and NPOs. On the one hand, NPOs participation must not be conditional upon governmental logging off, that is, government's dominant role cannot be substituted by NPOs; on the other hand, effective cooperative governance must not defy the value of equality, both government and NPOs need to create mutual trust and develop a common goal in the process of disaster governance.

The requirements for cooperative governance include: (a) capabilities construction so that NPOs could participate into the governance process autonomously, (b) necessary regulations for NPOs so that the governance performance could be promoted, (c) enough services for NPOs so that their enthusiasm for participation could be aroused, and (d) statutory border of power to make sure that both the government and NPOs could work within legal space.

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Research on the Interactive Path between the Government and Public Welfare Organizations in China—Taking Chengdu Public Welfare Organizations as an Example

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Abstract In this paper, we firstly summarize the current situation of the interactive relationship between the government and public welfare organizations and find out the main problems in the developing process of public welfare organizations, based on the investigations and analyses of the current situation of public welfare organizations in Chengdu. Then, we make a discussion on the ways to improve the relationship between the government and public welfare organizations from different perspectives, such as reforming the governmental policy, establishing the supervision and management system specifically for the public welfare organization, improving the systems of relevant policies, laws and regulations, developing cooperative relations, updating the public welfare view, etc. Finally, we draw the conclusion that there should be positive interactions between the government and public welfare organizations to improve the social service. On the one hand, the government should provide the macroscopical guidance and policy support, as well as strengthen the supervision and management. On the other hand, the public welfare organizations should actively seek cooperation with the government and enterprises, expand its brand influence, improve the management and operation ability and enhance the professional ability.

Key words Public welfare organization, Service-oriented government, Interactive path

1 Introduction

Since Chinese economic reform and open up, the relationship between the country and society has been gradually adjusted to an interactive and cooperative state. This can be reflected in the mutual support and cooperation between the government and public welfare organizations, with a dynamic process of two-way influence.^[1]

With the development of reform, a lot of public welfare organizations come forth and grow rapidly. However, there exist the limitations in the development of public welfare organizations, due to some internal problems such as the small scale, the lack of sources of funds, the imperfection of policies and laws, the weak internal management of public welfare organizations, etc., as well as some external problems such as the lack of cooperation with the government and the inharmonious relationship with enterprises. The government has begun to realize in recent years that it is more important to support and cooperate with the public welfare organizations than supervision. In the principle of “small government, big society”, the government has also been continuously exploring the innovation in cooperation mechanism with public welfare organizations such as the government procurement of public service. But the effect is not obvious owing to the role and function of the government.^[2] At present, the development of social public utilities in China needs to be supplemented and improved by the public welfare organizations, and needs to carry out the activities, for example, non-governmental assistance and public service, with the support and guidance of governmental policies. In order to achieve public welfare cooperation between the government and public welfare organizations, it is necessary to construct a supply mechanism.

In this paper, we take the relationship between the government and public welfare organizations as the research subject. Starting from the social aspect by visiting the relevant departments of Chengdu Municipal People’s Government and public welfare organizations in Chengdu, we know the present situation of the public welfare organizations in Chengdu and conclude the collaborative approach and the work path by adopting methods of literature research, field survey, network survey, etc. so as to

provide reference for the effective development of public welfare services and government organizations.

2 The present situation of public welfare organizations and the analysis of existing problems

2.1 Status of government and social welfare organizations

Firstly, we discuss it from perspective of the government. The public welfare has a wide range, including people's growing material needs and spiritual needs, the impact caused by the social disaster and various aspects of services that the government fails to notice. The public services that the government provides within the scope of its function cannot meet the rapidly changing demand for social services and social public affairs also affect the harmony and stability of the whole society. As a result, the government inevitably requires cooperation and support from public welfare organizations.

Secondly, we discuss it from the perspective of public welfare organizations. The public welfare organizations in China are still in an awkward position. Because to a larger extent, the Chinese government still controls the destiny of the public welfare organizations. On the one hand, the government needs the public welfare organizations to coordinate the imbalance of the governmental policies and the injustice that the government fails to notice. On the other hand, the government also worries that the excessive development of public welfare organizations will be out of control. Therefore, the supervision in public welfare organization from the government is either insufficient, or excessively harsh. So the development of public welfare organizations still faces the restriction of the system environment with Chinese characteristics. There are also limitations on the operation mechanism of public welfare organizations that they are not able to operate on their own. Especially they are not able to undertake the responsibilities of public welfare alone.^[3]

In this paper, we make a questionnaire survey that investigates the present situation of public welfare organizations in Chengdu and the relationship between public welfare organizations and the government. Mainly from the perspective of public welfare organizations, we understand the present situation of public welfare organizations and the relationship between public welfare organizations and the government, so as to understand the development of public welfare organizations in Chengdu. Combined with literature research, we discuss the interactive path of the government and public welfare organizations from the perspective of public welfare organizations.

2.2 The present situation of public welfare organizations and the existing problems

From the survey of employees of public welfare organizations, as shown in Figure 1, 43% think that the development of public welfare organizations is so-so and 8% believe that the development of public welfare organizations is excellent. It indicates that there is a lot of room for the development of public welfare organizations. They need enough guidance from the government and they need to improve their services and enhance their own influence as well.

From the current help and guidance that public welfare organizations receive from the government, as shown in Figure 2, most of the public welfare organizations have received the support in funding and policy from the government, part of them have received the support in tax and site, which shows that the government is paying attention to the development of the public welfare organizations and trying to promote the development of the public welfare organizations. But there exist developing shortcomings in public welfare organizations. The investigation shows that 80% of public welfare organizations lack in proper management, and 43% show financial chaos and insufficient cooperation with government. Some public welfare organizations are also faced with the shortage of funds.

From the perspective of the public welfare organizations, what kind of support do they expect the government to provide? 95% of the public welfare organizations expect the government to provide a broader platform for public welfare organizations. And the majority of public welfare organizations expect the government to institutionalize and legalize the cooperation between the government and public welfare organizations, which can provide the rules to follow in the development of public welfare organizations and promote the development, and expect the government to increase the support in policies and funds and lower the standard of admittance of public welfare organizations. The government should provide a larger room for development when guiding and supporting the public

welfare organizations in order to better serve the society. As shown in Figure 2.

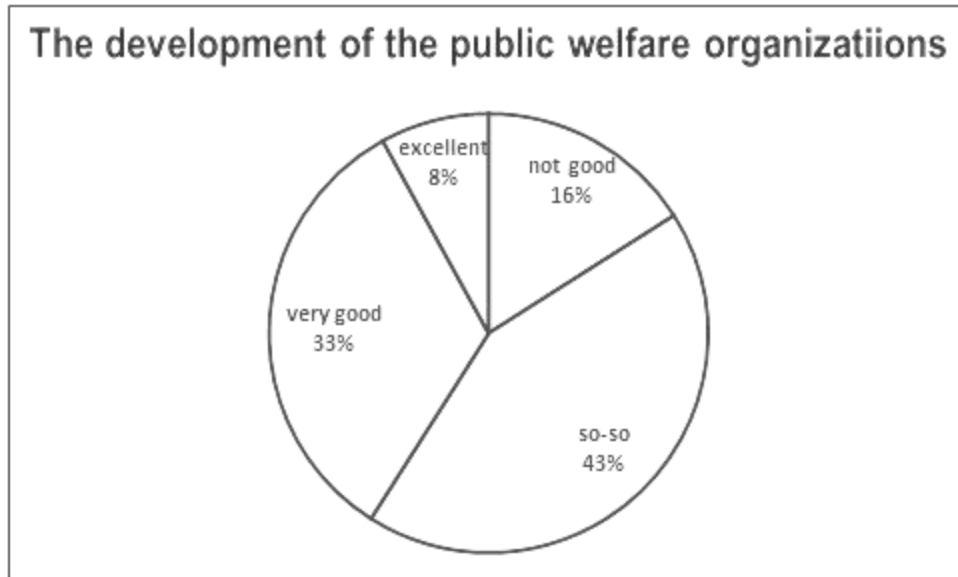


Figure 1

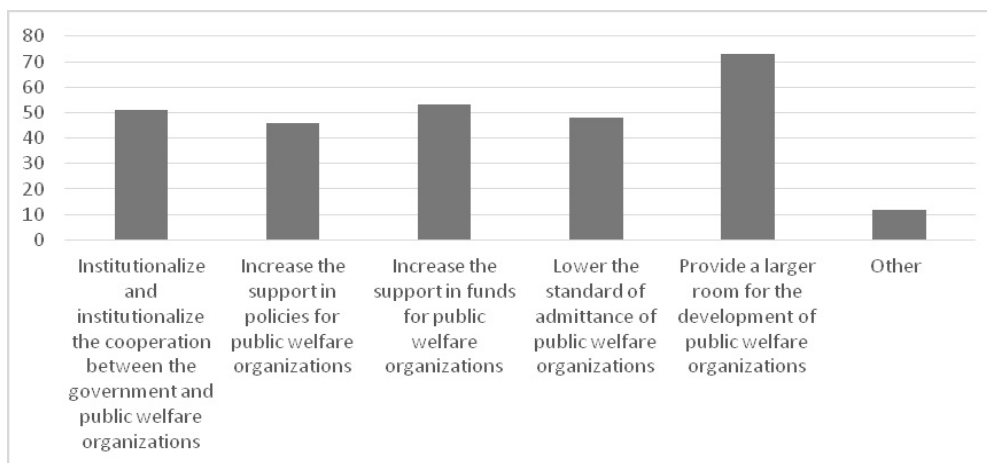


Figure 2

From the perspective of public welfare organizations, most of them consider that the relationship between the government and the public welfare organization is to guide and to be guided, to supervise and to be supervised, as well as a relationship of cooperation. Some consider that it is a relationship of mutual help, and to administrate and to be administrated. It shows that there are different reflection of the relationship between the government and the public welfare organizations in different public welfare organizations because of the different support they receive from the government, which on the one hand is caused by the public welfare organization itself, on the other hand indicates the lack of Institutionalization in the relationship between the government and the public welfare organizations as shown in Figure 3.

In the subsequent visits, we also learned that the public welfare organizations expect the government to provide a broader platform for the development. Meanwhile, ensure the financial

transparency of public welfare organizations in system so as to promote positive and healthy development of the public welfare organizations.

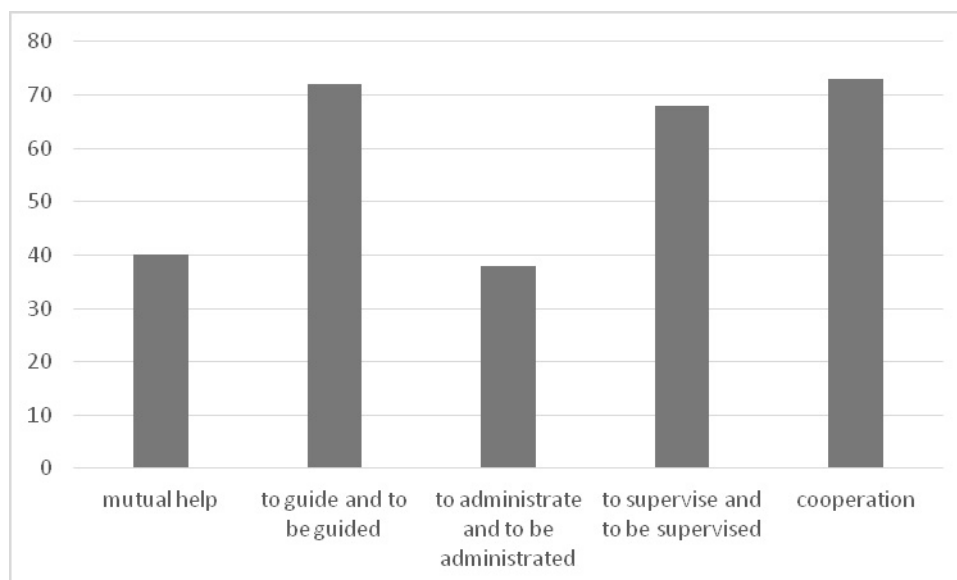


Figure 3

3 Analysis and discussion on the path of governmental management

3.1 The relationship between the government and public welfare organizations

In social public relations, the relationship between the government and the public welfare organization is to supervise and to be supervised, to guide and to be guided, a relationship of cooperation and coordination, and a comradeship with a united front. The government and public welfare organization should be each other's comrade, that is to say, the government should acquire more space for the public welfare organizations within the scope of rights and functions while public welfare organizations should make up for the deficiency of protection that government provide for the public with the advantage of flexibility, just like a smaller boat is easier to turn around. This comradeship between the government and public welfare organizations needs the support of relevant laws and regulations, which can provide criterion to determine the relationship for both in order to help each other and serve for the common public affairs. The government should introduce the administrative intervention to public welfare organizations, meanwhile, strengthen the supervision and guidance, thus protecting and improving the management of public welfare organizations.^[4]

3.2 The perspective of the government

3.2.1 Establish and improve the systems of relevant policies, laws and regulations

As Chinese government is a strong government, the government is greatly involved in public affairs and holds considerable rights in public affairs. This requires the government to reform the financial allocation, in which the government should increase the expenditure in social and public service, and strengthen the distribution of resources.

The government should establish laws and regulations and policies about the management of public welfare as soon as possible, which standardize the public welfare organizations in various aspects including forms, cooperation ways with the government, admittance conditions, operation modes, etc. and help and support public welfare organizations in the tax at the same time.^[5] Moreover, the government should also lower the registration threshold of public welfare organizations, change the ways to support public welfare organizations and guide the development of public welfare organizations.

In order to ensure that policies and regulations can be fully implemented, the government also needs to establish a sound and feasible regulatory mechanism to enhance accountability and financial

transparency, which helps the government and the public to supervise.^[6] The government should supervise and administrate the transparent financial affairs and operative management of public welfare organizations to build brands of public welfare organizations with good service, high credibility and large influence.

3.2.2 Implement preferential tax policies

To serve the society is the main goal of public welfare organizations. It raises funds from the broad masses of the people. However, the sources of funds are limited for the public welfare organizations and the staff of public welfare organizations also account for a spending. In order to ease the problem of limited funds for public welfare organizations, the government can implement the corresponding tax relief system. On the one hand, it can reduce the amount of tax that public welfare organizations have to pay. On the other hand, it can improve the enthusiasm of enterprises and the public to donate to public welfare organizations. For example, the 88th rule of the Inland Revenue Ordinance of Hong Kong P.R.China provides that if people donate money more than HK \$100 to exempt charities and trust corporations, he will be exempt from tax.^[7] The mainland can learn from it to promote the benign development of public welfare organizations through preferential tax policies.

3.3 The perspective of the public welfare organizations

3.3.1 Update the public welfare view

In order to make a further development, the public welfare organization should continuously improve its ability such as brand influence, professional ability, cooperative ability, etc., update the public welfare view and operate the organization as an enterprise. At the same time, enhance internal management and expand external influence. Public welfare organizations should constantly improve the management system, standardize the financial system, and effectively enhance the service ability and result. Moreover, public welfare organizations should make full use of their social influence and public credibility to actively raise public funds to guarantee that the public welfare organizations have adequate funds to support.

3.3.2 Focus on enhancing own influence

Public welfare organizations should make full use of their advantages in the future development to play an important role as a bridge and a channel for cooperation between non-governmental organizations and the government and the public.^[8] At the same time, the public welfare organizations should also cooperate extensively with various media to promote public welfare culture by introducing the concept of public welfare to the public. By the integration of all kinds of resources and the joint promotion, combine the public welfare culture with the business chain and spread them to the public.^[9]

3.3.3 Attach importance to the cooperative relationship with the government

The function of government is gradually transformed from “all-round” to “service-oriented”, which provides a large space for the development of public welfare organizations. The government has always been the guide and the prop of public welfare organizations. So preferential policies of government for public welfare organizations can bring great positive influence on the public welfare organizations and influence the development of public welfare organizations. Public welfare organizations can get support in resources from government, as well as qualifications and experience to cooperate with the government. Since the public welfare organizations still have the shortage in funds and most of the resources are still under the control of the government, it is the most important experience for the current public welfare organizations to carry out activities that public welfare organizations should build up a good cooperative partnership with the government.

4 Conclusion

In this paper, through the methods of questionnaire investigation and interviews we learnt the relationship between the government and the public welfare organizations from the perspective of public welfare organizations, thus explored the developing path of the government and the public welfare organizations.

1. Develop the partnership between the government and the public welfare organizations.
2. Government should improve relevant laws and regulations, supervise and guide the public welfare organizations

3. The public welfare organizations should actively seek government support, update the public welfare view and enhance their influence.

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The Innovation of Government Governance in the Big Data Era—Take the Chinese Government as the Analytic Perspective *

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Abstract The widely application of big data not only has a profound impact on society, but also plays an important role in promoting government governance reform. Big data will promote the innovation of government governance concept, governance system and governance mode. Based on the basic principles of government governance, This paper analyzes that government governance should use big data to achieve the goal of being the law-based, innovative, clean and the service-oriented government. And put forward the government must take the lead in adapting to the trend of information publicity and data sharing, promote the reform and innovation of government governance, and further improve the government's governance ability. In order to reach these goals, this paper suggests that it is necessary to build a unified platform for big data sharing, in order to promote the transformation and upgrading of government governance, to promote the government process's optimization for adapting the need of big data era, to sum up and popularize the beneficial experience of local government innovation and to enhance government's ability of using big data so as to increase the level of rule of law in its development.

Key words Big data, Government governance, Information opening, Data sharing

1 Introduction

Nowadays, with the development of super computers, cloud computing platforms and mobile Internet, the speed for people dealing with data has achieved a qualitative leap. China has entered the big data era, which means the advent of the era of government governance's reform and innovation. Big data can effectively integrate the country's political, economic, cultural, social, ecological and other aspects of information resources for government governance and provide data supporting and decision-making basis. The extensive application of big data will have a profound impact for the realization of "data governance", and it can promote the government to use data analysis in decision making and promote government governance innovation.

2 The promoting role of big data in government governance innovation

2.1 The connotation and characteristics of big data

In 2008, "Nature" magazine proposed the concept of big data for the first time. In 2011, the McKinsey Global Institute released a report named "Big data: The next frontier for innovation, competition, and productivity", which was first time refer that the big data era was coming^[1]. Big data is usually "refers to utilize commonly used tools to obtain, manage and deal, and with large capacity, multi-type, access speed, the application of high value as the main features of the data set"^[2]. Big data has 4V feature, that is, "massive data size (Volume), fast data flow and dynamic data system (Velocity), various data types (Variety), huge data value (Value)".^[3] In a new data ecosystem, the government governance will have a systematic change inevitably. To this extent, big data is kind of revolution. To get a better understanding of big data, the following three aspects is a good way: from the microcosmic aspects, it uses the huge data set to combines the virtual and physical space of human society, and making people's practice activities connecting the internet world and the real space, so that greatly expand the practice space for human society; from the middle aspects, from the enterprise's production activities to the country's governance, various elements of human society will be re-optimized in the complex space; from the macroscopic aspects, the coming and development of the big data era will

* Financed by the National Social Science Foundation of China in 2015: The Research on Xi Jin-ping Thoughts of Comprehensively Strengthening Party Discipline and China's New Experience of Anti-corruption (Project No.: 15BKS007)

change people's cognitive structure, and then influence the human epistemology. As a consequence, people's understanding of things and the law will enter the "precision" stage, the human ability to predict their own and nature will be greatly improved, the ability of human transformation of the world will be upgraded.

2.2 The promoting role of big data in government governance innovation

In the past, the difficulty of government governance is that there are "blind spots" in the data. Lack of data led to the government's ineffectively decision-making. Big data is the weapon to overcome the ills of government governance. It can enhance the level of government governance and the ability of governance. Through the construction of basic database, data exchange and sharing platform, governments can collect different data such as population, legal persons, geographic information, macroeconomic, license data from various sectors. We can withdraw from the cross sector's integration data application system, thus promoting the transformation of government governance model. Big data makes government governance from "subjectivism" and "empiricism" towards "precision" and "prediction".

First, big data will promote the idea of innovation in government governance. The traditional government governance is more embodied in a governance thinking and afterwards thinking. The government according to their power system from top to bottom to regulate economic, supervise market, manager social and public services. The government usually sees the service objects like management objects and it often turns to the way of post processing afterwards disposal and remediation in the management of specific public affairs. From this, we can find that the improvement and reform of the government's institutions and mechanisms are mostly forced by problems in some areas. Big data's widely used will change the way of government's thinking. Big data will greatly enhance the predictability of government governance, so that the government governance is becoming forward-looking. At the same time government can grasp the needs of the public to improve the government's public service level. In this way, we can change the management into service and governance. In short, with data to speak, with data to make a decision, with data to manage, with data to innovate will become the main idea of government governance. At present, many local governments have rapidly changed their minds to accelerate the application of big data in government governance.

Second, big data will promote the innovation in the governance system. The traditional government governance system has fragmented departments. Although we have completed two rounds of reform, the information sharing and collaborative governance has not yet fully realized among government departments. Big data will promote government to break the barriers among departments and achieve the goal of cooperation and coordination within government governance through the data resource's sharing platform, O2O one-stop service platform and other construction. Integrating horizontally and vertically the data of population, education, security, employment, social security, health insurance, industry and commerce, taxation, civil affairs and other aspects can not only prompt a number of administrative approval into simplification, decentralization, merger and cancellation, but also improve service quality, public satisfaction and implement intelligent service. In this way, big data can promote the optimization of governance structure to implement cross-sectoral and cross-regional governance. It can also get rid of past restrictions and forms a governance system based on data, core with public affairs and cooperate among departments or regions.

Third, big data will promote the innovation in government governance mode. The traditional way of governance is government departments and its staff face to face communicate with the public. The various departments of the government are fixed. The handling of specific affairs is mainly through the method of "one to one". The mode of governance depends on the executive orders, top-down implementation of policies, and even controlling some domains. Big data will make the relationship between government and the public achieve "one to many" and "many to one". By conducting relevance and causality analysis of real-time dynamic data, the government can deliver better services through fulfilling demands of the masses. We need to use data collection, fusion, modeling, simulation and other technologies to integrate and utilize data from different departments and industries. The intelligent government will replace or assist in making artificial decisions. Big data can help government realize intelligent management, optimize decision-making programs, scientific design

management processes, and using diversified ways to achieve management and services.

3 The goal of government governance innovation under the background of big data

On September 2015, the State Council of the People's Republic of China formally issued "the outline of action on promoting the development of big data". It marks the Chinese government's understanding of big data has risen to an unprecedented level. At the same time, it is also the beginning of using big data to guide government governance. The outline clearly proposes that it is necessary to speed up the application of big data so as to improve government governance system and the modernization level of governance capability.

3.1 Promoting pluralistic participation and building a law-based government

The widespread public participation is an important impetus for realization of the law-based government. The essence of governance is to achieve the common participation and cooperation of multiple subjects effectively. "Citizens' participation and institutionalized channels of communication help to enhance the fundamental power of government and contribute to the development of modern government capacity."^[4] Big data is based on the Internet, especially the deep fusion between new media, like Weibo, We Chat and society. This makes the communication and interaction between the government and the public much more timely and extensive. The public can participate in the management of public affairs through a variety of ways and become a part of the multi-governance, so as to promote the government to enhance the level of rule of law. On the one hand, public participation enables the government to absorb a wide range of public information in the legislative process and the government can apply this information to the law formulation, modification and supplementation after analysis and consolidation, which will make the legislation more scientific. On the other hand, the widely participation of the public can reflect on the implementation of the law. The use of big data can effectively assess the implementation of laws and regulations to improve the government's law enforcement practices, and promote the government's strict enforcement of law. "In order to promote comprehensively implement the rule of law, we must adhere to strict law. The administrative organ is an important subject of the implementation of laws and regulations, should take the lead in strict law enforcement and safeguard public interests, people's rights and interests and social order."^[5] In addition, in recent years, more and more people are using new media to express their interests demands and claims of right. The government should not only timely grasp the relevant information and data, but also need to learn to use the rule of law thinking and ways to respond and deal with people's demands.

3.2 Promoting scientific decision-making and building an innovative government

The source of government innovation lies in the scientific decision making. Decision making is the starting point of government governance. Once the decision is wrong, the follow-up governance will be all wrong. Therefore, only by realizing the scientific decision-making, can we really achieve the government's innovation. Scientific decision-making requires accurate grasp of information, and then make the choice and decision in line with the goal. If lack of understanding of people, wealth, goods, things and other data, it will be prone to deviations, resulting in the lack of rationality, legitimacy and regularity of decision-making. The use of big data can timely, comprehensive and accurate grasp of political, economic, cultural, social, ecological information. Through the analysis, screening, collection and integration of information, the information needed by decision makers can enter the system timely. Decision-makers via the analysis of big data can accurately grasp the law of economic and social development and the objective conditions of decision-making issues. Decision makers can also make adjustments and corrections to decision-making through real-time data changes. Such decision-making is more targeted and effective, so as to improve the scientific level of decision-making. In addition, big data will help the government to transcend the hierarchical information transfer model. It can help the government predict and grasp the dynamic information of the governance object. Big data promotes policy's sensitivity, pertinence and orderliness. It can be said that big data can promote government decision-making model from "empirical" to "smart". Big data can help the government governance achieve fine and intelligent, reflected in the education, health care, tourism, urban management, transportation, and lay the foundation for innovation in the government

governance model. For example, we can use the big data from Population Administration Decision Information System (PADIS) to analyze and forecast a city's traffic congestion problem. The result is different from the traditional that limit the number of population and motor vehicles and speed up development of public transport. PADIS's predictions show that a serious deviation between the concentration of living areas and economic centers is the root cause of congestion. Simply increase the public transport facilities and control the numbers of cars and people cannot solve these problems. To this end, PADIS proposed the solution is to improve the urban planning and management so that the city can develop in the multicenter direction.

3.3 Improve service levels; build a service-oriented government

Service is the core function of the government. Especially for the government under the market economy, the main function of the government is to provide public services. "Electronic office has been in government agencies for many years but there are many problems. The electronic office systems are not uniform in different levels of institutions and different department institutions. It results the barriers for information transmission between different institutions."^[6] Big data provides an opportunity for the government to improve the capacity and level of public services big data can break the "information island" phenomenon. It integrates government data in all aspects of public services, thus optimizing the government's service processes. It helps the government to build a new system of people-oriented and benefit the whole people. Public services have been changed from the "multi-station service" into "one-stop service" to enhance the efficiency of public services. At the same time, the government can use big data to analyze public satisfaction with public services and understand new public service needs. The government can also predict the point of growth for public service supply, targeted to provide accurate services. Therefore, the government can improve the overall level of public services.

3.4 Achieving open governance and building a clean government

"Eroding government trust is the biggest harm of corruption. Clean can maintain the vitality of the government."^[7] Let the power run openly is an effective way to prevent the breeding of corruption. "Only let the power run openly and let the people monitor the power to run, can we better change the government functions."^[8] The most direct effect of using big data is making information openly so that people can see the operation of government power and thus build a clean government. Big data can record and trace back to all the executive behaviors of government, effectively avoiding the possibility of the government's "black box" operation. According to the principle of openness and the exception of non-openness, government should initiatively use big data to make the process of power operation more refined and optimized. The government should set out the negative list, power list, and responsibility list, as well as disclose the relevant information to the community promptly. What's more, the government should use the Internet to ensure that government power is open and transparent and prevent the occurrence of corruption. With the development of big data, the information collation will be more deeper. Through the use of big data, we can improve the effectiveness of government work and reduce government operating costs, so that the government will be more clean and efficient.

4 The main path of government governance innovation in the background of big data

In the era of large data, the government must take the lead in adapting to the trends of information open and data sharing. Promoting the reform and innovation of government governance is the only way for government to improve governance capability and promote the modernization of governance.

4.1 Build a unified and shared data e-government platform

In the information age, the government holds more than 80% of the data (of which about more than 3000 databases). The government is the largest owner of information and data resources in this society. Therefore, the government has unparalleled advantages to use big data to govern citizens, businesses and social organizations.^[9] However, the government also has an important drawback which is the hierarchical to bring the separated of department, forming an obstacle for the dissemination of information resources and digital resources. In China, due to the dual role of management level and management range, there is a serious fragmentation in government departments. The government had

many self-contained information networks in each region, department, and industry. This makes the lack of effective data sharing in the government, and many data resources cannot be used. At the same time, because of the existence of such barriers, it also leads to duplication of information collection, resulting in a huge waste of resources. To break through this dilemma and realize the “turn” of government services, it is urgent to build a unified and shared data platform. Specifically, on the one hand, it is necessary to build a good infrastructure for information technology. Without the information infrastructure, we cannot talk about informatization, let alone big data. With these infrastructures, the government can effectively improve the ability to collect data. At the same time, traditional computing and storage methods are becoming more and more difficult to adapt to the development of big data. The emergence of cloud computing technology provides a technical support for the storage of big data. On the other hand, we should speed up the construction of big databases, including basic databases, professional databases and application databases. The basic databases mainly include the population, legal persons and spatial geography database. The basic database is mainly used to collect residents, enterprises and urban spatial geographic information, thus, the amount of data is huge. The effective use of these data requires the support of big data collection, storage, management and application technology. Big data professional database is based on the basic database. Such as education database, medical database, transport database, etc., they provide convenience for residents’ life. The professional database will make the government’s public service function more prominent. The government provides the public with a more considerate and personalized public service. The application database is based on the basic database and the professional database, and it can provide the specific application service for the society. With the development of emerging technologies, new applications, new business model, the government is required to offer big data service to community and enterprises. This trend also guides enterprises to innovate data industry model and foster big data industry. It requires the classification of data management. The first one is analytical data. Such data are for government statistical analysis only and are not shared among government departments. Analysis data application is based on analytical data, which is used for government internal decision making. The second one is shared data. Such data are partially shared or fully shared among government departments after a consensus is shared among each other. Shared data application is based on shared data, which is used within the relevant government departments. The third one is limited public data. These restricted open data include personal social security, provident fund data, etc. Such data is made available to the public through appropriate procedures, government websites and other public information channels. The fourth one is full open data. This kind of data is completely public. The government sets up an open data service platform for any enterprise, public and social organization to freely browse and download.

4.2 Promote the transformation and upgrading of government governance

The combination of government governance and information technology has been from version 1.0 to version 2.0. Nowadays, it is necessary to upgrade to the version 3.0, with the help of the combination of the government governance, new media and the larger date. Version 1.0 refers to the early e-government form. It is represented by government websites, management Information System (MIS) and Office Automation (OA), which is focusing on simple and convenient online services and providing a low degree of online communication. This is the initial stage of government governance and information integration. Version 1.0 of the governance model is the government’s one-way output information and the public passive acceptance; its amount of information depends on the government itself. It is a closed, delay, static data processing. Version 1.0 is a government centered-governance model. Version 2.0 means that with the popularity of the Internet, “the government has become a platform for providing network services. The government is not only providing a website, but also providing online personalized public services.”^[10] Compared with the version 1.0, the version 2.0 provides information services, and enhances the transparency of the government and the interaction with the public. Version 2.0 is a governance model which the public actively participate in under the leadership of the government. But its openness of the information is still limited. The goal of the version 2.0 is to transfer government work model from electronic way to information integration through the integration of government background tasks. With the wide application of Cloud

computing, Internet and other new generation of information technology tools and new media, the version 2.0 has been unable to meet the needs of social development. Government governance model needs transformation and upgrading. Thus, the version 3.0 became the goal of government governance innovation. Different from the version 1.0 and the version 2.0, the version 3.0 uses the big data platform, initiatively opens and shares information. The version 3.0 ensures public participation while pays more attention to communication and cooperation. It is up to the standard of “good governance” model.

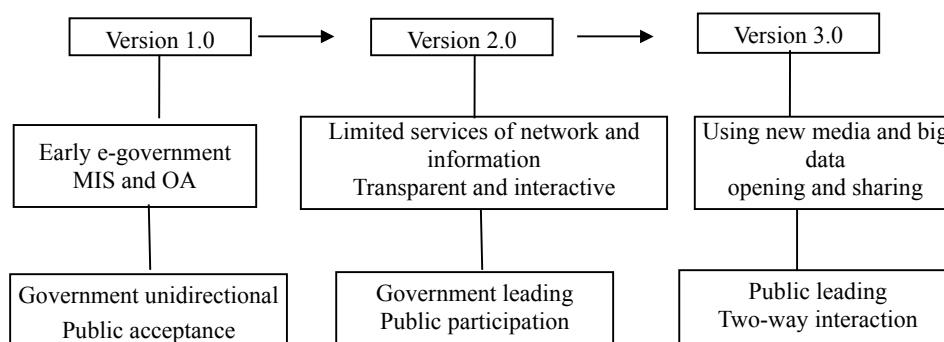


Figure 1 Schematic diagram of government governance upgrade

4.3 Promote government process optimization to accommodate large data needs

Traditional government management model is based on hierarchical organization to provide services, and partition governance areas of departments according to the specialization of work. This makes a complete chain of public services cut into several management links. And it leads to many functional boundaries among government departments, as the result, functions of information management cannot flow unimpeded. Each department and staff only knows the information of their own work process and is only responsible for their own process. They don't care about others information of process. This makes a complete process fragmented into several isolated parts. How can we improve the efficiency of government services and facilitate public service? Process reengineering is a very effective way. The process reengineering of government is the requirement of human society development from the industrial society to the information society. It refers to use the public management thinking, the principle of the market mechanism of economics and modern information technology to design and reform the traditional management model, organizational structure model, business model and service delivery mode, when the external environment, internal resources and structure of the administrative organization change. And consolidate the redesign and reform of the management model, organizational structure model, business model and service delivery way via the network information technology. And then constitute a scientific and rational management model to improve the effectiveness of the public sector. In the era of big data, version 3.0 requires a people-centered government taking the initiative to open and share government's information, ensuring of public participation while paying more attention to interdepartmental communication and cooperation. In practice, many local governments believe that optimizing the government process is to establish an administrative service center, allowing multiple departments to work together. But this is only the form of “one-stop” service without data sharing as a support and failing to break the information barriers among departments. While approval process is simplified, there are still many difficulties in the follow-up services. Take an example of handling visa, if the information among departments is not shared, the holder has to carry a lot of documents back and forth among different departments the different departments. And even some departments just want a duplicate document. Therefore, there is a relationship between government work process reengineering and institutional barriers, and the reengineering of government processes needs multi-channel, multi-level, cross-sectoral, seamless and comprehensive integration. In the era of big data, the process reengineering of government should optimize the integration of government departments focus on service functions, and reduce the obstacles caused by the improper establishment of government institutions. To promote cross-sectoral

government information sharing and cooperation, the government should break the boundaries of regions, departments and industries while dealing with the same business. form multi-sectoral cooperation and co-governance, achieve “integration” and “one-stop” services and reengineer of social service process. The most complex and difficult social service process reengineering is realizing online service mechanism for communication between the public sector and the public, and providing efficient and convenient service Chinese government services had a shift from “dispersion” to “service center”, and then, it will change from “service center” to “one-stop”.

4.4 Summarize and popularize the good experience of local government governance innovation

With the coming of the era of big data, many local governments sensitively catch the huge role of big data in promoting the government innovation, which the promotion of big data for the government innovation, and take the lead in a series of action plan In order to make better use of large data in the process of government governance innovation, we should sum up the local governments’ innovative practice, and good experience should be popularized in the nationwide.

Table 1 The cases of local governments innovation on using big-data governance

Local government	Details
Guangdong province	Start a big data strategy to promote the government transformation and upgrading.
Guiyang city	Construction of “China data valley” with content center, service center and financial center as its core
Shanghai city	Big data research and development of the three-year action plan
Shandong province	Establish large data industry ecosystem, build the government public service platform

Guangdong provincial government takes the lead in starting a big data strategy to promote government transformation and upgrading among local governments. Guangdong provincial government firstly opens data, such as finance, environmental protection and government procurement. The government realizes information sharing and promotes the “open application” through the Internet. Thereby promoting innovation in government governance, and creating “the intelligent Guangdong”. Guiyang city government starts to build a new government governance model through big data according to “Several Suggestions on Speeding up the Development and Application of Big Data Industry” and “Planning Outline for the Development and Application of Big Data Industry in Guizhou Province(2014-2020)” issued by Guizhou Provincial Government. In addition, Guiyang city government has issued “Suggestions on Accelerating the Talents Development of Big Data Industry” to fuel the development of big data industry. The Guizhou city government is committed to the construction of “China data Valley” with the core of big data content center, service center and financial center on the basis of big data talents and big data industry. The Shanghai city government has issued “Three-year Action Plan on Big Data Research and Development” which gives priority to data resources opening. Some sectors on the basis of big data such as health care, food safety, lifelong education, intelligent transportation, public safety, and science and technology services are chosen to build big data public service platforms, and then help boost the level of government services by their big data support. In 2014, the shanghai city government opened 190 kinds of data resources to the public which is from 11 areas and involved 28 municipal government departments. Shanghai’s geographical location of data is fully open, and its market regulation data will also be gradually fully open. In the future, the government will gradually open other kinds of data resources of some entities, Including all organizations that are authorized to regulate public affairs and the public enterprises and institutions that are closely related to the interests of the people. Shandong provincial government has issued Suggestions on Speeding up the Coordinated Development of E-government. It proposes to make use of big data to promote the construction of the government’s public service platform, and plans to build a unified and standardized e-government network in 2020 and achieve information sharing, business cooperation and data open. The main business of the government information coverage rate will reach 100%. The construction of large data will help the government to make their power list clearly and complete the whole process by network operation. The practice of local government shows that the use of big data to promote government governance innovation is the trend. Governments at all levels must follow the pace of the times and firmly grasp the opportunities of the

big data era to realize the modernization of government governance.

4.5 To enhance the level of legalization of government application of big data

“The law is the power of the country, the rule of law is the important support of the national governance system and governance capacity.”^[11] The government governance in the era of big data is not only the application of big data, but also the management of big data. Under the strategic plan of comprehensively promoting the rule of law, the government must run according to the rule of law. First, the government should improve the law of information disclosure. At present, the publicity of government information is regulated by “the Government Information Disclosure Regulations”, which is a basic law. It is only an administrative regulation with low legal effect. Therefore, we should pay close attention to the development of government information publicity laws, standardize data collection, storage, opening, sharing, application, protection, make clear other aspects of the rights and obligations, and define the role and status of the government. Secondly, the management system of government data resources should be formulated. We should use the law to break the information barriers among government departments, thereby improving the level of government information sharing and the efficiency of big data utilization. The government should focus on the top-level design on big data management. That means, the relationship between data ownership and the data right to use should be define in law on the one hand, and national, provincial, city, county, township and other levels of government’s responsibilities in the application and sharing of big data should be clearly defined on the other hand. The government should also promote the standardized construction of data sharing and application. Finally, develop laws and regulations about information security and rights protection laws and regulations. We need to explore data security standards and protect data security and privacy through laws. Make it clear through laws on the personal information data’s rights of access, right of delete, right of modify, right of relief and so on. The government should take the initiative to undertake its supervisory responsibility. The government needs to develop industry norms and establish the punish mechanism of data leakage to protect data security and privacy.

5 Conclusions

The paper believes nowadays, the society is moving from the IT era to the DT era. The big data and government governance is getting closely as a whole in this era. The innovation of government governance in the big data era is along the track of the data management. Important manifestation of innovation is the application of big data. Big data in this era will be widely used in the government’s decision-making, management, services and other aspects. With the government governance upgrading to the 3.0 version, it can be predicted that big data will make our country’s government governance entered a new stage. This will not only improve the level of modernization of government governance, but also enable people to enjoy unprecedented precision of public services, which makes the legalization, innovation, integrity and service-oriented government more effective.

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Coproduction of Public Service in Economic Development Zones: The Case of China (Shanghai) Pilot Free Trade Zone

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Abstract The economic development zone is of great significance to China's reform and opening-up, which is implemented as the experimental field of China's economic reform. In recent years, the central government has initiated the plan of establishing the free trade zone, aiming to promote free and easy trade. To some extent, the free trade zone is considered as upgrades of economic development zone. However the delivery of public services within the economic development zone has its own features in terms of the industry-intensiveness, big profits, labor-intensiveness and weak management. Under this condition, the traditional way of delivery in which the government takes the lead may not meet the increased demands in the zone.

The New Public Management has resulted in various forms of public service delivery such as privatization and multi-actor delivery. One argument is that the government should not be the only provider of public services, and citizens should be part of a public service delivery process for example by participating in the design of public services.

This study examines the coproduction of public services in the context of the China (Shanghai) Pilot Free Trade Zone. The focus is on citizen governance that is concerned with questions of how public services are delivered in the free trade zone and the rationale behind. In the society where resources are integrated, the boundary becomes unclear. Thus, it is essential to distinguish the roles and function among different actors. Given this consideration, this study further discusses the roles of actors involved in the delivery of public services within the free trade zone.

Key words Coproduction, Citizen governance, Public service, Economic development zone

1 Introduction

Public governance is an important topic in the study of public administration, which raised some heated debates. One argument focuses on how government can better deliver public services in an era where multi-actors are increasingly involved a public service delivery process. In other words, the government is no longer the sole provider of public services; social organizations, non-profit organizations, communities and other actors are also engaged based on the collaborative arrangements established with government for the purpose of providing good quality services to citizens.

Among the core components of public governance, citizen participation is an essential part. Arnstein (1969) suggested a theoretical framework of citizen participation, which includes eight stages.^[1] Under this framework, citizen control is considered as the highest level of participation while manipulation as the lowest. King, Feltey and Susel (1998) discussed in their work how can a citizen participation process be improved.^[2] Based on their study, it is suggested that there are several conditions for effective citizen participation for instance establishing a sustainable relationship and collaboration between government employees and citizens. First, the trust between government and citizens is critical that influences the participation of citizens; second, citizens should be well equipped with knowledge and capabilities. Bracht and Tsouros (2011) emphasized the policy-making perspective when understanding the concept, degree and channels of participation of citizens.^[3] In line with this, Nabatchi (2012) suggested the importance of having citizens in the design process of service delivery.^[4] The suggestions and ideas that citizens propose can have an impact on policy making, which may eventually influence the outcome of service delivery.

Discussions on citizen participation have responded questions that touch upon the approach to improving public services. The questions discussed address different aspects of a public service delivery process. Under a governance framework, citizens should not be treated as passive receivers of

services; rather, they are coproducers of services. This collaborative arrangement in public service delivery is established through negotiation, dialogue and cooperation, in which citizens play a part and their voices can heard in this process. In late 20s century, there has been an increase in studies on governance that concern the conceptualization and other key concepts for example public governance, citizen governance etc. Rosenau (1999) suggested that governance is a new concept which refers to a process where different actors engage for a shared vision.^[5] The government is not necessarily the only actor. Ansell and Gash (2007) studies governance from different perspectives and the argument is the public including public organizations and other actors should be involved in the process of policy making by way of setting up regulations and arrangements.^[6] Based on Ansell and Gash, the definition of governance covers six aspects: public organizations initiate the forum of policy making; non-government organizations are involved; high relevance of participants and decision-making; it's realized by agreement. Similarly, Salamon (2002) discussed the importance of having non-profits in the process of service delivery with an emphasis on action tools, network, PPP, negotiation and empowerment.^[7]

2 Research design

This study takes a coproduction perspective aiming to understand how coproduction works in reality and its impact on service outcomes. In order to answer the research question, a case study is conducted in the free trade zone in Shanghai. The questions address first, why coproduction is feasible approach to effective public service delivery; second, what are the problems in current service delivery within the zone.

2.1 A coproduction framework

The term coproduction was first termed by Ostrom in 1971, who studies urban issues and found that some services were delivered not only by the government but other organizations outside the government for instance residents and communities.^[8] Ever since the concept was brought to the field of public administration, more scholars are engaged in research on coproduction including its conceptualization, conditions and outcomes of public services. After the year 2000, there's been an increase in coproduction research, which mainly conducted in European countries and produced much evidence on coproduction cases.^[9]

Based on the conditions of China, the delivery of public services is realized through collaboration of communities, residents, private sectors and some nonprofit organizations. In this sense, the delivery within the free trade zone is similar as the delivery of public services nationwide. The framework articulated in this study is as follows (see Figure 1). This providers of public services include government, private sector, NPOs and citizens. By citizens, it means individuals who are involved in a process of service delivery. Under certain occasions, citizens mean both individuals and families.

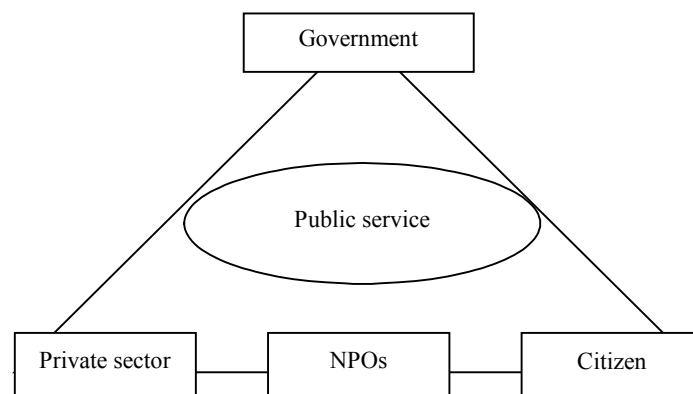


Figure 1 The relationship between providers of public service

2.2 Case selection

A case is conducted to understand the approach to service delivery within the free trade zone. The

rationale of selecting Shanghai free trade zone is first, conducting case studies is advantageous in exploring questions that are unknown^[10], second, and the case evidence may contribute to understanding theories.

2.2.1 Background of the case

Economic zone is designed and established after the reform, with its purpose of developing the economy through different policies approaches. From a public service delivery perspective, services are the key which an important function of such economic zones. Within the zones, the industries are mainly labor-intensive, in which services are not effectively delivered. First, the government cannot provide everything needed within the zone; second, residents are rarely engaged in the process; third, more services are oriented toward the benefit of enterprises, while the demands and voices of residents are not heard.

2.2.2 Characteristics of the case

Based on the-above-mentioned considerations, this case has some representation to some extent. In recent years, several free trade zones are established under the grant plan of the central government, which promotes open trade and effective service delivery and Shanghai is a typical example of this. Specifically, the outcome of service delivery in different service areas varies. In the past two decades, this area has developed into a highly advanced region in which more services are delivered by non-governmental actors. First, within the zone, there are several actors who coproduce the services including the government, individuals, private sectors and some nonprofit organizations. Second, Shanghai, being a most developed city of China has experiences and lessons to offer in public service delivery. Third, given a coproduction approach to service delivery within the zone, the role that social organizations play is still limited. There's still a lack of personalized services to those who are in need. In terms of methods, interviews, participation observation and policy analysis are utilized to answer the research questions.

3 Shanghai free trade zone public service analysis

3.1 Description of public service characteristics in region

According to their contents and forms, public services can be divided into basic public services, economic services, public security service and social public services. Due to the differences in government policy preferences, there are differences in the development of other three types of public services based on the implementation of basic public services. For example, economic services in the enterprise clusters will be relatively high priority, the ethnic areas value public safety more, and community concentration area will pay attention to social public service development.

The economic guidance of the free trade area determines that the regional government focuses on its relationship with the market. It can be concluded from the framework of regional government. The government of the development zone is generally divided into central government control and self-management. The central government control model includes the direct administration and the agency administration. Self-management model is divided into government-led model, enterprise-oriented mode and government and enterprise hybrid model. Given the state of China's economic development, The Chinese development zone adopts the government-led mode in the early stage. After extensive administrative experience, the government will cooperate with enterprises to implement the government and enterprise hybrid model.

The free trade area is an upgraded version of the economic development zone. In the process of the free trade area building, regional governments focus on the reform of government supervision functions. The function and status of government is more explicit. The regional government draws on the administration model of other countries' free trade zones, sets up a streamlined, efficient and authoritative fabric of government, organizes the administration of the free trade area according to the enterprise operation mode, and promotes the indirect management. The functional framework of the regional government focuses on economic functions and simplifies the functions of social govern, leading to a large number of services in market segment and a severe lack of services for individual residents.

With the reform of the government regulatory system, economic and public services in the region

have developed rapidly. Negative list management is one of the most important governance innovations. Within the zone, service and manufacturing industries are open for testing in 54 items in certain specific areas. In addition, the record management system is established regarding the foreign investment and the time to proceed documents is shortened. Given these conditions, a series of arrangements are established which create convenience in trade business. Under this circumstance, the establishment of the free zone has provided opportunities for financial innovation.

Social organization in region is still in the initial stage which lead to a serious shortage of social public service. First, there are only a handful of NGOs in the region. Some branch offices of NGOs outside the region have been involved, due to the purchase of services. The more concentrated industries in the region, such as the wine trade industry, spontaneously formed industry associations, but all have just been established and the service provided is very limited. Second, primary-level organization of CCP, trade union and CY are well organized and provide appropriate services for their members. For example, an information-sharing platform was established with efforts of party organizations within the zone, which engages resources of party-building websites, WeChat and other relevant information source. Based on this platform, party member volunteers are able to provide various services regarding human resources, employment and volunteering.

Public safety in region is integrated into municipal administration, while equalization of basic public service is lacking. The establishment of the FTZ has broken the original administrative divisions, and the surrounding streets and towns were required to be included in, for the sake of the sake of the regional system advantage. Many governance rights were transferred. The government of the streets and towns surrounding was not regulated except for public safety, and no longer invests heavily in infrastructure. The government infrastructure invested by the FTZ government is concentrated in the industrial cluster area, and the situation in the non-industrial area is the opposite.

3.2 Analysis of public service situation in region

The residents of the FTZ are mainly migrant workers: foreign nationals and people from other provinces and cities. Migrant workers refer to those who are employed in Shanghai without census register. Current census register system prevents migrant workers from having equal rights. By observing and interviewing 10 employees of Shanghai FTZ, the author found that the service participation of residents directly affected the supply status of the service.

According to the 13th Five-Year Plan of Shanghai's employment and social security, the migrant workers have been included in the "urban worker insurance". From April 1, 2016, the medical insurance of migrant workers have been adjusted to the urban worker insurance treatment. Under this system, migrant workers have little difference from the household registration population in terms of basic public services.

The respondents said, they were basically satisfied with the current medical treatment, injury treatment, education training, rest and vacation. As a non-native, they have similar motivations and needs in the search for a sense of urban belonging, such as caring, protecting and communicating with social networks. Their demand for public services is not limited to traditional public services such as education, medical care, public transportation, etc., which are more important in daily life and social integration. The difficulties and bafflement of these groups are the direct drivers of this group's participation in the service delivery process.

In 2013, the human resources department of the local enterprises in the informal situation reported to the government that there were many difficulties for high-level talents working in region. To meet the needs of high-level talents including census register, accommodation and schooling of their children, several policies have been initiated within the zone. Meanwhile, service agencies that deal with the development of these talents are also established to address the service needs raised by this group of people. Given these talents are capable and accounts a high percentage in housing, they have a long-term need for public services. In addition, see Figure 2, the management committee of the zone has been promoting employment services through establishing collaboration with some human resource companies, which gradually become the coproducer of services within the zone.

Compared with high-level talents and employment services, the public service of low - level migrant workers is severely undersupplied. The reason is that lower-level migrant workers cannot

influence or participate in the public service provision process. For example, the majority of low-level migrant workers have no private homeownership in Shanghai. There are two main ways of living in Shanghai: One way is to rent. Migrant workers rent rooms in residential areas near their workplaces.

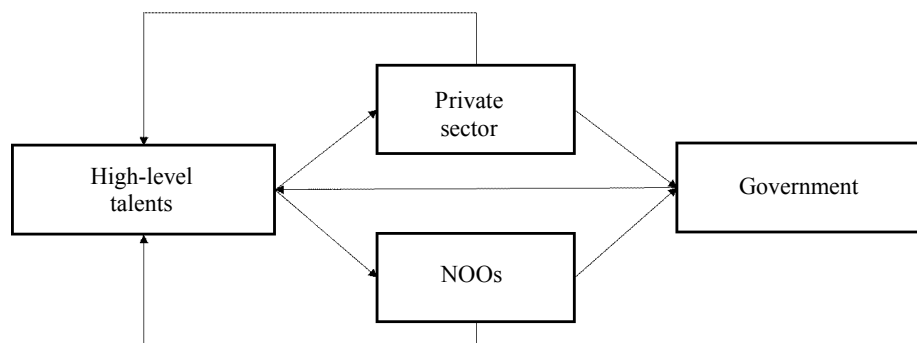


Figure 2 The relationship between providers of high-level talent public service

Since the free trade area is more distributed in the surrounding areas of the city, these areas have just completed the urbanization process and are more of the emerging community, and the community function is very weak. The authors found by field observation that the residential areas inhabited by a large number of indigenous people with strong relationship, making it difficult for migrant workers to integrate into the community. The second type is living in the dormitory provided by the employer, which is a large proportion of migrant workers. The dormitory is in the production area, managed by the general affairs department of the enterprise, so it is not a residential area in sociology. The government provides public services directly or indirectly in communities, so it is difficult for migrant workers to get public services. For example, the administrative service center of the FTZ (citizen center) only handle the affairs of Lujiazui and the expo area, while the Lujiazui and the expo area retain the original administrative divisions, which do not have the characteristics of the development zone.

Migrant workers obtain social services resources from administrative villages and communities around the region, resulting in inadequate public service resources and environmental degradation in such villages and communities. Social services in the region have entered a vicious circle.

4 Conclusions

The residents living in the economic development zone are those who are not originally from Shanghai but are now working here. The fact that these people are separated from their home town and the function of the economic development is not in full play, which make it difficult for them to access public services. The findings of the study suggest first, residents living in the economic zone are highly motivated to participate in the delivery of public services because of the increasing need for better services; second, the economic development zone has the capacity to facilitate the provision of public services as progress is being made in the social security system; third, professionalized services are still lacking and the number of nonprofit organizations is limited, however, contracting out services has already being implemented outside the zone and now is adopted in the zone; forth, the growth of both registered and non-registered trade associations has provided opportunities for non-governmental service delivery; fifth, party organizations play a role in promoting services within the zone. Based on the above-discussed findings, it is suggested that the coproduction of services has produced some effective outcomes.

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Research on the Improvement of the Regulatory System Based on the Negative List Model in China

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Abstract The negative listing model adopted in China's free trade test zone provides a market environment of fair competition for the development of domestic and foreign-funded enterprises on theoretically. The adoption of the negative listing model conforms to the new rules of international trade, and on the other hand, it is in line with the reform trend of domestic administrative system. Under the negative listing model, the government management of free trade test zone has changed from the pre-approval system to the model where filing is done at early stage and later on the regulation will cover the whole process. Therefore the government's current regulatory system is facing new risks and challenges under the new situation. From the perspective of negative listing mode, with the entry points of law and regulation system, the information sharing system, the joint credit investigation system and the multi-agent regulation system, this paper takes the free trade area as the research object to carry out the research aiming to improve the regulatory system and better promote the development of free trade zone.

Key words Negative list, Free trade test area, Information sharing platform, Credit investigation system

1 The present of the problems

With the extensive application of the negative list model in the free trade area, on October 19, 2015, the State Council formally issued the Opinions on Implementing the Negative Listing Model for Market Access (hereinafter referred to as "Opinions"). The "Opinions" clearly presents the overall requirements, the main tasks and supporting measures of the implementation of the negative listing model market. The "opinions" shows that China will formally carry out the national unified market access of negative listing model in 2018^[1]. This means that China will start to establish a unified national market access of a negative listing model. The negative listing management is not a simple open label, nor is it simply carrying out subtraction or the reduction of administrative agencies, but a new model of government management of foreign investment. The purpose is to transfer the market access of foreign investment from the traditional model of "investigation and approval before market access, following regulation after the access" to "national treatment before access and emphasizing regulation after access + negative listing as the supplement".^[1]

With the above reasons, the regulation of the negative list model is not the same. What are the features and functions of the negative listing regulation? How to analyze the problems emerging in the process of promoting and the cause of them? How to further improve the corresponding regulatory system in the promotion of negative listing mode around the country? These are the important issues that need to be addressed and explored before the formal implementation of the negative listing model in 2018.

2 The features and functions of the negative list

Before the new emerging "negative list", China has been using a "positive list", that is, according to China's current foreign-funded enterprises, other laws and regulations, foreign investment must complied with the "foreign investment industry guidance directory"^[2]. In this catalog, the encouraged, restricted and prohibited categories of foreign investment projects are clarified. This can be seen as to set a sport venue, players can only perform within the regulated scope and any cross will be an violation, that is, "no deed can be done without the permission of law"^[2].

The negative list is an internationally accepted investment access management system. It refers to the way of listing all the management measures, performance requirements, executive requirements

and other aspects of management measures that do not match the foreign-funded MFN treatment and national treatment.^[3] So the negative list management model is equivalent to the “blacklist” of the investment area. Put it with legal language, it will be the exception of national treatment, that is, the certain areas that are not allowed when it comes to national treatment, while other areas are allowed to be given national treatment. Simply put, the government will regulate which economic areas are not open, and except for the listed restricted areas, other industries and areas are allowed to open, that is to say, “the operation can be conducted without the being prohibited by law”, which provides foreign business national treatment before their access of Chinese market, therefore more spaces are given to them. This will undoubtedly stimulate the vitality of the capital in our society and also make the market resources to generate bigger effect. But what listed on negative listing are not just prohibited investment fields, it is also the standards of the regulation.^[4] Although currently it is still a new concept in exploration, coupled with the complex and ever-changing situation, the wisdom of the government regulators will be tested. As for the foreign investors under the management of negative listing model, the change mainly concerns the transfer from the previous strict approval system to the current filing system, from the previous pre-regulation into the current post-regulation throughout the whole process, the main purpose of which is to control the risk, rather than simply transfer the prior approval measure to the post-regulation. The core of the risk control is the standardization and the transparency of the government management^[4]. In this paper, the analysis of the characteristics of the negative listing will be followed with the in-depth discussion about the regulatory status under the negative listing model.

3 The analysis referring the problems existing in regulatory process under the negative listing model and the related causes

The adoption of the negative listing model provides greater room for economic conducts in terms of investment and more opportunities for investment economic entities, therefore effectively stimulate their investment incentives. But at the same time there are many problems existing in the process of applying negative listing management model. So regulators need to improve their awareness of risks and responsive ability under the negative listing model^[5]. In the process of promoting the negative listing model, the problems and their causes are as follows:

3.1 The legal guarantees in regulatory

At present, the fragmentation in China’s legal system is relatively serious, which has not yet formed systematic legal guidelines. So many grassroots departments cannot conduct effective management in the implementation of the regulation process. First of all, the development of the free trade area has adopted a completely different model with the previous “positive listing”. Under the “negative listing” model, for the enterprises that cannot go through strict approval process directly into the free trade area, there is no corresponding legal basis for their management. Secondly, the negative list is not capable of discarding all the industries harmful to the national interests^[6]. And in this knowledge-based economy, the new technologies are constantly emerging and promote the booming of new industries, while these new industries are very likely to entry the domestic through the loopholes. In facing these problems, the current legal texts do not have enough countermeasures. Finally, the negative listing model is mainly targeting to foreign investment. On this basis, the relevant domestic law and international law has not yet been efficiently and effectively linked together.

3.2 The information sharing problem in the regulation

Currently, information sharing platform has not been fully established. Under the condition that information cannot be communicated smoothly, the following problems can easily occur. One thing is monopoly related issues. Contributed by the undeclared information, some companies and industry have actually already been monopolized by foreign multinational companies^[7]. With the continuous development of China’s own technology, the driving force and the spillover effect of foreign-funded enterprises on domestic enterprises are weakening. The second is the problem of irrational structure. The foreign-funded enterprises came in China at the time are mainly labor-intensive industries, the industries transferred in China are not high-end industries, but some low-end industries. Similarly, the enterprises tend to shift the economic sectors with low additional value to China, including those that would cause considerable pollutions to the environment^[7]. Under the implementation of negative list,

more foreign-funded enterprises will enter our country. In order to avoid such crisis, the national business must be alert and take prevention measures in advance. So the regulation in the process of foreign-funded enterprises needs to be strengthened. The prerequisite and the basis of the regulation in process are the improvement and the perfection of the information sharing platform.

3.3 The rewards and punishments linkage in regulation

Under the condition that the well-developed information sharing platform is still in absence, for the enterprises in free trade zone that do not comply with illegal acts, effective random checks and alarm notification cannot be conducted timely. For example, even an enterprise that has a non-compliance records in terms of taxation can still obtain substantial financing sum in the banking and financial system. Such behavior will not only have bad impact on other enterprises, but also disrupt market order and harm the fair competition in market.^[8]The reason for this problem is that there is no linkage of credit system has been established, that is, the market regulation of the administrative department and social credit system are not connected, nor the collection, sharing, and disclosure of credit information and government multi-sectional linkage of credit reward and punishment system are established. Therefore the punishment effect of “once fail at credit, nothing can go smoothly” cannot be reached^[8].

3.4 Decentralization of regulatory bodies

The decentralization of regulatory bodies directly leads to the inefficiencies and low quality of regulation, which will render the prominence of potential risks in the free trade market. Considering the current situation, in terms of management, many regulators are scattered in different departments. When it comes to the questions about should the integration be carried out next step and how, there is no specific plan. In terms of financial regulation, the degree of capital liberalization also depends on the promotion of cross-border regulatory capacity. The greater the intensity of the openness, the wider the scope of regulation required, and if the regulation cannot keep up, the intensity of openness may be affected. Legal matters also need to be improved. In a certain range, the completion of pre-regulation and follow-up regulation will involve customs, taxation, environmental protection, security, finance and other departments. How to coordinate these departments is also pretty difficult. The communication between departments needs further efforts^[8].

4 Suggestions about improvement of the regulatory system under the negative listing model

On the basis of the analysis of the problems existing in the promoting process of the negative listing model and the causes, from the perspectives of legal system, information sharing system, linkage credit system and multi-agent system, this paper puts forward the suggestions about the improvement of the regulatory system under the negative listing model.

The focus point of regulation under the negative listing model is the whole process regulation after the foreign-funded enterprises into the free trade test area. On the ground that rigorous review and approval to the settled enterprises will not be conducted at the early stage, the comprehensive information concerning the enterprise will be in short. In the fast-changing market economy, it is impossible to predict whether these enterprises' market behavior will bring harm to consumers, industry, free trade area and even social development. Therefore a perfect information sharing platform is in need, so that the basic information of an enterprise's own production and development will be published and updated for the inquiries and use by relevant individuals. On this basis, through the dynamic evaluation of the basic information of an enterprise, the credit rating can be conducted. And this credit rating information will be shared with financial, industrial and commercial institutions, therefore to feedback the enterprise's market behavior; In addition, for the diversity and fluidity of the market, it is necessary to combine the multiple regulation bodies of the society in order to ensure the complete information mastery of the supervised objects. And all of these systems need to be based on specific laws and regulations to maintain and stabilize the cooperative relationship between the construction and the system. Therefore, we need to improve the legal system in the early stage and adjust it in accordance with the actual situation of the whole system. The relationship between these four elements is shown in the following Figure 1. The following parts in the thesis will be the specific

analysis of the importance of each element and how to improve the operation.

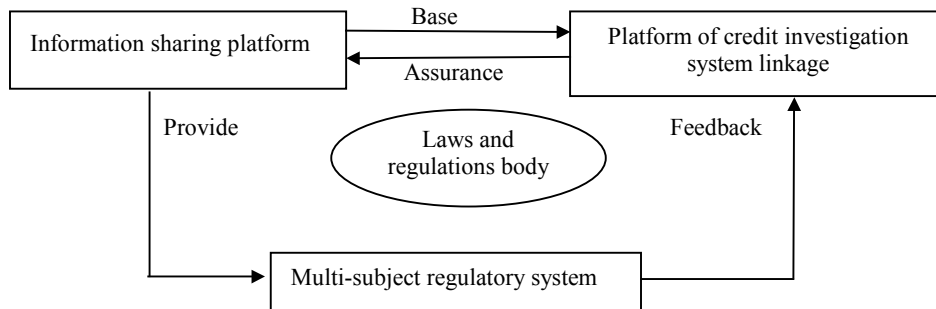


Figure 1 The composition and relationship of the elements of regulatory system

4.1 Perfecting laws and regulation system

Perfecting the system of laws and regulations is the prerequisite for building a well-developed regulation system. To solve the problem of legal fragmentation and to improve the legal level of the negative list, innovation in the free trade test area can be tried out and the building of the platform of regional information sharing platform should be encouraged. The system of multi-subject regulation in the platform of credit investigation system linkage will carry out the experiment of system innovation in the free trade area (FTA). First of all, we must deal with the relationship between reform and institutionalization. In the FTA, China has also carried out some innovations in legal system, allowing for the timely maintenance and cease of laws in accordance with local conditions. For example, on August 12, 2013, the fourth section of the twelfth NPC Standing Committee reviewed The Decision on Authorizing the State Council to Suspend the Implementation Of the Relevant Legal Provisions in the Pilot Area of China (Shanghai) Free Trade Zone and other Area Decided By State Council (Draft), which stipulates temporary suspension of three types of relevant provisions to the foreign-found enterprises excluded from the negative list, including Foreign Investment Law, the Law of Sino-Foreign Joint Ventures, Sino-Foreign Cooperative Operation Law. And the meeting also made the decision to temporarily suspend the implementation of the relevant provisions of the Law of Cultural Relics Protection, The suspension of the relevant provisions of the above-mentioned law is 3 years.^[8] Secondly, the relationship between domestic law and international treaties should be handled properly. We should concern about the guarantee of the domestic economic system and the matter referring sustainable development in our country, at the meantime, it is necessary to attach more attention to the openness and freedom of foreign investment conditions. We shall not only focus on the protecting of the country's economic security, environmental resources and labor protection issues relating to China's major interests, but also strive to dock with international rules, abide by international treaties, and promote good interaction with trade and cooperation countries.^[9] Only on the basis of the national economic security has been well protected and the sustainable development in China has been properly maintained, we can better deal with foreign trade protection barriers and price discrimination policies, strive for more favorable conditions for the domestic enterprises to "go out", and keep up with the globalization tide in the era of knowledge economy, so as to continuously improve our country's competitiveness and influence around the world.

4.2 Perfecting information sharing system

Perfecting the system of information sharing is the key process of building a perfect regulation system, because the basis and precondition of the pre-regulation and follow-up regulation is sufficient and timely information sharing. The well-developed information sharing platform can improve the transparency of the market, reduce the market transaction cost and the rent-seeking risk, therefore to achieve the goal of the effective allocation of resources. What's more, it can provide the basis for the follow-up regulation, improve the scientific and normative features of the regulation, so as to achieve the purpose of improving the efficiency of the government. The perfect information sharing platform should integrate the credit information of the legal person and the natural person produced in the process of carrying out the duties in administration, judicature, public utilities and other departments,

therefore to form a data center of credit information, which can function as information sharing, risk control, coordinated regulation and punishment linkage all in one. The supervisory departments can implement the regulation measures such as “double-notification”, “double-feedback”, “double-random” and “double-evaluation” on the platform^[6]. In terms of the practice of establishing information sharing platform, Shenzhen QianSheKou FTA fully utilizes the geographical advantages of the being adjacent of Hong Kong P.R.China and Macao P.R.China. With Hong Kong’s market regulators, jointly carry out the implementation of information sharing, the mutual recognition between the two places, the application of data growth and mutual recognition in the cross boundary of the frontier, which effectively facilitates the investment of enterprises in Hong Kong P.R.China, speeds up the development of foreign investment in the region and achieves mutually beneficial and win-win development^[7].

4.3 The establishment of the credit investigation system linkage

Establishing a linkage credit system is the core element of perfecting the regulation system, because the main target is to establish and stabilize the responsibility system for the enterprise. On the basis of information sharing platform, we can carry out effective regulation service throughout the whole process of the enterprises in the FTA with the utilization of credit system linkage. The linkage of the credit system should not only combine the regulation of the Government administrative department with the credit system of the society to improve the efficiency and quality of follow-up regulation of government, but also establish the credit information collection, sharing and disclosure platform, as well as the credit system linkage of government’s multiple departments, so as to realize the social credit management system of “once failed on credit, nothing can be done smoothly”^[8]. This includes two parts: one part is the early warning system of the enterprise credit, such as the establishment of credit risk classified management system of market entities. Relying on the credit information sharing platform of the credit entities, the market participants’ credit can be divided into “Good” “Warning”, “Credit fail”, and “Serious breach of credit” these four categories, which will release to the public. The other part is the regulation, inspection, reward and punishments system aiming to the different levels of the market entities. for example, the enterprise with “good” credit risk rating can be implemented with “double random” (random extraction of inspected enterprises, random inspection of personnel), which is the random check that focuses on day-to-day regulation and inspection system, so that which can also promote the government’s scientific, standardized and normative inspection for law enforcement can be enhanced^[9].

4.4 The establishment of the credit investigation system linkage

Efficient and effective regulation is difficult to achieve. On the one hand, it is due to the decentralization of market regulation subjects. On the other hand, it is contributed by the complication of market behavior. Therefore, we need to change the existing management system that mainly relies on government regulation, to fully mobilize the social forces to participate in investment regulation, and to realize the change from the “government solo-control” to the “governance by the whole society”^[10]. The regulation of social multi-subject includes government regulation, self-discipline of social subjects, industry autonomy and social regulation. Government regulation includes comprehensive regulation + professional regulation, big ministry system + comprehensive law enforcement, precise regulation, coordinated regulation, classified regulation and dynamic regulation. The self-discipline of the social subject includes the lawful operation of market participants, the publication system of enterprise annual reports, and corporate social responsibility. The industry autonomy includes the trade association, committee, school and the Social Participation Committee of the FTA. Social regulation includes professional services such as accounting, law, rating and evaluation, third-party inspection certification, media and varies hotlines. Such coordinated regulation can promote the transparency, clarity and scientific of the regulation, which is beneficial for the enterprises to change their development strategy and to enhance the sense of “ownership”. From the responsibility to the Government, change the regulation to a sense of obligation for safeguarding the fundamental interests of the public.

As for the model in which the main regulation body is the government, with the case study of catering industry, this paper constructs the cooperation regulation chart of government + third-party

platform, as shown in the following illustration (see Figure 2):

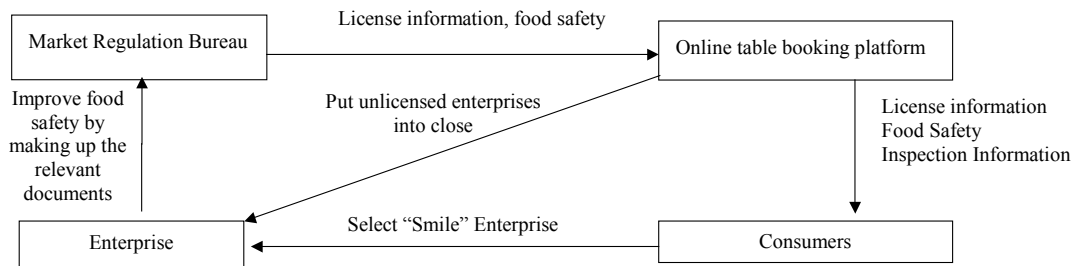


Figure 2 Regulatory system regulation chart of government + third party platform

From the above government and third-party regulatory platform map in food industry, it can be seen the entire regulatory system of the operation process constructed in this paper. first of all, the market Regulation Bureau shall, according to the laws and regulations, inspect the information of the enterprises and the food safety inspection information, inform the enterprises that do not conform to the requirements and require them to renew the documents in time; apart from that, the Internet third party booking platform can investigate the food enterprise licenses and food safety through whether the permit of settling in the platform is allowed, on the other hand, the choice and comments of consumers can also be taken into account when ranking the market behavior of an enterprise, and the result shall be released on the information sharing platform for reference; Then it is the consumers, who directly contact with the enterprise, are able to reflect any enterprises' irregularities on the third-party platform in the entire fluid process of inspection. Finally, the information platform, through the evaluation of all these information, can come up the enterprise's credit rating, therefore a market elimination mechanism can be established to ensure the good operation of the free trade area and the healthy development of the society.

5 Conclusions

The problem of the negative list is essentially concerning the issue of the openness of our country. The extent of the negative listing openness depends on the government management, the level of the regulation and the degree of the strictness. The negative listing management model adopted in China's FTA is not only an important measure for the reform of foreign capital management system, but also a positive attempt of perfecting the regulation-oriented government. The negative listing model puts forward a new administrative mode and new law-oriented regulation thinking in our country. It is an important content of the innovation in the comprehensive regulation system in China's FTA, and also an assurance of the healthy development of the free trade zone. At present, there are still some problems in the regulation of the free trade area, such as law and regulation, information platform of regulation, the construction of credit system and the perfection of supporting system. China should conduct the top-level design of the follow-up regulation in the FTA, speed up the unification of legislation, perfect the market management system, credit system and information sharing mechanism, realize the diversification of the regulation subjects, and achieve some innovations in terms of the comprehensive regulation in the FTA. The implementation of a negative list requires a more open and transparent system of government regulation, and the application of a series of regulatory measures that come with the negative lists is a new arrangement of such a management model.

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Research on the Innovation of Social Assistance Management in China Base from the Perspective of “Internet +” *

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Abstract With the development of the social assistance system, China has initially established the management system of social assistance that the Subsistence allowances is the basis and medical assistance, educational assistance, housing assistance, temporary assistance are supplement. Problems of fragmentation, decentralization and extensification of social assistance management are gradually emerging with the impacts of need for the poor complicated and management for social assistance refined. At the same time, “Internet+” is the latest concept from development of Internet and information technology. Its functions of big data management, operation informatization, resource sharing have high compatibility with social assistance management. The paper analyzed the informatization management model of Yaohua Subdistrict in Nanjing, based on concept and technology of “Internet +”, and proposed China’s optimization strategies of social assistance management.

Key words Social assistance management, “Internet +”, Informatization, Management model of Yaohua Subdistrict

1 Introduction

As a basic social safety net, social assistance plays an irreplaceable role in correcting market failure and maintaining social fairness. After years of development, in China, social assistance system has improved constantly^[1]. Assistance program is growing, and assistance people is increasing. However, although China’s social assistance is maturing, some potential problems in social assistance management are emerging, such as “fragmentation”, “decentralization”, “Disintensification”. In recent years, with the wide application of information technology, the Internet is continuously infiltrating into the social management. A new model of social relations and social management is emerging. the “Internet+” has become a new development trend to optimize government functions under the Internet era. It provides new ideas for the reform of social assistance management.

2 Situation and problems of traditional social assistance management

2.1 Development of social assistance management

As one of the important social security system, social assistance is a social policy based on the legislation to provide cash or service aid for low income groups, to meet them basic survival needs. At present, China has established a social assistance management system including subsistence allowances, medical assistance, educational assistance, housing assistance, employment assistance and temporary assistance^{[2][3]}.(Figure 1)

2.1.1 Subsistence allowances

In order to protect the basic life of low-income groups, China established a social assistance in the early 1950s. With the reform of the economic system, social assistance has changed accordingly. State Council carried out a policy of the minimum living standards for urban residents in 1999. The subsistence allowances system was further promoted. in 2005, China had put forward the goal of building a new socialist countryside, and the rural subsistence allowances system began to develop rapidly. In management, the compensation standard of the subsistence allowances is jointly set by the local government sectors, such as financial sector, price control authorities and statistical department.

*Financed by the State Social Sciences Fund: Research on the Innovation of Social Service Supply Model from the Perspective of “Internet +” (Project No.: 16XGL013).

Specifically, civil administration department is responsible for the main management work; finance department is responsible for providing the funds; subdistrict office and town government is responsible for subsidiary management.

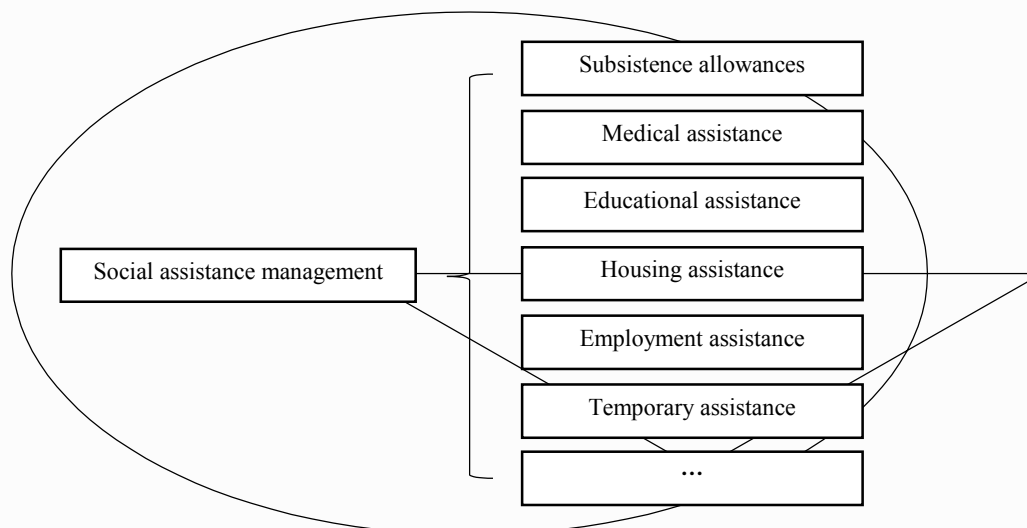


Figure 1 China social assistance management system

2.1.2 Medical assistance

To alleviate the difficulties of the poor, China implemented the medical assistance at the beginning of 21st century. Ministry of civil affairs, ministry of health and ministry of finance enacted a policy on rural medical assistance. Medical assistance began to be implemented quickly in rural areas in 2003. Two years later, State Council carried out a policy of establishing urban medical assistance. The urban medical assistance system also entered the construction stage. At present, the medical assistance system has been fully covered by urban and rural areas. The system is directly managed by the civil administration department. Health department and finance department is responsible for coordinated management.

2.1.3 Educational assistance

Before the education reform, government saw the education as an important part of the welfare service, and implemented free education. The government had began to reform the education system in elementary and secondary education since the early 1980s. In order to enable the children of poor families to study, in the mid-1980s, China began to build the educational assistance system. Education assistance is mainly managed by local education departments. Central and provincial governments allocate a special fund to local government based on local specific circumstances. At stage of compulsory education, the contents of assistance include remission of tuition and free books; At stage of secondary education, the assistance is tuition fee subsidy; At stage of college level, the contents of assistance include scholarship, subsidy and work-study program.

2.1.4 Housing assistance

In order to protect the housing rights of low-income groups, State Council carried out a policy of reform of the urban housing system in 1998. The policy marks the start of the housing assistance system. The housing assistance is jointly managed by the civil administration department and the housing security department. The contents of assistance in urban area include providing low-rent house, public rental housing and economically affordable housing. In rural areas, it include house building, repairing and reconstructing.

2.1.5 Employment assistance

State Council established some policies to protect unemployed worker in 1950s. In 2007, Employment Promotion Act was promulgated. It marked employment assistance into the legal construction stage. Local employment service department is responsible for management of

employment assistance. Assistance service mainly includes free employment information, occupation introduction, employment training and public welfare position.

2.1.6 Temporary assistance

In order to assist people who have been met accident, the ministry of civil affairs had implemented the policy of establishing temporary assistance system. Temporary assistance was gradually established throughout the country. The management of temporary assistance was coordinated with multiple departments. The civil administration department is responsible for overall management. Health department, financial department, human resources and social security department and other are responsible for cooperative management.

2.2 Problems of social assistance management

With the development of the social assistance system, China has initially set up a system of social assistance management to respond to different assistance needs. But at the same time, there exist three problems in management of social assistance, outstanding fragmentation, decentralization and extensification.

2.2.1 Management fragmentation

China's system of social assistance management include subsistence allowances, medical assistance, educational assistance, housing assistance, employment assistance and temporary assistance. During the establishment of the system, each assistance has established special policies and management system respectively. The subsistence allowances, medical assistance and temporary assistance are mainly administered by the civil administration department; Educational assistance is administered by the education departments; Housing assistance is administered by the housing security department; Employment assistance is administered by the employment service department. The problem of bull management is very serious. Firstly, Multi-sector management increase the budgetary cost of the social assistance. Secondly, the utilization of assistance resource is not high because of differences in the responsibilities and interests of each department. Thirdly, Diversification of assistance demand need to strengthen cooperation among departments. But there is poor communication between departments. It results in management information-isolated island, and seriously affects the accuracy and efficiency of social assistance.

2.2.2 Operation decentralization

Each assistance program has a series of working procedures such as application, approval, distribution and verification. However, each procedure is responsible for one or more departments. Thus, problems of the operation diversification of assistance management are presented. With the expansion of the assistance scope, the problems will become more and more prominent. For example, in in rural areas, someone apply for the subsistence allowances should go through the village committee's discussion, and town government's check. Finally, civil administration department of county government shall conduct examination and approval. Similarly, in general, other assistance program' application will involve in village committee, town government, county government as well. If someone wants to apply for two or more program, although the process is similar, the place and regulation are different. This requires applicants to issue different materials and go different departments. That leads to social assistance management is inefficient.

2.2.3 Management extensification

At present, in the process of social management management, the relevant approval materials are mostly printed. The management department also needs to archive the paper materials. Use of the paper materials and manual handling will cause inconveniences and security risks in the management process. Authenticity will be affected. On the one hand, the applicant can change and misreport the economic situation of individuals and families in order to obtain social assistance. On the other hand, administrative staff can only check the paper materials, and can't judge the authenticity. Furthermore, many administrative staffs are lack of specialized knowledge. These reduces the precision and efficiency of social assistance management.

3 The compatibility between “Internet+” and social assistance management

3.1 Emergence and characteristics of the concept of “Internet+”

With the rapid development of information communication technology, the integration of the Internet and traditional industries is deepening and creating some new social and economic development forms^[4]. In 2012, Ma Hua-teng, deputy to the NPC define the “Internet+” as a new industry pattern through the Internet platform, using of information communication technology to combine the Internet with traditional industries^[5]. In the same year, Premier Li Ke-qiang proposed “Internet+” action plan to Implement of the concept of “Internet+” in his government work report. With the development of Internet technology, “Internet+” also gradually becomes a new concept of social governance. In particular, its the three main characteristics which are big data management, information operation and resource sharing formed a good compatibility with social assistance management. (Figure 2)

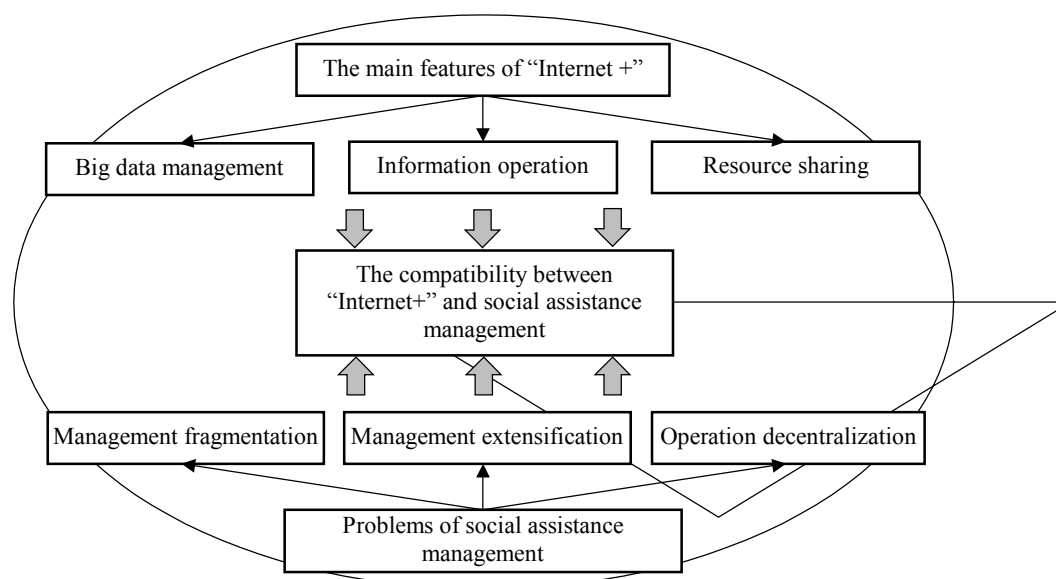


Figure 2 The compatibility between “Internet+” and social assistance management

3.2 Big data management is beneficial to improve the quality and efficiency of assistance management

In the information age, the overall popularization of the Internet has greatly increased the data transmission of social. In order to better obtain valuable information and quickly analyze it, the management of data and information needs to be managed in an integrated way^{[6][7]}. This can effectively solve the problem of management fragmentation in social assistance management. The introduction of internet can make assistance management form big data platform, coordinated the management of subsistence allowances, medical assistance, educational assistance, housing assistance, employment assistance and temporary assistance. The big data management platform can divide the subsystem according to the various assistance contents, and further clarify the responsibilities of each department, easily check the progress of the assistance. Social assistance management can use data integration to avoid the problem of error assistance. Moreover, the interconnection management model can also break the information isolated island among departments, and greatly improve the quality and efficiency of assistance work.

3.3 Information operation is helpful to promote the standardization of assistance management

The Informatization operation is actually to change paper materials and hand operation into the virtual information way through internet technology. The management approach can solve the problem of operation extensification of assistance management. Information operation can change the traditional management style. In operation, the electronic files is more convenient for transmission and storage. The application and check of various assistance will be more accurate and convenient. At the

same time, the informatization operation can also improve the professional quality of administrative staff and the standardization of management work.

3.4 Resource sharing is helpful to strengthen the coordination of assistance management

The internet can transfer a large number of information to any port which needs to be shared^{[8][9]}. With the construction of E-Government, China has begun to apply internet technology to government services. These experiences can be further applied to social assistance management. Facing the multi-sector management of social assistance, the internet technology can form a trans-department resource sharing mechanism which brings together information and content of various social assistance programs. Assistance management department can search the information trans-department at any time, and supplement and update the relevant assistance information. Therefore, Internet technology can enhance the integration within the department and promote cooperation with external departments, thus improving the coordination of social assistance management.

4 Case analysis: informatization management model of Yaohua Subdistrict in Nanjing

Yaohua Subdistrict which is located in Qixia District, is one of the resettlement areas. Due to the complicated population situation, the social assistance management in the area is very difficult. Yaohua Subdistrict government affairs service center found in 2013, and covered 13 communities. In order to better meet the needs of the social assistance of the poor, the government affairs service center uses the Internet to innovate the way of assistance management, and establishes the government affairs information management system and integrated service platform.(Figure 3)

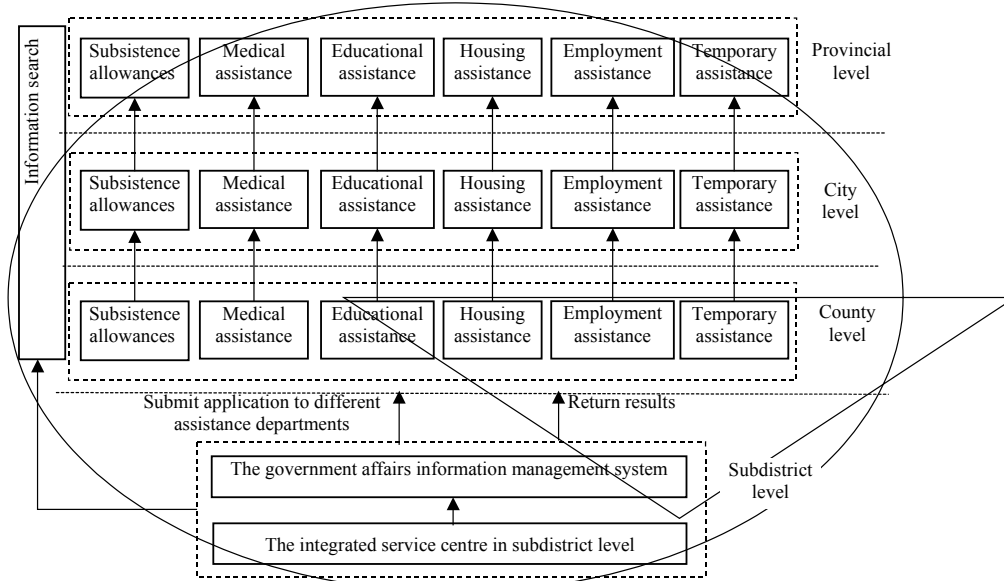


Figure 3 Informatization management model of social assistance in Yaohua Subdistrict

4.1 The government affairs information management system

Through the establishment of the government affairs information management system, Yaohua Subdistrict extend it to all communities. realizes the real-time collection and recording of Important information of social management. On one hand, the system is able to integrate all the management process such as application, examination and data verification in a information management platform, and use the technology of data correlation to provide information search. On the other hand, through information aggregation and data analysis, The system can accurately grasp the implementation effect of social assistance, adjust the assistance benefit. Also, through the comprehensive analysis of the personal information, the system can also find people who need help and give assistance to them in time. Besides, the government affairs information management system also provides some convenient

functions for various types of people such as online consultation, online booking, online complaint data and data query.

4.2 The integrated service centre

The integrated service centre is the carrier of the government affairs information management system. The centre is integrating information to realize the unified management of various social assistance processes such as application, verification and approval in an office window to through Internet technology. Due to wide range of contents of various businesses, the management of the centre needs to adopt the electronic and information operation model. This puts forward higher requirements for the professional quality of administrative staff. At present, the centre can provide 130 administrative services. All the social assistance services can be handled under one roof. Moreover, the integrated service centre also offers visiting service for special people such as the elderly and the disabled.

4.3 Characteristic analysis of the innovation of social assistance management in Yaohua Sub-district

Firstly, the government affairs information management system and the integrated service centre facilitates the daily work of assistance management, and simplifies every work of assistance management. Secondly, information sharing of various social assistance programs and relevant assistance management departments is conducive to ensuring the authenticity of information and ensuring timeliness and effectiveness of social assistance work. Thirdly, the informatization management model of Yaohua Subdistrict has simplified the work of assistance management, and standardized the service standards for various assistance managements.

5 Optimization strategies of social assistance management in China

5.1 Government should improve the social assistance management system through information management

The goal of social governance innovation is to achieve good governance and ensure people's livelihood. As an important means of social governance, social assistance management needs to keep pace with the times. Firstly, based on the means of information integration, through the establishment of information management system, social assistance should strengthen the communication and cooperation among different departments. Through the method of information exchange and data sharing, realize the coordination of social assistance management system. Secondly, facing with the decentralization problem of social assistance management, assistance management departments should actively use informationization means to one-stop management.

5.2 The primary government should adopt the general management of assistance service

Firstly, primary government should establish the mechanism of integrated service centre to realize the general management of assistance service, make the different assistance project connected to a physical platform based on internet technology, and realize various business integrated. Secondly, promoting the concept of "general social work". For social assistance administrative staff, relevant departments should strengthen training and improve their knowledge reserve of social assistance. A window can do a variety of assistance works to realize the business process reengineering of social assistance management.

5.3 Social forces should be actively involved in assistance management

The government is the dominant force of social assistance, but it does not mean that social assistance should be completely dependent on the government. It is the consensus and responsibility of the whole society to support the poor. So social assistance should also introduce social forces into its management, and encourage the active participation of the social forces. Firstly, government could open microblog, WeChat, online discussion community to broaden the way of public participation, understanding of real public opinion timely, realize the two-way interaction of assistance management. Secondly, government can use social forces to find the specific situation of those who have not been included in the scope of assistance, and provide assistance to them in time.

5.4 Social assistance should be improved supervision level

Firstly, we should rely on the network to establish the dynamic supervision mechanism of social

assistance. The government should introduce Internet technology and establish a two-way supervision system according to the administrative scoping, realize the dynamic supervision across departments and improve the accuracy of assistance management. Secondly, we should make full use of the role of social supervision, expand the scope of the disclosure of assistance management through the web portals and other online ways, accept the supervision of the whole society.

6 Conclusions

After decades of rapid economic growth and increasing demands for people's lives, the Chinese government has also paid more attention to the construction of social assistance. Nowadays, China has initially established management system of social assistance that the Subsistence allowances is the basis and medical assistance, educational assistance, housing assistance, temporary assistance are supplement. However, the diversity of systems and the departments also led to the problems of fragmentation, decentralization and extensification of the assistance management. These has greatly affected the efficiency of social assistance work and met the needs of the poor groups. In recent years, with the further promotion of concept of "Internet +", Network and information technology have been continuously applied to areas of government administration and social governance, and achieved excellent results. Big data management, operation informatization, resource sharing which are the characteristics of the "Internet +" provide good reform ideas for social assistance management. In the future, to solve the management problem of social assistance, China need to introduce the concept and technology of "Internet +", and make assistance innovations on management system, service forms, social participation and supervision.

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Public Service Motivation (PSM) of Healthcare Professionals in Chinese Public Hospitals *

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Abstract The theory of public service motivation (PSM) reveals the differences between public sector employees and private sector employees in motivation preferences and job involvement. The theory of PSM originated in the United States. The existing research focuses mainly on developed countries, and few studies focus on developing countries, such as china. Furthermore, the study subject of PSM is relatively simple. Groups of people other than public servants are seldom studied. Public hospitals are an important part of the public sector in China. Studying the structure and level of PSM for healthcare professionals in public hospitals can enrich existing studies. Based on the survey data of 855 healthcare professionals in Chinese public hospitals towards PSM and relevant demography data, this paper tries to provide evidence to the existing of PSM among healthcare professionals. The results show that the PSM observed in the West also exists in China, but the generalisability of the measurement scale is kind of limited. Three of the five sub dimensions (“public interest”, “self sacrifice”, “democratic governance”) exist in China, but the other two sub dimensions (“politics and polices”, “compassion”) is unconfirmed. healthcare professionals in Chinese public hospitals have high level of PSM. We also proved that education level could affect the PSM of healthcare professionals, but gender has no significant influence.

Key words Healthcare professionals, Public service motivation, Motivation structure, Motivation level, Chinese public hospitals

1 Introduction

The motivation of civil servants is one of the most ancient and most discussed issues in public administration (Alonso and Lewis, 2001^[1]). Employment in the public sector often has been portrayed as a calling, a sense of duty, rather than a job (Houston, 2006^[2]). Therefore, the motivation of civil servants and private sector employees are different. Generally, public employees place less of an emphasis on higher pay as a motivator and more emphasis on service to society and the importance of meaningful work. In order to explain and study these differences, Perry and Wise put forward the theory of PSM. Besides, they proposed three hypotheses. (1) The greater an individual’s PSM, the more likely the individual will seek membership in a public organization; (2) In public organizations, PSM is positively related to individual performance; (3) Public organizations that attract members with high levels of PSM are likely to be less dependent on utilitarian incentives to manage individual performance effectively (Perry and Wise, 1990^[3]).

In the past 20 years, the study of PSM has extended from the United States to Europe and Asia. Despite increased attention to the study of PSM, scholars have focused almost entirely on developed countries (Liu, 2009^[4]). There is little research about PSM in China. Furthermore, the study subject of PSM is relatively simple. Groups of people other than public servants are seldom studied. Public hospitals are an important part of the public sector in China. Health care worker is an ideal group to measure and study PSM. Because they are generally considered to be full of love and dedication. And they communicate with patients everyday, so that caring and solicitude spirit is considered to be part of their working ability. Undoubtedly, it is very necessary and valuable to study the structure and level of PSM of healthcare professionals in Chinese public hospitals.

Therefore, this paper uses the survey data of 855 healthcare professionals in Chinese public hospitals to provide evidence to the existing of PSM among healthcare professionals. We analyze the

*Financed by Beijing Natural Science Foundation with Project No.: 9174042; by the Humanities and Social Science Foundation of Ministry of Education with Project No.: 16YJC630017; by the Beijing Social Science Foundation with Project No.: 17GLC043; and by the Beijing Excellent Talent Project with Project No.: 2015000020124G047.

structure and level of the PSM of healthcare professionals, and investigate the influence of gender and education level on their PSM. Finally, we make some discussion and conclusion of this research.

2 Literature review and research hypothesis

2.1 Definition of PSM

Rainey is considered to be the first scholar to study the PSM directly, who found employees in public sectors are more willing to do meaningful affairs for society compared with employees in private sectors (Rainey, 1982^[5]). For a long period of time, scholars have discovered the importance of PSM, but did not give a clear definition. Until 1990, Perry and Wise offered the first conceptual definition of PSM. They defined it as ‘an individual’s predisposition to respond to motives grounded primarily or uniquely in public institutions and organizations’ (Perry and Wise, 1990^[3]). Then the concept of PSM has been continuously enriched and developed by scholars, become more and more international, and can be applied to countries with different institutional and cultural background.

2.2 Sub dimensions of PSM

Borrowing from sociological research by Knote and Wright-Isak, Perry and Wise delineated three categories of motives: “affective motives”, “rational motives”, and “normative motives” (Houston, 2006^[2]). “Affective motives” are grounded in human emotion and are characterized by a desire and willingness to help others, “rational motives” are grounded in maximizing individual utility; “normative motives” involve a desire to serve the public interest (Liu, Tang and Zhu, 2008^[6]). on this basis, Perry translated the theory of PSM into a formal measurement scale. This measure scale includes 24 items corresponded to four dimensions of PSM: “attraction to policy making”, “commitment to public interest”, “compassion”, and “self sacrifice” (Perry, 1996^[7]). With the exception of “self sacrifice”, other four sub dimensions corresponded to the three categories of motivations identified by Perry and Wise. “Attraction to policy making” fell into the “rational category”; “commitment to public interest” fell into the “normative motives”; and “compassion” fell into the “affective category” (Liu, Tang and Zhu, 2008^[6]). “Self sacrifice” was retained because of evidence in the related literature. Since then, PSM measurement scale has been continuously verified and revised. Under the premise of ensuring the validity of the measurement, scholars reduce the number of items, and enrich the dimension of PSM, such as democratic governance.

2.3 The study of PSM in China

the concept of the PSM is very similar to the Chinese traditional virtue (Cheng, 2015^[8]). Liu, Tang & Zhu tested the applicability of the PSM measurement scale in China firstly. They found that, not only in the United States, China also has the PSM. Chinese civil servants had a high level of PSM (Liu, Tang and Zhu, 2008^[6]). However, only “public policy making”, “commitment to public interest”, and “self sacrifice” these three sub dimensions were verified. The dimension of “compassion” in China did not exist. Further research shows that, PSM can be a positive antecedent of job satisfaction among occupational students civil servant, social worker, and public welfare institutions staff in China (Liu and Tang, 2011^[9]; Liu, Tang and Yang, 2015^[10]). Generally speaking, The research on Chinese PSM is very limited. And the existing research didn’t investigate the PSM of Chinese healthcare professionals.

2.4 Research hypothesis

- (1) PSM originated from the West also exists in China.
- (2) healthcare professionals in Chinese public hospitals have high level of PSM.
- (3) Female healthcare professionals have higher PSM than male healthcare professionals.
- (4) healthcare professionals with higher education level have higher PSM than those with lower education level.

3 Research design

3.1 Objects and processes

The data for this paper is based on the first-hand data we collected throughout China. The survey carried out in the second half of 2015, lasted for about 5 months. The object of this survey is the healthcare professionals in Chinese public third-level grade-A hospitals. China is noted with vast territories and striking regional differences. Therefore, we first divided the survey area into the Eastern,

the Midland and the Western, and then selected a number of cities in each region to investigate (according to the hospital number in each region). The selected cities are Shanghai (Eastern), Guangzhou (Eastern), Amoy (Eastern), Haikou (Eastern), Changchun (Midland), Zhengzhou (Midland), Wuhan (Midland), Xi'an (Western), Chongqing (Western), and Urumqi (Western). We chose a representative public third-level grade-A hospital in each city, and at least 50 copies of the questionnaire were distributed in each hospital. The questionnaire was issued by the combination of paper questionnaire and network questionnaire. In the end, we collected 855 effective questionnaires, and the effective rate of questionnaire was 95%.

3.2 Variables

In order to invest the PSM of Chinese healthcare professionals, we used the measurement scale of PSM designed and tested by Vandenabeele (Vandenabeele, 2008^[11]), which exhibiting good fits, reliability, and validity. The measurement scale consists of "politics and policies", "Public interest", "compassion", "self-sacrifice", and "democratic governance" these 5 sub dimensions. Compared to Perry's measurement scale, "democratic governance" is a newly created dimension. All the 18 items are subjective evaluation questions. Such as "I do not care much about politicians", "I voluntary and unselfishly contribute to my community", "to me, patriotism includes seeing to the welfare of the others", "much of what I do is for a cause bigger than myself", "everybody is entitled to a good service, even if it costs a lot of money", and so on. The five-point Likert scale was used to test the respondents' agreement of each item. Specifically, "1" means "strongly disagree", "2" means "disagree", "3" means "normal", "4" means "agree", "5" means "strongly agree".

We also investigated healthcare professionals' gender and education level, in order to investigate the influence of personal factors on their PSM.

3.3 Method

In the course of the study, we used the following research methods. Confirmatory Factor Analysis technique was applied to investigate the generalisability of the PSM scale and the structure of the PSM of Chinese healthcare professionals. Descriptive statistical technique was used to investigate the level of the PSM of Chinese healthcare professionals. One Way ANOVA and Independent-Sample T Test were applied to analyze the effect of personal factors on the PSM of Chinese healthcare professionals.

4 The structure of healthcare professionals' PSM

We used Confirmatory Factor Analysis to test the generalisability of PSM measurement scale. The analysis result showed that the overall reliability of the scale is high and acceptable (Cronbach Alpha 0.8). We also tested the reliability of each sub dimension of PSM, the results were: "politics and policies" (Cronbach Alpha 0.621), "Public interest" (Cronbach Alpha 0.792), "compassion" (Cronbach Alpha 0.514), "self sacrifice" (Cronbach Alpha 0.808), and "democratic governance" (Cronbach Alpha 0.728). We can find although the sub dimensions of "politics and policies" and "compassion" didn't show good validity, but still acceptable (Above 0.7). It is generally believed that, only if the construct validity is below 0.6, then it is not suitable for factor analysis. Therefore, we do not need to adjust the items of the sub dimensions of "politics and policies" and "compassion".

Our findings have some resemblance to the conclusions drawn from the studies of other scholars. Such as, Liu, Tang and Zhu tested 191 Chinese civil servants' PSM with Perry's measurement scale. They found that three of the four sub dimensions of PSM "attraction to public policy making", "commitment to the public interest", and "self sacrifice" existing in China, but the fourth dimension ("compassion") is unconfirmed (Liu, Tang and Zhu, 2008^[6]). Besides, Liu proved that "commitment to the public interest", and "self sacrifice" these two sub dimensions of PSM exist among Chinese social workers (Liu, 2009^[12]).

Therefore, we can infer that the PSM observed in the West countries also exists in China, and the measurement scale is generalisability. The hypothesis 1 of this research has been verified. However, "politics and policies" and "compassion" these two sub dimensions may not be suitable to test the PSM of Chinese healthcare professionals. Because "politics and public policy" may still be too sensitive to the Chinese people. Chinese people are not used to being asked and investigated about political and public policy issues. Especially when we answer the question such as "politics is a dirty word".

Besides, Influenced by the new public management movement, the original values and moral ethics of public administration, such as compassion, have been replaced by rationality and interest. What's more, healthcare professionals in Chinese public hospitals are very busy every day, they need to diagnose and treat a large number of patients, so they may not have time and energy to sympathize with other people. Consequently, we propose to measure the PSM of Chinese healthcare professionals from "Public interest", "self sacrifice" and "democratic governance" these three sub dimensions. The validity of this measurement scale is yet to be further verified in the future.

5 The level of healthcare professionals' PSM

Generally speaking, Chinese healthcare professionals have high level of PSM. Among them, the highest score is 80 points, the lowest is 18 points, and the average is 63.53 points (above the theoretical average of 54 points). 90.2% of the research subjects score higher than 54 points, 67.7% higher than 60 points, 15.8% higher than 70 points, 4.3% higher than 75 points. The hypothesis 2 of this research has been verified. In order to reveal the differences of healthcare professionals' PSM in different regions, We conducted a comparison among different regions. Statistical results show that, The healthcare professionals' PSM has no significant difference among the Eastern, the Midland and the Western area (sig=0.274>0.005). Midland scores highest, of 64.32 points, eastern ranks second, of 63.40 points, western scores lowest, of 63.25 points.

Table 1 Medical staffs' PSM among different regions

			Sum of squares	df	Mean square	F	Sig
Between groups	(Combined)		133.919	2	66.959	1.297	.274
	Linear term	Not weighted	3.643	1	3.643	.071	.791
		Weighted	.161	1	.161	.003	.956
		Deviation	133.758	1	133.758	2.592	.108
	Within groups		43970.186	852	51.608		
	Total		44104.105	854			

The sub dimension of "Politics and policies" includes two items. The average score of this sub dimension is 6.64 points. The average score of the item "Politics is a dirty word" is 3.55 points (SD=0.988, Var=0.977). The average score of the item "I do not care much about politicians" is 3.09 points (SD=0.950, Var=0.902). It can be seen that healthcare professionals in China don't concern about politics and policies very much. Urumqi and Wuhan score higher in this dimension, of 7.61 points and 7.53 points respectively. Changchun scores lowest, of 5.69 points. Western scores highest, of 6.93 points, Eastern ranks second, of 6.52 points, Midland scores lowest, of 6.49 points.

The sub dimension of "Public interest" includes four items. The average score of this sub dimension is 13.27 points. The average score of the item "I voluntary and unselfishly contribute to my community" is 3.39 points (SD=0.832, Var=0.693). The average score of the item "Serving the public interest is an important drive in my daily life (at work or outside work)" is 3.26 points (SD=0.792, Var=0.626). The average score of the item "To me, serving the public interest is more important than helping individual persons" is 3.25 points (SD=0.904, Var=0.817). The average score of the item "To me, before anything, good civilians should think of society" is 3.37 points (SD=0.915, Var=0.837). It can be seen that healthcare professionals in China don't seem to care about the public interest. Haikou and Wuhan score higher in this dimension, of 13.99 points and 13.95 points respectively. Shanghai scores lowest, of 12.19 points. Western scores highest, of 13.51 points, Eastern ranks second, of 13.18 points, Midland scores lowest, of 13.17 points.

The sub dimension of "Compassion" includes five items. The average score of this sub dimension is 18.87 points. The average score of the item "To me, patriotism includes seeing to the welfare of the others" is 3.63 points (SD=0.865, Var=0.749). The average score of the item "Fighting poverty is an important duty of government" is 4.30 points (SD=0.804, Var=0.647). The average score of the item "I seldom think about the welfare of other people whom I do not know personally" is 2.80 points (SD=0.924, Var=0.853). The average score of the item "Without solidarity, our society is doomed to

fall apart” is 3.37 points (SD=0.804, Var=0.647). The average score of the item “To me, helping people who are in trouble is very important” is 3.92 points (SD=0.764, Var=0.584). It can be seen that healthcare professionals in China are more concerned about poverty, social solidarity and helping others, but don’t care the welfare of other people whom they do not know personally. Wuhan and Chongqing score higher in this dimension, of 19.60 points and 19.10 points respectively. Urumqi and Amoy scores lowest, of 18.14 points and 18.37 points respectively. Midland scores highest, of 19.19 points, Eastern ranks second, of 18.84 points, Western scores lowest, of 18,71 points.

The sub dimension of “Self sacrifice” includes four items. The average score of this sub dimension is 13.58 points. The average score of the item “Much of what I do is for a cause bigger than myself” is 3.36 points (SD=0.852, Var=0.725). The average score of the item “Making a difference in society means more to me than personal achievements” is 3.52 points (SD=0.864, Var=0.747). The average score of the item “I feel people should give back to society more than they get from it” is 3.53 points (SD=0.858, Var=0.736). The average score of the item “I am prepared to make enormous sacrifices for the good of society” is 3.16 points (SD=0.881, Var=0.775). It can be seen that healthcare professionals in China have a strong spirit of self sacrifice. Wuhan and Haikou score higher in this dimension, of 14.74 points and 14.41 points respectively. Changchun and Shanghai scores lowest, of 12.40 points and 12.83 respectively. Western scores highest, of 13.87 points, Eastern ranks second, of 13.49 points, Midland scores lowest, of 13.40 points.

The sub dimension of “Democratic governance” includes three items. The average score of this sub dimension is 12.07 points. The average score of the item “Everybody is entitled to a good service, even if it costs a lot of money” is 3.91 points (SD=0.763, Var=0.582). The average score of the item “Even in the case of major disasters, public service should be maintained” is 4.01 points (SD=0.744, Var=0.554). The average score of the item “It is important that public servants account for all the costs they make” is 4.15 points (SD=0.783, Var=0.613). It can be seen that healthcare professionals in China attach great importance to democratic governance and public service. Changchun and Wuhan score higher in this dimension, of 12.72 points and 12.67 points respectively. Urumchi scores lowest, of 10.89 points. Midland scores highest, of 12.57 points, Eastern ranks second, of 12.04 points, Western scores lowest, of 11.77 points.

6 Effect of personal factors on healthcare professionals’ PSM

Gender and educational level are the two most frequently discussed variables in the personal factors that affect PSM. In terms of gender, women are generally expected to have higher PSM. Such as, data from a survey of public management in state health and human service agent service agencies revealed that women scored higher on Perry’s “compassion” sub scale, and also on “attraction to policy making”, but no statistically significant gender differences were found on “commitment to public service” (Davis, Marlowe and Pandey, 2006^[13]). Different from previous studies, we found a very interesting phenomenon, that is Chinese healthcare professionals have no gender difference on PSM (Sig (2-tailed) =0.498>0.05), and five dimensions of “political and polices” (Sig (2-tailed) =0.066>0.05), “public interest” (Sig (2-tailed) =0.481>0.05), “compassion” (Sig (2-tailed) =0.305>0.05), “self sacrifice” (Sig (2-tailed) =0.169>0.05), “democratic governance” (Sig (2-tailed) =0.234>0.05).

Table 2 PSM and sub dimensions of healthcare professionals with different genders

	F	Sig	t	df	Sig(2-tailed)
PSM	2.019	.156	-.667	853	.498
Politics and policies	4.256	.059	-1.838	853	.066
Public interest	1.067	.302	-.705	853	.481
Compassion	.062	.804	-1.027	853	.305
Self sacrifice	1.362	.244	-1.378	853	.169
Democratic governance	.518	.472	-1.192	853	.234

Equal variance assumed.

In terms of education level, Monomania and Pandey showed that PSM was strongly and

positively related to education level (Monomania and Pandey, 2007^[14]). Perry, Brudney, Coursey and Littlepage also found education may enhance and promote the development of PSM (Perry, Brudney, Coursey and Littlepage, 2008^[15]). Similar to previous research, Chinese healthcare professionals of different education level have different PSM (Sig=0.001<0.05). Their PSM increases firstly and then decreases with the rising of education level, bachelor degree is a turning point of the trend. Chinese healthcare professionals of different education level have different attraction to politics and polices (Sig=0.000<0.05). In general, their attraction to politics and polices is negatively related with their education level. Chinese healthcare professionals of different education level have different level of compassion (Sig=0.001<0.05). In general, their compassion level is positively related with their education level. Chinese healthcare professionals of different education level have different spirit of self-sacrifice (Sig=0.037<0.05). healthcare professionals of college degree have the strongest spirit of self sacrifice, but those of doctor degree has the lowest spirit of self sacrifice. Chinese healthcare professionals of different education level are different in the opinion of democratic governance (Sig=0.000<0.05). healthcare professionals with higher education level have more recognition for democratic governance. However, Chinese healthcare professionals with different education level have no significant difference in the sub dimension of “public interest” (Sig=0.215>0.05).

Table 3 PSM and sub dimensions of healthcare professionals with different education levels

	Sum of squares	df	Mean square	F	Sig
PSM	906.741	4	226.685	4.461	.001
Politics and polices	76.214	4	19.054	7.192	.000
Public interest	42.461	4	10.615	1.452	.215
Compassion	112.799	4	28.200	4.943	.001
Self sacrifice	77.233	4	19.308	2.564	.037
Democratic governance	86.164	4	21.541	6.517	.000

Equal variance assumed.

7 Conclusions

The main purpose of this article is to investigate the structure and level of PSM of healthcare professionals in Chinese Public Hospitals. In order to achieve this goal, 855 medical staffs from public hospitals in ten cities were surveyed. The survey result suggested that the PSM usually examined in the America and Europe also exists in China. However, the structure of PSM found in China is kind of different from the West: only 3 of the 5 sub dimensions were confirmed, which are “public interest”, “self sacrifice”, and “democratic governance”, but “politics and policies” and “compassion” these two sub dimensions were unconfirmed.

Generally speaking, healthcare professionals in Chinese public hospitals have high PSM. The PSM of healthcare professionals in different regions is kind of different. healthcare professionals in the Midland have the highest PSM. We also analyzed the level of five sub dimensions of PSM. The average score of “politics and polices” dimension is 3.320 points. The average score of “public interest” dimension is 3.318 points. The average score of “compassion” dimension is 3.772 points. The average score of “self sacrifice” dimension is 3.393 points. The average score of “democratic governance” dimension is 4.023 points.

Besides, in order to explain the current status of the PSM of healthcare professionals more comprehensively, we analyzed the influence of gender and educational level on PSM. The result is that gender has no significant influence on PSM and its sub dimensions. Education level has significant influence on the PSM and its 4 sub dimensions, except the dimension of “public interest”.

Despite these findings, this research also has some limitations. Firstly, we adjusted the construct dimension of PMS according to the research findings. But whether the measurement scale consisted of “public interest”, “self sacrifice” and “democratic governance” these three sub dimensions can effectively measure the PSM of healthcare professionals in Chinese public hospital still need to be validated in future studies. Secondly, we analyzed the structure, level and influencing factors of healthcare professionals’ PSM. In the future, we will add other variables, such as work pressure, health, presenteeism and so on, to investigate the antecedents and effects of healthcare professionals’ PSM.

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Research on the WeChat Use Behavior of among Uygur Users in “Erdaoqiao” Community of Urumqi, China *

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Abstract As the most widely used social media platform in China, WeChat has penetrated into daily life and has broad implications for the development of civil society. This paper constructs research framework based on the Diffusion of Innovation, Use and Gratification, etc. According to the Urumqi “ErDaoQiao” Uygur community user questionnaire and focus group interview, studied the Uygur group Audience behavior and Internal Mechanism of Adoption and Use of WeChat. The results found that Uygur groups within the community are easily to adopt WeChat with high contract intensity. Family factors are an effective one in explaining the use behavior, but the impact of psychological variables cannot be ignored. In addition, the use degree of WeChat for women is much higher than that for men.

Key words Uygur, “Erdaoqiao” community, Use behavior of WeChat, Diffusion of innovation

1 Background

WeChat is an instant chat social software, which can support to send text messages, voice messages, pictures, small video, small applications etc., such integrated mobile phone applications through Internet ^[1]. It combines the two elements, information communication and relationship construction, transfers people’s real social relations to the phone, completes the convergence of social reality and virtual reality. The author found that there are numerous researches of relevant areas and abundant subjects involved through collecting the existing WeChat research. However, most of these studies focus on media literacy, and put the emphasis on quantitative analysis, lack of qualitative research, the research on the WeChat use of Uygur is even fewer. According to CNNIC 39th “China Internet Development Statistics Report”, by 2016, the number of Internet users in Xinjiang was 12.96 million, the penetration rate is 54.9%, ranking 10th among China ^[2]. It can be seen that the overall Internet penetration rate in Xinjiang is high, which has become a necessary condition for the development of new media.

Uygur in Urumqi live in form of groups, “Erdaoqiao” community, “big bend” community, “Yan’an Road” community, “Youth Road” community and other major communities are as the main residential groups^[3] “Erdaoqiao” is one of the large communities, the population reaches about 83 thousand by 2016. Therefore, this article attempts take “Erdaoqiao” Uygur residents as study object to explore their WeChat use behaviors.

2 Literature discussion

Use behavior of WeChat for Uygur users will be divided into two aspects, adoption and contact to study. These two parts constitute a complete process for them to access to new media, and promise more systematic study conducted of their use of WeChat. Based on which, this article takes “Diffusion of Innovation” and “Use and Gratification” theory as the main frame of this research.

Diffusion of Innovation Theory is used to explain the spread and diffusion process of an innovative thing through designated channels in a particular social system^[4]. This theory is derived from the classical innovation diffusion model of sociology (Rogers model), enjoys dominant position in the field. One of its main contributions, at the individual level, the “subjective psychological awareness” as the main factor for people accepting innovative things. Individual subjective psychological cognition includes perception of characteristics, epidemic and needs, etc.^[5]. Perceptual

* Financed by National Social Science Fund (Project No.: 16BXW022), the National Education Ministry (Project No.: 14XJA860001), Soft Science Program of Sichuan Province (Project No.: 17RKX0661).

features represent individual subjective cognition and innovation, Rogers divides it into five aspects: relative superiority, usability, compatibility, testability and observability^[6]; Perceived epidemic refers to the impact of social pressure on the process of innovation diffusion; Perceived demand means that only people find an important need in life which cannot be met by existing products, but when new products can meet these specific needs, people begin to adopt and continue to use this product.

Based on the existing research results, and according to WeChat characteristics, that is the phenomenon be popular rapidly and widely used in a short time and the psychological features of Uygur users^[7], the survey focuses on relative superiority and usability on five dimensions; In the aspect of perceiving needs, this study divides the needs of Uygur users into the needs for information, for self-expression and for recreation and leisure. According to the above theory, the research questions put forward by author are:

(1) How is the adoption of WeChat Uygur users?

(2) What is the subjective psychological awareness (perception of characteristics, epidemic and needs) of WeChat Uygur users? Does it affect the adoption to WeChat?

We use the theory of innovation diffusion to explore the adoption of users, and mainly deal with contact problem during WeChat use through the theory of Uses and Gratification. E. Katz first put forward the theory of "Personal Use of Mass Communication", which he summarized media contact as a causal chain of "social factors + psychological factors", namely, media expectation, media contact, and demand satisfaction process^[8]. "During the process of communication, the audience has been the positive participants" is the core point of the theory, the audience make choices based on personal motivation, goals and needs, the study proved that the degree of demand will affect the intensity of media content contact^[9]. WeChat, currently as the most popular new media in the society, has achieved a truly personalization, the user itself can become an information platform to have users gain corpus consciousness^[10]. Use and meet the audience perspective explained by the theory, provide a basic framework for the study of WeChat and audience relation.

Based on the content of the use and satisfaction theory as well as the WeChat propagation feature, on contact level, we mainly explore how the media needs and contact behavior of the WeChat Uygur users affect the contact intensity.

To sum up, the following research hypotheses are proposed:

(1) What are the media needs of Uygur users using WeChat?

(2) What is the contact behavior situation of Uygur users to WeChat, including time, frequency, content?

3 Research methods

3.1 Research objects and sampling methods

In this thesis, the research objects are Uygur users in "Erdaoqiao community" of Urumqi city. According to population statistics, gender, age and other factors of Erdaoqiao community, the author carried out quota sampling and identified 300 samples. In April 2017, taking Erdaoqiao community of Urumqi city as the center, located a bus stop front and back, using the method of intercept in stations, shopping malls, restaurants to give out questionnaires and reclaim on the spot. In addition, the author put a certain amount of questionnaires to the designated people on the internet. A total of 254 valid questionnaires were received.

3.2 Questionnaire design and measurement methods

Part one: Demographic background variables, including the gender, age, education and income of the respondents.

Part two: the basic WeChat adoption situation of Uygur users.

Part three: WeChat contact situation of Uygur users.

Part four: The subjective psychological factors influencing the adoption of WeChat by Uygur users need to be divided into three dimensions, namely, perceived features, perceived prevalence and perceived needs. Measure the answer with the Likert five point scale and assign the answer from 1 to 5. The greater the score, the greater the perception.

Part five: Uygur users' media demand of WeChat. The author will inquire from four dimensions,

information acquisition, maintenance interpersonal relationship, self-expression and recreation.

Uygur nationality has its own national language, so I ask professionals to translate questionnaire into Balakrishnan, when issuing, let the respondents choose according to their language level, and try to make the result more objective.

3.3 Focus group settings

In order to further understand the WeChat use by Uygur users, we have chosen two typical Uygur families in “Erdaoqiao community”, and interviewed the focus groups composed of their family members. The author has entrusted the core members of two families as the host, so that has guaranteed the unity of language in the interview, avoiding the deliberate intention caused by strangers, and making the interview as objective as possible. About the focus group A, host (A1) is a 24 years old man, group members are 49 years old father (A2), 46 years old mother (A3), 68 years old grandfather (A4), in total of four members. About the focus group B, there is a 46 years old female hostess (B1), group members are 46 years old husband (B2), 19 years old eldest son, 16 years old youngest son, in total of four members.

4 Research findings

4.1 Basic data analysis

4.1.1 Demographic background statistics

According to the survey statistics, the male to female ratio of Uygur users is 51.6% and 48.4% respectively, the proportion of ages is under 18, 18-25, 26-39, 40-59 and over 60 are 5.5%, 31.1%, 27.6%, 29.1% and 6.7%. In terms of education, the proportion of primary school and below, junior high school, high school, college and above are 5.1%, 11%, 29.5% and 54.3%.

4.1.2 Base situation of use behavior

According to statistics, only 7 users never use WeChat, 6 people have used then gave up. Adoption rate is as high as 94.9%. And the vast majority of users (82.7%) have used WeChat more than a year, and 12.1% of users have used WeChat for six months to one year. It can be said that up to 95% of users have used WeChat for more than half a year. Users who use three months to six months and less than three months account for 4% and 1.2% respectively.

When inspecting how users touch WeChat, it was found that 50% of the users chose the family recommendation, 36.7% of the users choose a friend recommended, then the download center (7.3%), mobile phone comes (5.7%) and advertising (0.4%) in turn. It can be seen that Uygur users' adoption of WeChat are mainly by interpersonal communication. Families, in particular, play a decisive role in communication and diffusion.

In terms of media preferences, 79.1% of users choose using WeChat most often, 4.6% of users choose QQ, and 6.3% of users choose other social software. As can be seen, users who choose to use WeChat account for a large proportion of Uygur users.

Most of the respondents spent less than two hours a day with WeChat (88%). Among them, the contact within half an hour accounted for 18.1%, half an hour to an hour accounted for 35.1%, one to two hours accounted for 34.7%, more than two hours accounted for 12.1%. It can be seen that WeChat use time of most Uygur users has been controlled within two hours a day.

In contact frequency, the daily contact rate is as high as 80.7%, the regular contact ratio is 12.5%, sometimes and the occasional contact ratio is 5.2% and 0.8% respectively.

As for WeChat's content preferences, 77.4% of respondents prefer voice messages, while 22.6% prefer text messages. In the function of Moments, 92.3% of users like to update the moments of friends, followed by “give a like” (41.5%) and share articles (22.1%), the last is “post something on Moments” (12.9%). In the use of Official accounts, most of users expressed they only subscribe to Official accounts but rarely browse them (72.6%), 22.6% of the users indicated that they have never used Official accounts, and only 4.8% of users indicated that they frequently browse the Official accounts and participate in interaction. In the function of WeChat wallet, users using Red Packets, Pay and Transfers are 94.4%, 53.6% and 31% respectively. But Mini Programs, as the new function of WeChat, the proportion of its users is not high (29.4%). Thus it can be seen that the major use of WeChat function by Uygur users are interpersonal interaction with acquaintances, users more prefer to use

voice communication and update Moments of friends, and the use of WeChat Official accounts is less. As the influence of WeChat wallet function further expands socially, the proportion of users using WeChat Red Packets is obviously higher, and the utilization rate of WeChat payment, WeChat transfers and other business related functions has also been improved. However, for WeChat’s newly developed and relatively complex functions, the use rate of respondents is low.

4.2 Analysis of influencing factors

4.2.1 Adoption

According to previous statistics, WeChat Adoption rate by Uygur users in this region is as high as 94.9%. The variables used by users is too small, so we mainly analyze the characteristics of the three dimensions perceived by the user’s subjective psychological factors.

According to the survey, the average of perceived features was 3.9, followed by perceived prevalence 3.8, and perceived demand was the lowest (3.7). On the whole, the Uygur people’s perception of subjective psychology is strong in the three dimensions, and is headed by perceived characteristics. In a panel interview, A4 talked about the direct reason why he was willing to use WeChat: “WeChat can send voice messages, I’m too old to type, and with WeChat, I can speak Uighur directly, which is very convenient.” This shows that WeChat adoption of Uygur users is largely influenced by their perceived characteristics. When WeChat just launched, it can send voice messages, which is a great convenience for the communication among the Uygur people. Especially when the user is older, this trait meets the “rigid demand” of this class of users, which other social software cannot replace. Although in recent years, QQ and micro-blog also launched the function to send voice messages, but the market has already been occupied by WeChat, which is an important reason for the adoption of WeChat for the needs of users at the time of Uygur.

In the aspect of perceived demand, the maintenance of interpersonal communication is the most demanding. We also found that in the group interview, many younger Uygur users in the use of WeChat basically gave up QQ which they used frequently in the past, and the most important reason is that their family and friends are using WeChat. B3 said that the students all used QQ in the past, then the parents are using WeChat, then even grandparents also begin to use WeChat, WeChat is also used by classmates, in order to keep in touch with them, they also began to use WeChat. B2 also said that friends are using WeChat, colleagues are popular to give the thumb up, and they don’t want to be out-of-dated. Obviously, WeChat has provided the convenient platform for the Uygur user’s interpersonal communication.

4.2.2 Contact

In the study of the demand level and the contact intensity of Uygur users of WeChat, we mainly use the contact time and the contact frequency as the index of intensity.

According to the correlation analysis, the four dimensions of demand of Uygur users are positively related to the contact time and frequency (Table 1). In other words, the stronger the needs of Uygur users to gain information and maintain their interpersonal, self-expression and entertainment through WeChat, the longer their use time is, and also the higher the frequency is.

Table 1 Correlation test between media demand and contact behavior of using WeChat

	Contact duration	Contact frequency
Information demand	.219	.121
Maintain interpersonal relationship needs	.334	.261
Self-expression needs	.211	.211
Entertainment demand	.272	.255

4.3 Cross analysis

4.3.1 Gender

According to statistics, Uygur female users are more willing to spend more time on WeChat than the male users (As shown in Figure 1). In respect of WeChat’s Circles function, female users are more willing to post something on Moments, forward articles and give a like. Females see Official accounts more frequently than men, while the proportion of men using mini programs is higher than that of

women. In group interviews, female respondents also indicated that, compared with their husbands, they are more willing to spend time on WeChat, post something on Moments and give a like.

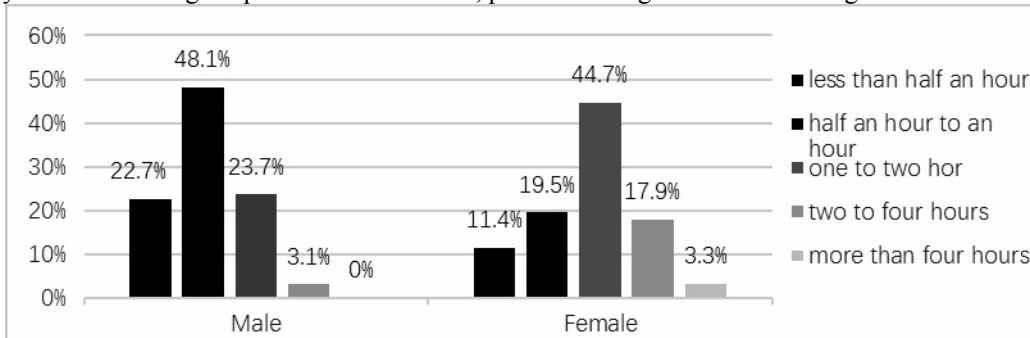


Figure 1 Cross analysis of WeChat using time and gender

4.3.2 Age

The smaller the Uygur user’s age (except under 18), the higher frequency of using WeChat (Figure 2) and the longer of using WeChat. Younger users are more likely to use WeChat wallet features, WeChat Official accounts, and mini programs. Older users prefer to forward articles on Moments.

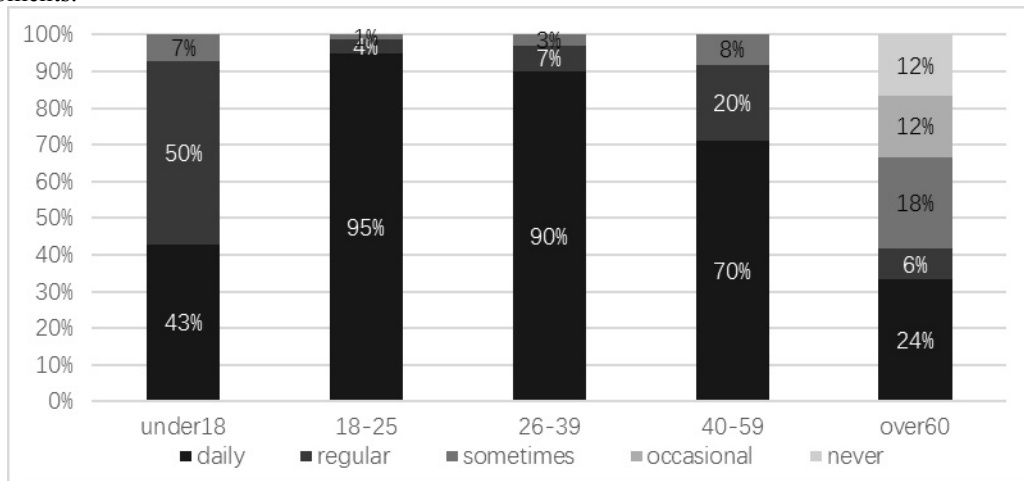


Figure 2 Cross analysis of WeChat usage frequency and age

4.3.3 Education background

As can be seen from figure 3, the higher the education background of Uygur users, the higher the time and frequency of using WeChat.

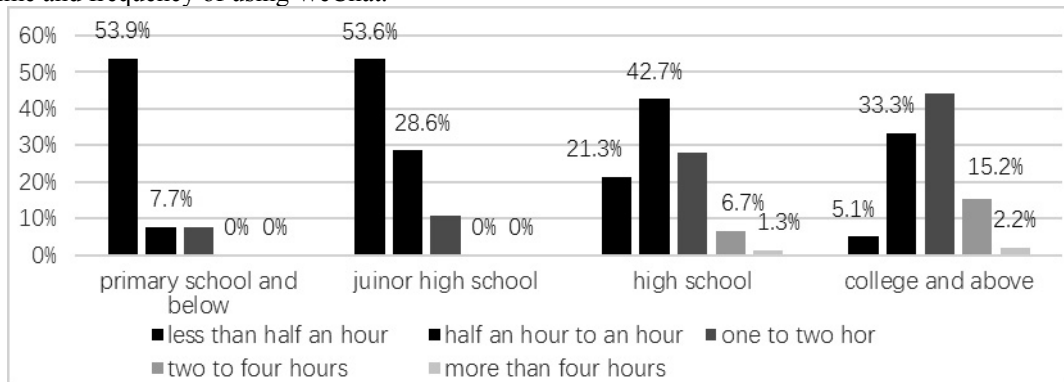


Figure 3 Cross analysis of WeChat usage time and education background

5 Conclusions

In this thesis, through the empirical investigation of the Uygur users in the “Erdaoqiao” community, and Study on their adoption and contact behavior of WeChat, The cross analysis of psychological variables and demographic background have been completed. The main findings of the study are as follows:

5.1 Uygur populations in “Erdaoqiao community” are loyal WeChat users

In our survey, it can be found that WeChat use rate among Uygur users is very high. And the number of people who use WeChat for more than a year reaches 83%, 81% of users contacts WeChat every day, which fully shows that the Uygur people in the community are loyal users of WeChat. The main reason can be found by the value of perceived feature tends to 4 in the questionnaire. As Uygur ethnic group has its own national language, WeChat’s voice message function has brought great convenience for their communication, and respondents all believe that WeChat is easier to use than any other social software before, which is precisely to meet their “Rigid Demand”. In the interview of focus groups, we also found that many panelists mentioned the convenience and ease of WeChat, that’s why the community group gave up other social software but chose WeChat. The features of WeChat satisfies the “Rigid Demand” of the nation’s communication, which has greatly increased the loyalty of the users.

5.2 In the community, family factors are powerful options for explaining the WeChat usage behavior of community users, but psychological variables should not be neglected

The survey found that families had a greater influence on new media use behavior of Uygur ethnic group. WeChat successfully combines virtual social life with reality, together with the unique emotional ties of ethnic minorities, forming a bond based on solidarity, trust and loyalty. As a platform for interpersonal communication, the essence of WeChat’s ability to run is communication. WeChat has also become a platform for strengthening family ties for Uygur people who value family values greatly. Since the opinion leaders in the family use WeChat, it involves its family members adopt WeChat.

In addition, psychological factors are also an important indicator affecting the use behavior of WeChat by community users. For example, perceived popularity would have a significant impact on WeChat adoption by Uygur users, which is 3.8, second only to its perceived characteristics. As the predictive factors of psychological variable, Uygur users’ media demand has a prominent influence on their media contact behavior, the more demand, the greater the contact strength.

5.3 Uygur women users are more addicted to WeChat in the community

Further analysis found that WeChat use among Uygur women was significantly higher than that of men. In the questionnaires and interviews, we found that female users are more concerned about WeChat content, and WeChat is more attractive to them. In a study of WeChat, researchers found that Chinese female WeChat users are more inclined to use WeChat as an entertainment tool to achieve higher life satisfaction^[11]. This point has also been confirmed by Uygur female users.

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Research on the Humanities Cooperation Mode between China and Russia Based on the Cross-boundary Collaborative Governance

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Abstract With the humanities cooperation mode between China and Russia as the research object, this paper applies the theory of cross-boundary collaborative governance, and tries to put forward the three modes of humanities cooperation include Government-led, Enterprise trade, Folk cooperation. The analytic hierarchy process was used to set the weight of the three modes of cooperation as the impact factors, and to evaluate the three modes of cooperation under the PEST model. Based on the given pattern selection strategy of this paper, this paper at the government and the non-government level puts forward some strategies and suggestions for the promotion of humanities cooperation between China and Russia in the hope that the humanities cooperation between China and Russia will develop steadily.

Key words Humanities cooperation mode between China and Russia, Theory of cross-boundary collaborative governance, PEST model, AHP

1 Introduction

China and Russia not only are big countries in the world, but also the largest neighboring countries. The two countries have always been playing an important role in the foreign strategy of each other, and also play a very important role for mutual security, stability and development. The second ten years of the twenty-first Century is the crucial period for China to achieve peaceful development, and it is also an important stage of Russian national rejuvenation and reemergence. The focus of the national development strategy of both countries is inside the country, and consolidating good neighborly friendship and promoting strategic cooperation are common requirements for the two countries to safeguard their national security and promote domestic economic development.

In recent years, along with the introduction of international strategy of China “The Belt and Road”, this topic has always been the hot spot of the world, and humanities cooperation between China and Russia is one of the hot spots, so many scholars on humanities cooperation between China and Russia have carried on the related research^[1-4]. However, the study of humanistic cooperation mode between China and Russia based on cross-boundary collaborative governance is still at the initial stage. The paper respectively to education, culture, health, sports, media, tourism, and other aspects of the literature on literature retrieval, through reading and sorting out a large number of documents, we tentatively put forward three modes of humanities cooperation between China and Russia, respectively for Government-led mode, Enterprise trade mode, and Folk cooperation mode. Based on the above three modes, the paper uses the Analytic Hierarchy Process^[5] (AHP) to sort the humanities cooperation modes between China and Russia under the PEST model^[6,7]. So as to give a better combination of humanities in the great environment of the two countries, and to use the cross-boundary collaborative governance theory to promote the strategy of humanities cooperation between China and Russia.

2 Definition of humanities cooperation mode between China and Russia based on the theory of cross-boundary collaborative governance

2.1 The definition of the cross-boundary collaborative governance theory

Since the World Bank’s first use of the term “crisis management” in 1989, the term “governance” has been widely used in politics, economy, society, culture and other fields. However, since scholars in different fields have explained and applied from their own academic backgrounds, there has been no unified definition about the connotation and extension of “governance” until now^[8]. The cross-boundary governance refers to two or more governance subjects, based on the pursuit of social public interests and public values, and joint participation and joint governance across the traditional

boundaries of public affairs activities.

“Synergetics” comes from the Greek language, meaning the knowledge of collaborative cooperation, and it is founded in 1971 by the famous theoretical physicist Herman Haken who comes from West Germany. The basic assumption of “Synergetics” is that new, well-ordered structures are generated from chaos and maintained by a constant supply of energy. Professor Haken defined the collaborative as the collective effect what interaction among the various components of the system or the overall effect^[9]. The cooperative governance theory is a kind of governance method of resource sharing, system optimization and joint action, which is set up in the governance system for the governance of public problems. It generally has the diversity of subject, coordination of action, diversity of authority and interaction of system and other characteristics.

With the development and change of economic society, the way of public governance is also changing. At present, the research of this paper has targeted cross-boundary collaborative governance theory which is the combination of cross-boundary governance theory and collaborative governance theory. With the advent of post industrial society, communication of cross administrative areas is becoming increasingly frequent, and the public issues that originally belongs to a single administrative region beyond sectoral boundaries and administrative divisions, becomes increasingly externalized and cross regionalized. The traditional theory of governance has been unable to adapt to the public problem of cross government organization governance, cross public and private areas of governance and cross regional governance requirements, but the theory of cross-boundary collaborative governance can achieve effective governance. Cross-boundary collaborative governance refers to the cross of the traditional boundary to participate in public affairs and joint governance, in order to avoid conflicts of interest, to achieve complementary resources and cooperation win-win situation, to promote the multi-governance subjects collaborative operation, to produce an orderly governance structure in the governance network. The use of collaborative means cross-sectoral cooperation, cross-cutting cooperation, cross-functional cooperation then achieve the dynamic process of governance objectives.

2.2 The humanities cooperation mode between China and Russia

The humanities cooperation refers to cooperation other than politics, economy, military, security fields and so on, or the field that related to the formation and influence of human quality and constitution, thinking and activities, quality of life, such as cooperation in culture, education, science and technology, sports, media, environmental protection, human resources training and so on.

2.2.1 Government-led mode

The Government-led mode refers to the advocacy and promotion of government agencies. With the development of China’s global strategy, the relation between China and Russian is getting better and better, and the humanities cooperation between the two countries needs to be strengthened. The humanities cooperation between China and Russia is not only an important aspect of bilateral relation, but also an important support for strategic cooperation between the two countries. In order to improve the level of humanities cooperation between China and Russia, boosting the role of cross-boundary governments is of great significance. From the end of the 20th century to the beginning of the 21st century, the governments of China and Russia promoted the way of humanistic cooperation, including the exchange of visits by delegations, the exchange of scientific research literature and journals, organizing and participating in international conferences and seminars, exchanging teachers and students to study, developing technical cooperation and innovation and so on. This mode is suitable for the direct exchange and cooperation between the governments of China and Russia, or the indirect organization of the two governments, through organizing and governing collaboratively humanities cooperation and by cross-boundary multi-governments to further improve the level of humanities cooperation.

2.2.2 Enterprise trade mode

The Enterprise trade mode refers to the humanities trade carried out by transnational enterprises. The cultural cooperation between China and Russia is not only dependent on the lead of government, but also cross-boundary trade exchanges between the two countries for the healthy development of humanities cooperation, which is also of great benefit. The transnational leading role of the government is indirect, not continuous, but for multinational companies, the most important thing is

the continuous transmission of humanities trade. As for the acceptance of foreign culture and related affairs, with the passage of time, is more likely to be accepted. This mode is suitable for multinational companies or large enterprises between two countries in the local humanities trade, through selling their own national or internal cultural resources, or through establishing mutual education institutions, or the direct docking communication between the two enterprises, or the strong cooperation between the two enterprises' R & D personnel to carry out humanities affairs cooperation. The direct docking exchange of enterprises compared with the two-way communication at the government level is simpler while communication is more smooth, and economic benefits are also more significant.

2.2.3 Folk cooperation mode

The Folk cooperation mode refers to the direct cooperation between the folk organizations of the two countries. With the long-term healthy and stable development of the strategic cooperative partnership between China and Russia, the cooperation has become increasingly active and the form of cooperation has also become diversified. For example, the Soviet Union Eastern European History Research Institute, invited Russian scholars to participate in the seminar held in international academic seminars almost every year since 2000. This mode is suitable for folk organization, folk groups, private individuals, or the direct docking exchange about people from two countries' bordering, completely simplifying the two-way process of the government level. Under the visual supervision of the two governments, it is entirely possible to organize the relevant humanities activities. This is indeed conducive to the enhancement of the emotional tone of the people from the two countries, the realization of the friendship between the two countries in reality, and the promotion of the development of humanities cooperation between the two countries.

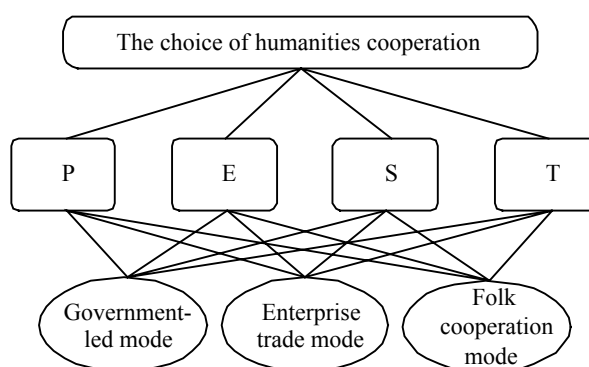
3 The choice of humanities cooperation mode between China and Russia

In this paper, the PEST model and the analytic hierarchy process (AHP) are combined to study the strong and weak combination strategy of the three cooperation modes mentioned above so as to give the corresponding weights about the three indexes under the four macro environments of P, E, S, T by AHP. Besides, this paper gives the corresponding strong and weak combination strategy of this mode by weighted average weight under the macro environment.

3.1 Determination of index weight

The weight of the three indicators refers to the relative importance of these indicators under the four specific environments, such as politics environment (P), economy environment (E), society environment (S) and technology environment (T). In this paper, AHP is used to give the corresponding index weight, according to the following steps:

- (1) Create a hierarchy model.



- (2) Construct the judgment matrix $A=(a_{ij})_{n \times n}$ in the hierarchy and calculate the eigenvalue and eigenvector.

Suppose that there are n factors in a hierarchy, $X=\{x_1, x_2, \dots, x_n\}$, and the weight of the criteria for the target is determined by comparing each other. Use a_{ij} to indicate the comparison of the i factor with

the j factor, then the equation $a_{ij}=1/a_{ji}$ can be obtained, $A=(a_{ij})_n * n$, and A is called the pairwise comparison matrix.

For the judgment matrix A , the paper uses the power method to calculate the eigenvalue and eigenvector to satisfy the $AW=\lambda_{max}W$. The λ_{max} is the maximum eigenvalue, W a normalization eigenvector corresponding to λ_{max} , and the component w_i of W the weight that sorted singly by the corresponding elements.

The value of the judgment matrix reflects the relative importance of each factor, and the 1-9 proportional scale (shown in Table 1) is used to assign value about the degree of importance. According to the Delphi method, the relative importance between the factors are compared, and the judgment matrix is obtained. Such as the politics environment P relative to the economy environment E is absolutely important, so P/E=9, obtain the judgment matrix as shown in Table 2, and calculate the matrix weights that are shown in Table 3.

Table 1 Digital scale and meaning

Scale value	Meaning
1	Comparing the two elements, have equal importance
3	Comparing the two elements, an element is slightly more important than another one
5	Comparing the two elements, an element is obvious more important than another one
7	Comparing the two elements, an element is strongly more important than another one
9	Comparing the two elements, an element is extremely more important than another element
2,4,6,8	If the difference of paired things fall in between, we can obtain intermediate value of the adjacent judgment

Table 2 P, E, S, T four order judgment matrix

	P	E	S	T
P	1	8	6	4
E	1/8	1	1/4	1/6
S	1/6	4	1	1/5
T	1/4	6	5	1

Table 3 The example of judgment matrix weight

	P	E	S	T	Weight
P	1	8	6	4	0.5155
E	1/8	1	1/4	1/7	0.0435
S	1/6	4	1	1/5	0.1029
T	1/4	7	5	1	0.3381

Then calculate the maximum characteristic value λ_{max} of the judgment matrix by the formula $\lambda_{max} = \frac{\sum_{i=1}^n (AW)_j}{nw_i}$, which is the product of the judgment matrix A and the evaluation weight W under the P, E, S, and T environments. The formula of AW is calculated as follow:

$$AW = \begin{pmatrix} 1 & \dots & 4 \\ \vdots & \ddots & \vdots \\ 1/4 & \dots & 1 \end{pmatrix} * \begin{pmatrix} 0.5155 \\ \vdots \\ 0.3381 \end{pmatrix} = \begin{pmatrix} 2.8333 \\ \vdots \\ 1.285975 \end{pmatrix}$$

Into the formula, obtain $\lambda_{max} = 2.8333/(4*0.5155)+0.1819625/(4*0.0435)+0.43043667/(4*0.1029)+1.285975/(4*0.3381)=4.1838$.

(3) Hierarchy single ordering, hierarchy total ordering and consistency checking.

Hierarchy single ordering:

The hierarchy single ordering refers to the weight value of all the elements of the layer relative to a element of a upper layer. The task of hierarchy single ordering can be attributed to the eigenvalues and eigenvectors of the judgment matrix.

Hierarchy total ordering:

The total ordering refers to the relative weight about each element of a judgment matrix against the target layer (topmost layer). The calculation of the weight uses the method which is from top to bottom, layer by layer synthesis.

This paper uses the method of combining PEST model with the AHP, and the criterion layer is the four kinds of environment of P, E, S, T. However, each environment has the same three indicators that can not be sorted, so the hierarchy total ordering is removed in the paper.

Consistency checking:

- ① Calculate the consistency index, the formula is $CI=(\lambda_{max}-n)/(n-1)$;
- ② Look up the table to determine the RI, which is corresponding average random consistency index (as shown in Table 4);

Table 4 The value of RI what is average random consistency index

n	1	2	3	4	5	6	7	8	9
RI	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45

③ Calculate the consistency proportion with which the formula is $CR=CI/RI$. When $CR < 0.10$, the judgment matrix has a satisfactory consistency, or makes an appropriate adjustment to the judgment matrix.

From the calculation of the maximum eigenvalue λ_{max} above, $CR=0.0688 < 0.10$, if meet the requirements, the above judgment matrix has satisfactory consistency.

According to the above method, the other three judgment matrices are calculated and the weight of the evaluation index in four specific environment based on the PEST model is determined by the consistency checking (as shown in Table 5).

Table 5 The weight of evaluation index under the PEST model

General goal	The PEST model	Indicators(Impact factors)and weight
The choice of humanities cooperation model between China and Russia	Politics Environment (P) (0.5155)	Government-led mode (0.7703)
		Enterprise trade mode (0.1618)
		Folk cooperation mode (0.0679)
	Economy environment (E) (0.0435)	Government-led mode (0.1662)
		Enterprise trade mode (0.7612)
		Folk cooperation mode (0.0726)
	Society environment (S) (0.1029)	Government-led mode (0.0841)
		Enterprise trade mode (0.2109)
		Folk cooperation mode (0.7049)
	Technology environment (T) (0.3381)	Government-led mode (0.2499)
		Enterprise trade mode (0.6548)
		Folk cooperation mode (0.0953)

3.2 Results and analysis

From Table 5, it shows that under the PEST model, the weights of the three influence factors (three cooperative modes) in each single environment are almost different. If only from a single environment perspective, as the politics environment, the weight of the government-led mode is the largest, which shows that the politics environment is in a good circumstance, and the administrative institutions that related to governments have greater impact on humanities cooperation between the two countries. However, under the economy environment and technology environment, the weight of the enterprise trade mode is the largest, which shows that cross-boundary enterprises and other large enterprises have better roles in promoting the humanities exchanges and cooperation for the two countries under economic prosperity or technological innovation, transnational corporations. Then, under the society environment, the weight of folk cooperation mode is the largest, which shows that in the context that the unprecedented development of society environment, folk organizations, non-profit organizations and so on have a great significance on the promotion of humanities cooperation between the two countries.

However, the three modes proposed in this paper do not only exist in a specific environment, because the country itself is a combination of a variety of environments at the national level. Therefore, the paper hopes to reach such a strong and weak cooperation mode strategy, and this strategy can be adapted to a great environment integration at the national level. Since this paper is not to pursue accuracy when the pattern selection strategy given, such as selecting one and discarding the other, it aims at giving a fuzzy mode selection strategy that replying one and the others to assist. Thus, through a weighted average approach, this article gets such a strong and weak combination strategy. Based on these above logic, weighted average is computed about the results what shown in Table 5, as shown in Table 6.

Table 6 Evaluation indicator weighted calculation results

General goal	Indicators(Impact factor)	Weighted calculation results
The choice of humanities cooperation model between China and Russia	Government-led mode	0.49746443
	Enterprise trade mode	0.35960959
	Folk cooperation mode	0.14292598

From Table 6, it shows that the fuzzy mode selection strategy adopted by the weighted average method plays a leading role under the government-led mode at the national level, while enterprise trade mode and folk cooperation mode play a supporting role. The strategy shows while China and Russia are getting on humanities exchange and cooperation, the government and the relevant administrative agencies play a very important role, which can be regarded as the policy driver and cooperation pioneer. According to the data, large enterprises and multinational companies can play a better role in promoting the government driving, and this also shows that with the relevant policy supporting and the government agencies approval, enterprises through humanities trade to earn foreign exchange, at the same time, the domestic ideology can continue to external delivery. In spite of the data, folk institutions and cooperative organizations have little effect on the humanities cooperation between the two countries, but their function can not be underestimated. In any country, the people are related to the prosperity and prosperity of the whole country, which also shows that the effect of the people is great, and the exchange and cooperation of the people should be actively promoted, truly exerting the power of the people.

As for the above, this paper gives the fuzzy combination strategy which should promote the application of three cooperation modes in the whole, with a view to promote the humanities cooperation between the two countries continue to move forward steadily.

4 Humanities cooperation promotion strategy between China and Russia based on the cross-boundary collaborative governance theory

In view of the above-mentioned fuzzy combination of strong and weak strategy the Government-led mode based, supplemented by the Enterprise trade mode and the Folk cooperation mode, relying on cross-boundary collaborative governance theory, this article mainly gives relevant improving countermeasures and suggestions from the aspects of government and non government level.

4.1 Enhancing the leading forces of government departments

Through the two sides of the government's multi-faceted cooperation and relying on cross-boundary collaborative governance theory, the humanities cooperation between China and Russia is further enhanced. Government departments as a key force in the process of the humanities cooperation between China and Russia, should actively drive the willingness to cooperate cooperation among the non-governmental sectors, and vigorously promote the healthy development of cooperation between the two sides. For example, the regular meeting between Chinese and Russian Prime Minister, the leading role played by the two countries in pragmatic cooperation and in promoting dialogue on important areas of humanities has indeed improved. However, humanities cooperation is the most important component of bilateral relations. In order to expand and deepen the comprehensive strategic cooperative partnership between China and Russia, the two sides should further improve the regular meeting between Chinese and Russian Prime Minister, deepen cooperation in this field and implement

the ‘Humanities Cooperation Action Plan between China and Russia’.

4.2 Strengthening the participation of non-governmental organizations

Based on the cross-boundary collaborative governance theory, the unofficial channels and ways of humanities cooperation between China and Russia should be further improved and strengthened. Unofficial humanities cooperation shows greater vitality than organized exchanges and cooperation with cross-boundary governments.

Therefore, adhering to the official and folk humanities exchanges and cooperation exist together and are equally important, providing official support and policy guarantee for the two sides to carry out cultural exchanges and cooperation, vigorously carry out humanities exchanges and cooperation, actively support the folk groups go out, and constantly expand humanities trade. For example, pay attention to guiding and driving the action of the folk groups, which attracts more participation of non-governmental organizations in the humanities exchanges and cooperation between the two countries so as to achieve the official and folk collaborative purpose; Pay attention to strengthening folk humanities exchanges and cooperation between the two countries so as to enhance intercultural collaboration ability; Pay attention to integrating folk humanities cooperation resources, classifying management, and enhancing the degree of exchanges and cooperation.

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An Empirical Study on the Intention for a Second Child and the Demand for Childcare Policies of Reproductive-age Chinese People *

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Abstract As China now highly risks slipping into a “low-fertility trap”, in 2015 the Chinese government unveiled the “universal two-child” policy to raise the fertility rate and tackle problems such as population ageing. This policy, however, enjoys no smooth implementation because a number of men and women of reproductive age choose to not have a second child for their concern about problems such as childcare. Through questionnaires and other research approaches, this paper tries to find out the intentions of having a second child of the reproductive-age population and studies some relevant factors affecting the intentions of a second child. Among all the factors, family time cost, economic cost, family support, social resources, and government services concerning childcare are highlighted in the survey. The paper also surveys on the demands of the reproductive-age population for second-child policies, in particular child care policies and thus finds the gap between the existing situation and people’s demands. On this basis, the paper provides targeted recommendations for childcare policies in China.

Key words “Universal two-child” policy, Childcare policies, Fertility rate, Reproductive-age

1 Background

In the early 1970s, the Chinese government put the index of controlling the population growth into the national economic development plan for the first time, and began to vigorously promote the basic national policy of family planning: to promote “delayed marriage and delayed child bearing, fewer and healthier births” At the beginning of 1980, the Party Central Committee put forward the policy that “a couple can only have one child”. In November 2011, a new policy in China began to implement: couples are allowed to have two children if both parents were the only child themselves. In December 2013, China announced a partial policy relaxation that allows couples to have two children if one parent is an only child. In October 2015, the Eighth Plenary Session of the CPC put forward: “adhere to the basic national policy of family planning and actively carry out the response to population aging, the implementation of a comprehensive two-child policy”, the policy on January 1st, 2016, officially began to implement.

In November 2015, Yang Wen-zhuang, who directs the National Health and Family Planning Commission’s grassroots guidance department in China, pointed out in an interview with the media : “At present, there are about 90 million pairs of couples meet the requirements of two-child policy, 60% of whom are women over the age of 35, 40 up and down each half, and the proportion of urban and rural areas is similar”.^[1] He also predicted that: in the next few years, the birth population will increase to some extent. The highest year is expected to be more than 20 million people. However, the ordinary people had a negative attitude towards the two-child fertility policy since the family economic pressure, two children burden, social support measures kindergarten service is not perfect and other reasons to make two children fertility “is out of reach.” Two-child fertility policy for couples where either the husband or the wife is from a single-child family began in 2013, at the end of October 2015, there were a total of 1.85 million pairs of couples applied for permission to have a second child, only accounted for 16.8% in 11 million pairs of policies in line with the policy, far below the national health and family planning Commission estimates. Then, according to the 2015 population birth rate data released by the National Bureau of Statistics, the birth population did not increase but fall. Xi Jin-ping, the General Secretary of the Communist Party of China, made it clear at the Fifth Plenary Session on the

* Financed by Fundamental Research Funds for the Central Universities: A Study on Second-Child Fertility of Population and Its Social Policy Response in China (Project No.: ZYGX2016J226).

“13th Five-Year Plan” that the negative effect of the universal two-child policy is influenced by two main reasons which are the non-significant effect of the alone two-child policy and the significant population aging which has been lower than the world average level has led to a reduction in the labor force. Yao Mei-xiong, a demographic scholar, mentioned that “There is no doubt that the alone two-children policy fails to yield major gains, and this sounded a warning bell that if the implementation of the universal two-child policy does not learn lessons to do supportive measures, it may also do not work well.”^[2]

In such a background, this paper focuses on the relevant questions: What is the status of the second child of the childbearing age in the context of the “universal two-child” policy? What is the current situation of child care in China? Can we meet the needs of the population of childbearing age? What policy improvements should we make to childcare?

2 Literature review

The analysis of intentions of reproductive-age population abroad mainly comes from three aspects: individual, family and society. On the personal side, studies have shown that fertility desire is related to personal education, family background and age, occupation, and so on. For example, studies have shown that the more educated females are, the more likely they will be to have more children.^[3] On the family side, the intensity of childbearing is related to the support rate of family members. This series of studies due to the traditional concept of family factors, mainly center on the Asian countries. In social relations, the degree of support for child rearing will also affect fertility.

Most of the research on fertility desire abroad is concentrated on the micro level, and the research is more deep-going. In reviewing the domestic literature, it is not difficult to see that most of the literature research adopts a comprehensive perspective, including economic and social policies, and expects to get a more reliable conclusion.^[4]

Most of the domestic literature to take the following four perspectives to observe the impact of fertility factors. Firstly, the economic base determines the intentions of fertility. Zhou Lian-fu pointed out in the study that family income and economic structure have a great influence on fertility desire.^[5] Secondly, changes in fertility policy affect the actual fertility rate. The one-child policy had formed a kind of subtle culture, which was transmitted by the parents to the children. The inhibitory effect of the two children’s fertility on their children was obvious. Thirdly, the level of social security affects the will to bear children. Kang Yi did an empirical study with the social security level and birth rate data of 1899-2010 years, and concluded that the promotion of social security level will reduce the birth rate.^[6] Fourthly, the study on the willing of the mobile population. Studies have shown that a large number of migrant workers, who are created by the special national conditions, procreation not for age gender and so on. The main factors affecting the fertility desire is local welfare insurance, marital status and so on.

The above literature research has provided some reference for the research of this paper. However, with the introduction of the “universal two-child” policy, the past research on the application of the new policy to adjust the fertility of the population of childbearing age is clearly no greater feasibility. Hence, new surveys, analyses, and even new definitions are needed to accommodate the current new policy environment. However, there are still cognitive vacancies in the academic circles for the change of childbearing intention brought by the “universal two-child”, and it is still in its infancy. This study aims to make up for the vacancy in this new environment and provide more data reference and insights for the current policy environment.

3 Methods

The sample for this study consisted of most of the participants in an intensive study of reproductive-age Chinese people in Sichuan and Chongqing. Since the present health care and reproductive age situation in China, the analysis treats people between 20-50 as bearing population. Most of the data for this study were collected by females. They take up 67% in this study. The interviewers mostly involved were ethnic Han and unbelief. The majority of respondents have received undergraduate education, work in enterprises and institutions, have small mobility, basically in the

lower middle-class family, and the vast majority of parents are willing to provide help in child-caring.

The content of this study is divided into three parts: firstly, we measured the interviewers' personal information. This part investigates basic individual information including gender, age, ethnic group, religion, economics, education background, job, marriage and family. Then, the measurement of individuals' intention of fertility desire was done. This part includes some factors such as the number, gender, the purpose of a child that parents want and the present situation they are in. Finally, we also measured present situation of child caring. This section is divided into five sections, respectively, from the individual, family, industry, enterprise, community and national policy to investigate the status of child care in China. This study divided current situation of social industry into three parts: the measurement of the domestic industry, child care industry and infant products industry. The survey was conducted with convenience sampling and online questionnaire. The questionnaire has been distributed over 200 copies, and there are 200 valid questionnaires.

4 Results and analysis

4.1 Measurements of fertility willingness of having two children

Through this survey, we collected the ideal numbers of children a couple intends to have without considering any limitations. As a result, 77.5% people intend to have 2 or more children. Therefore, we can get that most families have the strong will to have two more children and most people have planned to have two more children. Meanwhile, we designed a question which is to focus on the parents who already have had a child: "Do you have the plan to have a second child?". However, the answers that we collected are completely opposed to the answers we collected before. There are 31 parents refusing to born a second child among 37 participants, which represent the 83.78% answers to this question (we name this result as "the Actual Two Child Fertility Expectations"). Accordingly, "the Actual Two Child Fertility Expectations" is far smaller than "the Ideal Two Child Fertility Expectations" in the real situation that parents already have a child.

Why "the Ideal Two Child Fertility Expectations" is way different to "the Actual Two Child Fertility Expectations"? We think that it's the plenty of realistic reasons in the society that slow the path to having a second child: the family financial burden is too heavy; the time spent on caring a single child is too much; the national policy supports are too weak; the social welfare facilities are under construction... . Based on the findings of this survey, we focused on child care and studied how inadequate child care has led to a low fertility rate of having a second child. We also hope to make recommendations for our child care and raise the two child fertility rate to solve the current population problem through this survey by understanding deficiencies of our current child care.

4.2 Analysis of child care in individuals and families

In order to adapt to the situation of our country, this study first considers the subject of child care: individuals and families. And there comes to the following problems for these two when providing support for child care: whether the time for a person to care and accompany a child is abundant; whether the person has the knowledge and skills of child care; how many family members can give full-time child care; whether the families are going to give less care to the first child when they have their second child; What would happen to the cost of living and basic necessities if two children were brought up.

Analysis of the data shows that there are only 6% parents can take full-time care of their children; most people can only narrowly or not be able to take care of their children; the people who have more parenting knowledge and skills only accounted for 6.5% of the total participants. This shows that there are not many people who have enough time and are fully competent to take care of their children. In the matter of families, no family members can give full-time child care accounted for 37.5% and 67.5% of participants think that the birth of the second child will result in an appropriate reduction in the care of the first child. People who think raising the second children will not cause too much additional cost only accounted for 10.5% of the participants and most people agree that the second child will greatly increase the family financial expenses.

Take the data analysis of individuals and families child care into account, we can get such a conclusion: most individuals and families lack of time and knowledge to take care of children and the second child's arrival will undoubtedly cost more time and financial expenses.

4.3 Status analysis of child care industry

Status analysis of housekeeping service provision

Housekeeping service refers to the socialization, professionalization and marketization of some family affairs. In this study, five problems were set up to focus on the needs, costs, trust, difficulty of finding a housekeeper and the satisfaction of the whole housekeeping service. From the data we collected, most people do not choose the housekeeping service considering not only the high cost of housekeepers but also the distrust of the housekeepers' ability of providing safety and health care to children. Meanwhile, 69% people think it is difficult to find a desirable housekeeper from the market. Only 12% people think housekeeping service in China is mature now.

The previous data shows that the biggest threat faced by the housekeeping industry now is the distrust and the high-cost expectations of the employer. While the child care gives a heavy burden to personal and families in the aspect of time and money, it is difficult to seek desirable housekeepers in housekeeping service industry. Also, the housekeeping service provision can not meet the needs of child care in recent China.

Status analysis of preschool industry

The preschool service mainly refers to the service which provides kindergarten service and the commercial trusteeship service. The investigation in this industry mainly includes seven questions in these two aspects: kindergartens and preschools. We investigated the surrounding kindergartens which we can choose about their amounts, properties, cost, quality, how much parents' trust can be given to as well as the level of difficulty to find their addresses, which are the main specific questions we focused on.

51.1% people think that the number of kindergartens near the residence is big, but 83% people think that the kindergarten teachers are not qualified enough and more than 66% people think that the kindergarten fees are high. This shows that the current number of kindergartens is acceptable, but the quality is uneven and the fees for the public is relatively high. So the public satisfaction with the overall service of the kindergarten is not high. 38% participants think that the commercial child care institutions nearby are less except kindergartens and most participant (62% participants) worried about those institutions while people who think it's not easy to find preschools accounted for 44.5%. These data show that the current number of kindergarten institutions is relatively small and there is a considerable crisis of confidence. Also we can learn from the previous study of 'the Chinese Women's Green Book' of WSIC: under investigation towards parents in Beijing and Shanghai, there were 55.3% and 69.8% parents thinking that children under the age of 3 are suitable for kindergarten, there were 24.8% and 23.9% parents having no experience of finding a kindergarten successfully, who mainly represent the part of workers and low-income families. We can easily see that the current child care service development is lagging behind, the overall number needs to be increased, the cost should be reduced, the quality should be improved. As a fact, the parents who plan to have two children but have no time to care have difficulty finding satisfied preschool services.

Status analysis of infant products industry

As for infant products, the designed problems of our survey are less which mainly related to the quality and price of infant products. The results of the survey are quite concentrated: 78% people think that the price of infant products is high while only 3% people think that the price is low; 59.5% people think that the high price infant products have low quality in general. These data show that, infant products, considered as the parenting necessities, cannot meet the public satisfaction with the price and the quality. These products with low quality under high investment reduce families' will to have a child.

4.4 Status analysis of child care support from enterprise, community and policy

During the work time, the child-bearing age people's actual fertility rate is affected by the convenience or other factors of outside living conditions, which mainly consists the following three questions: whether they can get the relevant child care support from the enterprise; whether the child care facilities and service support in the community is available; whether the policy has a positive support towards the people of child-bearing age having a child.

Measurement of the status child care support of enterprises

How does the child care support of enterprises influence the fertility will of the child-bearing age people who are at work?. This study focused on three specific questions of enterprises in particular: whether enterprises provide baby rooms, whether they give child care services, how difficult to apply for a leave for children’s sick. By knowing enterprises’ support for their child-bearing age staffs to care their children, we tried to find out their attitudes towards their employees having a child.

From the effective recovery data, only 12% and 9.5% enterprises of the participants we surveyed provide baby rooms and child care services. When you need to leave and go home to take care of children, enterprises which you are easily allowed to leave from only accounted for 9%. These data indicate that, at present, a large number of enterprises in the aspect of child care have not played a strong supporting role for the child-bearing age people. Therefore, lacking enterprises’ support has reduced the fertility willingness of the child-bearing age people.

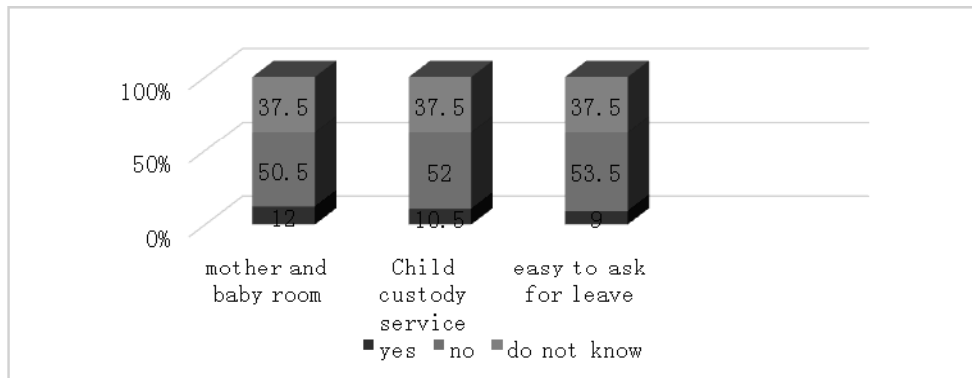


Figure 1 Statistical chart for child-rearing of enterprise support(percent,%)

Measurement of the status child care support of communities

Child care has a strong dependence on the living environment, especially the construction of welfare facilities such as children’s playground in the community, which affects the convenience of child care. This survey stressed two parts: children’s playground in the community and facilities of child care services, neighborhood rapport and the cultural atmosphere where and whether they can give the children a temporary care.

The recovery data show that the percentage of facts of the participants’ communities: there are 44% communities have child playing facilities, which is a large number. However, there are only 8% communities have free or low-cost child care services, which means the situation is very optimistic. Most people (69.5%) do not entrust their neighbors to take care of their children temporarily. Accordingly, we can infer that most of the communities have been equipped with children’s recreational facilities, but the child care services have not been paid attention to. Because of distrust and other reasons between neighbors, people will not entrust their neighbors to take care of their children. Lacking strong back-up support in the community when parents are too busy to take care of children, their child fertility will may be reduced by these reasons.

Measurement of the status child care support of policies

Family policy is the branch of social policy, which affects families directly or indirectly through various policy means. It is deeply influenced by social policy and population policy, and these policies make the family, society and country adopt each other to develop.^[7] This study measures the status child care support of policies from two specific questions, the duration of maternity leave and the evaluation of supportive policies. 46% participants think maternity leave is a little bit short and 57.5% participants didn’t rate a lot on current child care support policies. From this, we can infer that the current policies are ineffective in supporting child care, which the public is not satisfied with. Also, it is highly likely to reduce the fertility will of the child-bearing age people.

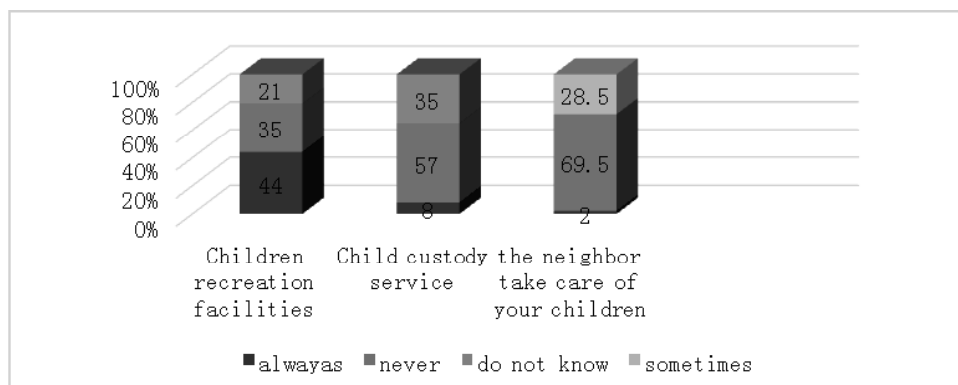


Figure 2 Statistical chart for child-rearing of community support(percent,%)

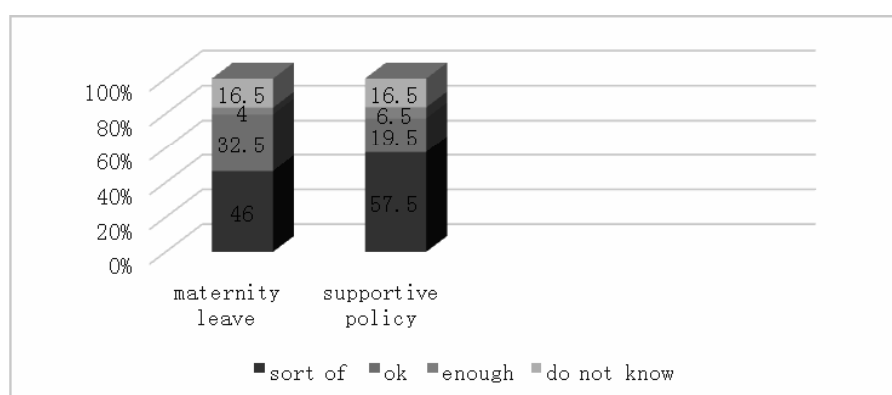


Figure 3 Statistical chart for child-rearing of policy support (percent,%)

5 Conclusions

Through this investigation and analysis of 200 people of child-bearing age, we found that the actual two child fertility expectation is low. The high cost of child care, the unsound government policy and many other problems reduce the family's two child fertility will. As can be seen from the above data, the ideal two child fertility rate of child-bearing people is higher, but due to various realistic reasons, the actual two child fertility expectation is far lower than this. There is not enough time and energy for parents and families to take care of their children, and it is thought that raising two children costs more. There are also serious problems such as lack of trust and cost too much in the industry of housekeeping and infant care. Among them, the industry of infant care is more immature and the number of kindergarten institutions is small. Infant products always have a high price with low quality instead. The overall development of the industry is not mature, high costs make it hard to realize the ideal the "two children fertility rate" dream. On the one hand, enterprises and communities cannot provide better child-care facilities. On the other hand, it is also difficult for policies to provide strong child-rearing support for people.

Based on the above findings, this paper proposes some suggestions for child-care: first, the development of housekeeping, child care and infant products industry needs to be specified while qualification, necessary training and supervision of the industry is requested in order to improve the overall quality of the industry and reduce the public trust crisis. Then provide support for the individuals and families who have insufficient parenting time for two children. Second, strengthen industry supervision, crack down the virtual high price of child care products and services in markets, issue relevant policies so the industry prices will be controlled within a certain standard. Suggest these industries provide different types and levels of services and products to ensure that most families with

two children find affordable parenting products and services. So, it can solve the current problem which raising a child is expensive. Third, the government should discount infant products or give families with two children tax relief or other means to share the families' high-cost burden, then encourage two children fertility rate. Fourth, improve the enterprise, community welfare facilities constructions, create a good atmosphere for the community, give a good environment to people who raise two children. Fifth, improve the policy system related to the two children fertility, extend maternity leave and reduce the burden of raising two children, in order to reduce the future worries of two children family.

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Legislative Regulation of Non-Profit Organizations in China *

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Abstract In recent years, non-profit organizations (NPOs) have played an increasingly important role in the social life of China, giving prominence to the necessity and significance of their legislative regulation. Legislation of NPOs in China is characterized by coverage of a wide variety of administrative levels, concentrated legislative contents and monotonous jurisprudence logics. In practice, it shows problems such as low legislative standard, crude content, poorly integrated and ill coordinated legal regulations, lack of provisions on internal governance structure and external supervision mechanism of NPOs. In the future, the legislative level of legal norms of NPOs should be enhanced, relevant supplementary legal norms be perfected, provisions on internal governance structure of NPOs be improved, internal governance mechanisms of NPOs be established and strengthened with perfection of external supervision mechanisms, and oversight on the part of government and other stakeholders be reinforced. Meanwhile, it is imperative to improve legislative regulations on taxation of NPOs and establish a sound, rational and effective taxation system for NPOs.

Key words NPO, Legislative regulation, Internal governance, External supervision

1 Introduction

As an academic concept, non-profit organization (aka non-governmental organization, the third sector and civil society organizations) gained wide currency with researchers all over the world in the 1980s and attracted Chinese scholars' attention in the early 1990s. On the whole, NPOs of different countries are all informed with such basic features as non-governmental, non-profit, self-governance and voluntariness (Wang Ming, 2010^[1]). However, due to influences of economic levels, political regimes, judiciary systems and cultural traditions of different countries, NPOs also take on divergent country-specific characteristics. This paper will focus on the status quo of legislative regulation of NPOs in China from the perspective of jurisprudential study to reveal the existing main problems and propose ways of improvement in the future.

2 Necessity and significance of legislative regulation of NPOs

In recent years, legal management aiming at strengthening and promoting in-depth development of social organizations has become an important way to improve China's state governance system and foster modernization of governance capabilities. In 2013, the third plenary session of the 18th CPC Central Committee released *the Decision of the CCCPC on Some Major Issues Concerning Comprehensively Deepening the Reform*. The document has proposed to fully activate the vitality of social organizations by further pushing them to define rights and responsibilities, govern themselves by laws and make details transparent, and speed up efforts to form a modern social organization system which separates government administration from commune management in a bid to enable them to play a bigger and more active role. In 2014, the fourth plenary session of the 18th CPC Central Committee deliberated and passed *the Decision of the CCCPC on Some Major Issues Concerning Comprehensively Advancing the Rule of Law*. The document has mentioned several times to bring the role of "social organization" in reform and development into full play, particularly to "advance rule by law in multiple levels and fields". Attaching importance to the role of "social organizations" and strengthening their legal governance has become an important topic for China to comprehensively advance rule of law. It becomes imperative to define the policy-oriented concept of "social organization" in the legal system and translate it into a specific legal concept. In the Chinese context,

* Financed by the Fundamental Research Funds for the Central Universities of China (Project No.: ZYGX2016J233).

“non-profit organization” is the corresponding legal concept of the policy-oriented parlance “social organization”(Wu Zhi-liang, 2014^[2]).

Non-profit organization is a non-governmental, non-profit, voluntary and self-governing organization led and set up by a natural person, legal person or other organizations. As a product of a specific historical period, NPO has undertaken a crucial and arduous historical mission since its very birth(Shi Bai-nian, 2006^[3]). NPO has taken on a brand-new shape of a third sector outside of government and market and participated in economic development and social governance flexibly as a relatively independent social force. It holds critical importance for the development of NPOs to complete legal reconstruction of social organizations from the perspective of “legislative regulation of NPOs”. The reasons are as follows. First, in terms of the source of rights of the organizations, NPOs are an embodiment of citizens’ “rights of association” in nature. Freedom of association is one of the basic rights endowed to Chinese citizens by the *Constitution of the People’s Republic of China*. Ensuring realization of citizens’ basic right is thus inherent in the concept of legislative regulation of NPOs. Secondly, in terms of organizational functions, as one of the important entities of national economic development and social governance, NPOs have a myriad of functions including activating and pooling social resources, supplying (quasi) public services, promoting societal self-governance and advancing social development, etc. Thirdly, in terms of limitations of organizations, NPOs are prone to give rise to such problems pertinent to “voluntary failure” as paternalistic work style of administrators and loss of organizational credibility based on their own primordial features such as “owner absence”. Reinforcing legislative regulation is conducive to solve voluntary failure problems brought by owner absence. Currently, in light of the reality of China’s existing legal system lagging behind NPOs’ development needs, a number of Chinese scholars have repeatedly suggested conducting all-round, effective legislative regulation on NPOs by building a NPO legal system(Wang Ming,2013^[4])that places equal emphasis on cultivation and regulation(Wu Zhi-liang,2014^[5]).

3 Status quo of legislative regulation of NPOs in China

In terms of legislative regulation of existing NPOs in China, it has the following features.

Firstly, the legislation covers a variety of administrative levels. In alignment with the top-down Chinese legal hierarchy, NPO-related regulations are in place from the constitution and laws to administrative regulations and departmental rules. First of all, it is explicitly specified in Article 35 of *the Constitution*, China’s fundamental law, that “Citizens of the People’s Republic of China have the freedom of speech, publication, assembly, association, parade and demonstration”, which provides basic stipulation of citizens’ right of association and constitutes the constitutional origin of NPOs. Secondly, at the level of basic laws, *Charity Law of the People’s Republic of China(Charity Law)* was officially enacted at the fourth session of the 12th National People’s Congress on March 16, 2016.As the first basic and comprehensive law for China’s public welfare and philanthropy sector, the *Charity Law* has defined and standardized fundamental issues in the philanthropy cause in ten aspects including charitable organizations, charitable fundraising, charitable donations, charitable trusts, charitable property, charitable services, information publicity, promotional measures, supervision & management and legal responsibilities. It has boosted the development of China’s public welfare cause to a great extent. In particular, it has exerted profound influence on the standardization and development of China’s NPOs. For instance, in terms of the perennially controversial and confusing concepts of “NPO” and “charitable organization”, Article 8 of the *Charity Law* explicitly stipulates that charitable organization is a non-profit organization that is established according to law, complies with the *Charity Law* and aims to carry out society-oriented charitable activities. On the one hand, this legal definition makes the concept of “non-profit organization” finally recognized in the area of basic law; on the other hand, it is a testament to the opinion advocated by scholars that “Non-profit organization consists of charitable organizations as well as non-charitable ones”(Jin Jing-ping, 2014^[6]. Meanwhile, Provision 2 of Article 8 stipulates that charitable organizations are allowed to adopt organizational forms of foundation, social group and social service institution, which serves to once again ascertain and define the connotation and denotation of “charitable organization”^[7]. In addition, the approved *Charity Law* has answered a myriad of practical questions. For example, it has

standardized individual's public fundraising behaviors that have been practically in existence for a long time and calls for urgent regulation by specifying that only charitable organizations which have obtained public fundraising eligibilities can carry it out. Meanwhile, the concept of "non-profit legal person" is specifically provided for in Section 3 of Chapter 3 "Legal Person" of *General Provisions of the Civil Law of the People's Republic of China* that came into effect on October 1, 2017. Article 87 of *General Provisions of the Civil Law* defines the non-profit legal persons as a legal person that is established for public purposes or other non-profit purposes and does not allocate its profits to sponsors, founders or members. Meanwhile, it outlines basic types of non-profit legal persons which include government-affiliated institutions, social groups, foundations and social service organizations, etc. while maintaining consistency with classifications of the *Charity Law* at the legislative level. Moreover, at the level of administrative regulations, *Regulation on Administration of Social Organizations*, *Regulation on Administration of Foundations* and others are all important norms regulating management of NPOs in China.

Secondly, the legislation has concentrated content. Before the promulgation of the *Charity Law*, China's legal norms on managing NPOs were mainly reflected in the registration system under "dual management system" and formed a closely-knitted administrative regulation system for NPOs. The so-called "dual management system" refers to the fact that three types of traditional social organizations in China, i.e., social group, private non-enterprise unit and foundation, which are subject to joint management of the registration authority and competent business authority from applying for registration of establishment to carrying out activities. This legislative idea was continued from *Regulation on Administration of Social Organizations* in 1989 to the revised version in 1998, and then to *Regulation on Administration of Foundations* in 2004 (Jin Jin-ping, 2012^[8]). During a specific historical period, this "dual management system" showed a certain rationality and advantage. Separate management not only alleviated the paucity of oversight capability on the part of the registration authority, but also paid attention to business familiarity on the part of competent business authority to create synergy to the satisfaction of all parties (Jin Jin-ping, 2012^[9]). Looking back on relevant legislations for China's NPOs in this stage, we can find that it mainly centered on legislative regulations for registration. For instance, there were 40 articles in *Regulation on Registration and Administration of Social Organizations* enacted by the State Council in 1988 and all of its major clauses aimed to standardize registration of social groups. There were 14 articles in total in *Regulation on Administration of Foundations* enacted in the same year and all of them revolved around entry standards and designated management departments of various foundations. The core contents of *Interim Regulations on Registration Administration of Private Non-enterprise Units* and *Regulation on Registration and Administration of Social Organizations* enacted on September 25, 1988 were both about standardizing the registration system of relevant organizations.

Thirdly, the legislation has monotonous jurisprudence logics. The legislative system of NPOs is relatively sketchy and monotonous in comparison with sophisticated and self-consistent logics of other laws. Take the relevant legal provisions for fiscal and taxation systems of NPOs as an example. As is known to all that it has been prescribed in the fiscal and taxation systems of various countries that charitable organizations and public donations are eligible for such preferential policies as tax breaks and pre-tax deductions. Tracing its jurisprudence basis (Jin Jin-ping, 2014^[10]), it means that the part of tax resource at government's discretion to pay for public services is handed over to the civilian-run NPOs, constituting covert transfer payment from the government. In other words, resource integration and allocation can be achieved by way of benign competition of NPOs so as to foster and materialize self-governance of society and enhance the overall governance ability (Jin Jin-ping, 2014^[11]). According to the principle of correspondence between rights and responsibilities, the extent of rights enjoyed is commensurate with the extent of obligations undertaken. Therefore, NPOs should be given obligations of disclosing in formation and accepting external supervision which are commensurate with their rights based on the difference in tax preferences they enjoy. This also means a need to distinguish different NPOs from one another in a bid to determine which level of tax preference policy they should enjoy. However, in the current legal system of NPOs, provisions for non-profit organization, charitable organization and tax-free organization in a broad sense are relatively sketchy,

without effective distinction, limitation and constriction.

4 Dilemma of legislative regulation of NPOs in China

Currently, there are a number of drawbacks in the legislative regulation of NPOs in China. They are mainly reflected as follows.

Firstly, the legislative regulation has low standards and crude contents. Despite of the provisions of *the Constitution*, *the Charity Law* and even *the General Provisions of the Civil Law*, the overall legislative level of legal system of NPOs tends to be low, and relies heavily on administrative regulations issued by the State Council and departmental rules with strong underpinnings of administrative controls in practice. This results in deficiency of authority and lack of solid legal foundations for a long time on the part of the legal system of NPOs. The active legal system content on NPOs is sketchy as well, since it typically focuses on entry and registration of NPOs rather than paying attention to the details in management of NPOs. For example, aside from citizens' freedom of association in the constitution, articles for safeguarding and monitoring basic rights of non-profit legal persons are missing in other legal norms. For another example, the existing legal system has no legislative regulations on government purchasing public services from NPOs, while the *Government Procurement Law* is not dedicated to NPOs and *the Guiding Opinions of the General Office of the State Council on the Purchase of Services by the Government from Social Forces* is not so practicable (Wu Zhi-liang, 2014^[12]). In addition, China's tax policies for NPOs are not systematic, clear-cut and well-defined at present. In terms of content, a few tax preferential policies are applicable to NPOs, and most of them focus on income tax, leaving property tax, commodity tax, house tax and land use tax uncovered. In terms of effect, the tall order and complicated procedures for enjoying tax preference make it difficult for NPOs to obtain tax breaks.

Secondly, the legislative regulation is poorly integrated and ill coordinated. In the current legal system of NPOs, legal norms are loosely scattered in legislations at various levels and hierarchies. There is not only a lack of consistent jurisprudence logic, but also a scarcity of corresponding matching and alignment. There are even considerable conflicts between certain legal norms in terms of content. The reason lies in that there is no unified law in the current system to standardize and define fundamental issues of NPOs, leading to separation and scarcity of necessary coordination between legal norms scattered in various administration regulations and departmental rules. For instance, there is a conflict between the entry system for NPOs under the dual management system and the freedom of association in the constitution (Wu Zhi-liang, 2014^[13]). As a product of a specific historical period, the dual management system seems reasonable, but it actually raised the bar for setting up NPOs substantially by adding a requirement for NPOs to look for appropriate competent authorities in charge of their businesses at the outset of establishment, resulting in some NPOs to be set up by grass roots, or as corporations or overseas organizations. In addition, if we carry out in-depth analysis on the dual management system, it is not hard to find that the legislative idea of the system actually originates from differentiation of functions of different government sectors. Competent authorities in charge of respective businesses are likely to indulge in a nonchalant mindset and take overly rigorous standards to review applications for establishment of social organizations, which is rather detrimental to their development (Jin Jin-ping, 2012^[14]).

Thirdly, the legislative regulation lacks provisions on the internal governance structure of NPOs. The current legal system of NPOs has limited regulations really involved with the internal governance structure of NPOs and it mainly relies on partial administrative rules to roll out regulation. Although Article 12 of the *Charity Law* specifies that "charitable organizations should, based on the laws, regulations and articles of association, establish and perfect internal governance structures, and clearly define duties and authorities in decision-making, implementation and supervision when carrying out charitable activities", it only makes a declarative and programmatic provision without expanding on concrete internal governance structures in a specific article. For example, is it a must to set up a board of directors and a board of supervisors? What are the scale, staff composition, function allocation and roles of the two boards? In the current legal system of NPOs, aside from the necessities of setting up a board of directors and a board of supervisors being explicitly spelt out in *Regulation on Administration*

of Foundations, such a mandatory requirement is not found in NPOs of other forms. This manifests self-governance of NPOs, however, the lack of power allocation mechanism and necessary administrative regulations are bound to give rise to problems such as organizational dysfunction and voluntary failure in the course of NPOs' development, making the board of directors unable to play its due role and leaving the board of supervisors without foundations. These will all have an impact on NPOs' healthy operation and long-term development. For another example, there is also a lack of legal regulations for the status and function of decision-makers of NPOs. In particular, there is no explicit regulation on the obligations of the decision-maker. When it comes to practice, several articles of the company law are taken as a reference and the duties of loyalty and diligence of directors to their company are co-opted from corporate governance structure (Zhang Jian-wei, 2011^[15]). Nevertheless, the ambiguous and asymmetrical rights and obligations are prone to trigger all sorts of behaviors that do not make a clear distinction between public and private interests and abuse power, leading the NPO into a plight of governance. In addition, there is also a lack of corresponding legal norms for financial management and audit supervision within the NPOs, resulting in sub-standard fund use and management on the NPOs, which will influence their fundraising and social reputations.

Fourthly, the legislative regulation lacks provisions on the external supervision mechanism of NPOs. There is no sound external supervision mechanism for the Chinese NPOs. Firstly, in terms of government supervision, the government mainly supervises NPOs by administrative regulations, which has great subjectivity and randomness. Besides, apart from clear-cut regulations for entry in the early stage and registration of NPO establishment, there is a dire paucity of legal regulations for behavior surveillance and oversight of governance structure after NPO establishment. Secondly, in terms of supervision from the stakeholders other than the government, it is hard for relevant subjects like donors, beneficiaries and volunteers to conduct effective oversight on the NPO. Although the *Charity Law* has made detailed regulations on donors' donated property and performance of donating obligations, it only endows donors the right to enquire and duplicate materials pertinent to management and use of their donated properties in Article 42. The earlier *Regulation on Administration of Foundations* only has a general provision that "donors" have the right to "enquire about the usage and management of the donated property with the foundation and give opinions and suggestions". When it comes to the supervision right of beneficiaries, the current legal norms barely deal with it and only provide for preconditions and specific ways for relevant NPOs to accept donations in some administrative regulations. Although the *Charity Law* specifies volunteers' rights and obligations during charitable activities arranged by relevant NPOs, it does not confirm their right of supervision on NPOs. Thirdly, in terms of social supervision, although evaluation of NPOs has become an industry-wide practice, the current legal system does not provide detailed regulations regarding a third party's evaluation of NPOs. Besides, the current legal system has inadequate provisions on supervision by public opinion and media with impeded channels of practice, resulting in the fact that social supervision can only play a limited role (Zhang Jian-wei, 2011^[16]). Lastly, in terms of judicial supervision, it can be said that the Chinese judicial authorities almost have no avenues for and relevant regulations on oversight of NPOs, and thus are totally unable to form effective regulation and supervision.

5 The way out for legislative regulation on NPOs in China

According to Salamon, for a majority of countries, non-profit law is one of the most important factors which determine a non-profit activity and its degree (Thomas Silk, 2000^[17]). On the whole, China's current legislative regulations on NPOs remain immature and have a myriad of drawbacks such as generally low legislative level, imperfect legal system, lack of coordination between legal regulations, slapdash and perfunctory details of legal regulations, control surpassing governance in legal concept, etc. It is imperative to achieve transformation toward a better legislative regulation through reflection, innovation and drawing lessons on the basis of solving existing problems effectively.

First of all, it is imperative to advance the legislative level of legal regulation on NPOs and improve relevant supplementary legal regulation. Nowadays, China's judicial theory research concerning NPOs has become mature and a variety of NPOs are participating in and influencing social

life to a varying degree. It is thus essential to further improve people's perception and acknowledgement of NPOs by virtue of unified legislation. At the level of basic law, a stand-alone "non-profit law" should be formulated to standardize the subject, nature, legal status, management system, operational mechanism and supervision mechanism of NPOs in an all-round manner, incorporate various NPOs and their relevant causes onto the track of legalization, and improve other peripheral legal regulations according to its content. Some scholars have suggested borrowing experience of other countries and adopting a balanced and unified legislative model which integrates organization law and behavior law into a whole to construct a legal system of NPOs with the future civil code as the core, the NPO law as the lead and separate NPO law as supplement (Wu Zhi-liang, 2014^[18]). A unified NPO law can not only cater to and improve the cumbersome and dispersed practical demand of current NPOs, but also conserve legislative resources and avoid conflict and repetition within the legal regulation. Moreover, on the basis of solving and standardizing universal and common problems faced by NPOs by way of basic NPO law, it is also essential to enact and improve several separate laws concerning NPOs while further integrating and improving other substantive laws and procedural laws concerning NPOs to form an effective legislative regulation for NPOs (Wang Shi-qiang, 2012^[19]).

Secondly, it is imperative to improve regulations on internal governance structure of NPOs while establishing and perfecting their internal governance mechanism. The legalization of establishment of NPOs and their daily administration is the only route for them to achieve long-term and effective development. Improving legislative regulations on their internal administrative organs is a precondition to such an end. Effective regulations on internal governance of NPOs shall be formed by making rational designs for internal administrative organs, functions, task divisions and corresponding rights and obligations of relevant personnel, establishing an effective mechanism to actualize supervision and constrict among one another, and formulating efficient evaluation and incentive systems. For instance, specify the decision-making body and decision-maker of NPOs, clarify their duties and responsibilities, and provide approaches and guarantee measures for them to perform such duties and responsibilities according to the types of NPOs. Meanwhile, supervise and cause them to perform duties and responsibilities according to relevant punishment system. Establish internal watchdogs and legal norms from selection and appointment to functions, authorities and incentive and evaluation mechanisms to fully mobilize supervisors' initiative and achieve the goal of feasible and effective supervision. Moreover, there should be explicit regulations on the rights and obligations of internal staff and volunteers of NPOs. The guarantee measures should be given particular emphasis. Achievement of various tasks, actualization of organizational missions and personal career plans should be effectively combined to improve individual loyalty and enthusiasm to the organization and foster healthy and sustainable development of the organization (Zhang Jian-wei, 2011^[20]).

Secondly, it is imperative to improve the external supervision mechanisms of NPOs and step up supervision of NPOs on the part of government and other stakeholders. In the first place, it is essential to improve external supervision of NPOs on the part of government by defining subject identity of various NPOs and identifying their basic features on the basis of establishing the dominant position of NPOs as the third sector, carrying out legal adjustments to the entry systems of various NPOs, changing the current dual management system and basic feature of government's strong administrative management of NPOs in the past, and placing emphasis on government's authority in external supervision. In the second place, it is essential to improve external supervision of NPOs on the part of other stakeholders. For instance, attention should be paid to donors' exercise of rights. Donors' rights and obligations should be further specified to ensure their rights to know and enquire about donated properties and articles, and donors' right to know and give suggestions to NPOs should be improved. Beneficiaries should also be incorporated into the plural subjects of external supervision, with their rights and obligations specified and their corresponding right of supervision including enquiring and giving suggestions granted. Information publicity of NPOs should be strengthened and further transparency of property management and usage information is particularly needed. It is also important to have unimpeded avenues of supervision on the part of news media and general public and improve external evaluation mechanism (Zhang Jian-wei, 2011^[21]).

Lastly, it is imperative to improve legal tax regulation of NPOs and formulate a sound, rational and efficient NPO tax system. Firstly, based on recapitulation and reorganization of relevant concepts such as NPO and charitable organization from tax-paying perspective, demarcations of tax positions of different NPOs should be completed, particularly the demarcation over whether a NPO should be entitled to tax break and if so, what type of tax break it is entitled to (Jin Jin-pin, 2014^[22]). This means rational classification of and effective regulation on the types of legal persons including non-profit legal person in terms of structural division of basic legal persons in civil law (Jin Jin-pin, 2005^[23]). Secondly, even for NPOs legally recognized and eligible for tax breaks, differentiated tax preferential policies should be awarded in accordance with their different organizational activities and behaviors. Relevant provisions on tax preference for NPOs in Japan's *Legal Person Taxation Law* can be borrowed as a reference (Wang Shi-qiang, 2014^[24]). Thirdly, as to the questions of whether the NPO, subjects of donated property and beneficiaries are entitled to tax break and which type of tax break they are entitled to, they should be provided for explicitly in relatively high-ranking legislative regulations. As a major issue impinging on NPOs' existence and development, taxation is mainly mentioned in some documents and notices issued by Ministry of Finance and State Administration of Taxation, with a myriad of important details missing, thus awaiting regulation by higher-level legislations.

6 Conclusions

As scholars have suggested, NPOs, a lubricant linking "citizens and the state" in the society, give consideration to both "private and public" interests which are not only involved with government administration and social governance, but are inextricably linked to an array of individual interests of citizens (Lu Li, Luo Ying-shu, 2014^[25]). However, China's current legislative regulation of NPOs is still at a relatively low level and thus severely affects NPOs in playing their roles. It will be one of the most pressing tasks for the development of NPOs in China to review the legal system of NPOs, keep on enacting and improving NPO-related legislative regulation, and form an effective legislative regulation of NPOs.

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Part Two

Promoting Social and Economic Development in West Africa from Global Perspective

Supported by Center for West African Studies of University of Electronic Science and
Technology of China (CWAS of UESTC)

The Role of Pastoralists' Tradition/Cultural Institutions in Climate Change Resilience in West Africa *

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Abstract This is an overview desk study of the role of pastoralists' institutions currently, and what their likely roles will be in the future. The particular focus is on resilience in the face of climate change. The study opens by discussing three different perspectives on resilience that have been applied to dryland production systems. We then turn to measures that have been proposed for development resilience that are relevant to dryland production systems. This is followed by a discussion of West African Agropastoral systems, leading to an analysis of the situation in Burkina Faso. We conclude with recommendations for programming in agropastoral systems in Burkina Faso and more broadly in agro-pastoral areas in West Africa.

Key words Resilience, Pastoralism, Agro-pastoralism, Drylands, Institutions

1 Resilience concepts in dryland production systems

The World Bank's 'Concept Paper on the Economics of Resilience in the Drylands of Sub-Saharan Africa' (2013), identifies four key shocks to dryland production systems: climate, health, market, and conflict. Across these four shocks, households may differ in: exposure to the risk, sensitivity to the shock, and capacity to cope with the shock.

Another approach to resilience in dryland areas is contained in the documents concerning the Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) program of DfID (2011, 2014). Resilience as defined in the BRACED program can apply to individuals, households, communities, systems, and ecosystems. The monitoring being conducted as part of the BRACED program is predominantly centered on the change in resilience at the individual and household level. However, although the focus is on the individual and household, it is important to recognize that the resilience at these levels also depends on the resilience of the community, systems, and ecosystems in which they live. This context in which individuals live is a part of understanding the concept of resilience. Here, 'resilience to climate shocks and stresses (that may be intensifying as a result of climate change) is considered to be a composite attribute possessed by each individual, that represents their ability to anticipate, avoid, plan for, cope with, recover from and adapt to (climate related) shocks and stresses. Improved resilience means that an individual is better able to maintain or improve their well-being despite being exposed to shocks and stresses.' (DfID, 2014: 5)

USAID defines resilience as 'the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth' (2012: 5). They note that resilience, vulnerability, and inclusive growth are related, and state '...we intend that our efforts will result in: increased adaptive capacity, improved ability to address and reduce risk, improved social and economic conditions of vulnerable populations. Over the long term, we envision that these results will collectively contribute to reduced humanitarian need.' (2012: 5). Also notable in this report is a table that provides a variety of different definitions that have been proposed to explain the concept of resilience as applied to development.

2 Resilience measures

a. Individual and Household. Barrett and Constanas (2015) provide an overview of the concept of

* This study was originally commissioned as a report for the International Food Policy Research Institute and has been edited for this conference and supported by Center for Western African Studies of UESTC

resilience as seen through the dynamic lens of poverty traps. They illustrate the importance of understanding the difference between a resilient outcome with a poverty trap; if resilience is ‘bouncing back’ we want people to bounce back to something better than poverty. Cisse and Barrett (2016) build on this framework to propose a statistically based resilience measure that is predictive of future outcomes. Importantly for the purposes of this report, they illustrate the use of the measure using data from northern Kenya and define resilience around future herd size. The measure they propose is based on past data but forecasts forward to predict future resilience at the household level. Barrett and Santos (2015) present estimates of future herd size from household survey data and indicate that estimates made by livestock owners of future expected herd sizes are influenced by climate scenarios. That is, herders recognize that the existence of something like a sustainable outcome for future herd size becomes increasingly difficult as anticipated future rainfall regimes worsen. McPeak and Little (2017) use household data from the PARIMA study in northern Kenya and southern Ethiopia to consider resilience measures in terms of income and assets. They report that measures that investigate the speed of recovery from a drought event as a way to capture resilience work better when the recovery point is commonly defined across households (such as a poverty line for income or a herd size for assets). One area that has yet to be fully considered is the intrahousehold dimension of resilience. One preliminary finding from a study I am working on now that is based on numerical rankings from 1 (least resilient) to 5 (most resilient) from Mopti in Mali is based on asking both the male head of household and his wife to assess their households degree of resilience. The male mean is 2.47 and the female mean is 2.33 which is a significant difference at the 1% level using a paired t-test. It is also the case that female headed households have lower mean resilience rankings compared to male headed households. We also find a contrast between households that identify their primary activity as cultivation (mean 2.53) with those that identify the primary activity as livestock based, (mean 2.00) which is also a statistically significant difference. This is part of a broader study in Senegal and Mali that takes the BRACED framework described in the previous section and operationalizes for use in program monitoring. This analysis is considering how resilience assessments correlate with other measures of access to markets and services, exposure to shocks, and other related measures (McPeak, 2017).

b. Community and System. A different dimension of the BRACED work is based on community level resilience assessments. A collection of these for communities in dryland areas in both East and West Africa have been conducted by IIED (International Institute of Environment and Development) and partners (Ada Adaptation Consortium, 2017; Bahadur et al. 2015). Also at the community level, FAO has developed the SHARP method, which stands for Self Evaluation and Holistic Assessment of Climate Resilience of Farmers and Pastoralists (FAO 2015). Finally, resilience as a concept to apply to social ecological pastoral systems is presented by Robinson and Berkes (2010).

3 Overview of livestock production in West Africa

Recent research in West African livestock production systems contextualizes the grazing system in Burkina Faso. Work conducted by a research team the author was a member of in similar systems in Mali and Niger investigates the role of mobility in livestock production systems. In this work, mobility is divided into three zones. The first is the village territory, where livestock graze in areas around the village during the day to return to the household at night. The second is proximate grazing, where animals are outside of the village territory grazing and generally do not return at night to the home compound, but are less than 40 kilometers from the household. The third category is long distance migration, generally transhumance migration, at a range of greater than 40 kilometers from the household. In a survey of 32 villages in Mali and Niger, Turner, McPeak, and Ayantunde (2014) report the following distribution of mobility by species and season.

This illustrates that there are two main forces behind livestock mobility. The stronger one is the rainy season incentive to move animals out of the village territory to allow animals to graze in areas where cropping is not taking place. The second is the dry season incentive to move animals out of the village territory to where pasture is available. Generally, the first motivation in the rainy season moves animals to the north of the residence. The second in the dry season moves animals to the south of the household residence. The species difference indicates that the migration incentives are more

pronounced for cattle than for the small stock of goats and sheep.

Table 1 Livestock mobility by season, percent of the village herd in each area

	Grazing area	Rainy season	Dry season
Cattle	Village territory	22%	45%
	<40 km from village	26%	23%
	>40 km from village	52%	32%
Goats	Village territory	33%	56%
	<40 km from village	27%	22%
	>40 km from village	40%	22%
Sheep	Village territory	34%	53%
	<40 km from village	25%	21%
	>40 km from village	41%	26%

(Turner et al., 2014, p. 237)

Turner et al. also report on the reasons cited for moving out of the village territory by season. These are based on community interviews and a ranking exercise where highest ranked items are given a score of 1 and non-ranked items are given a score of zero. Based on table 7 of this article we can generate Figure 1.

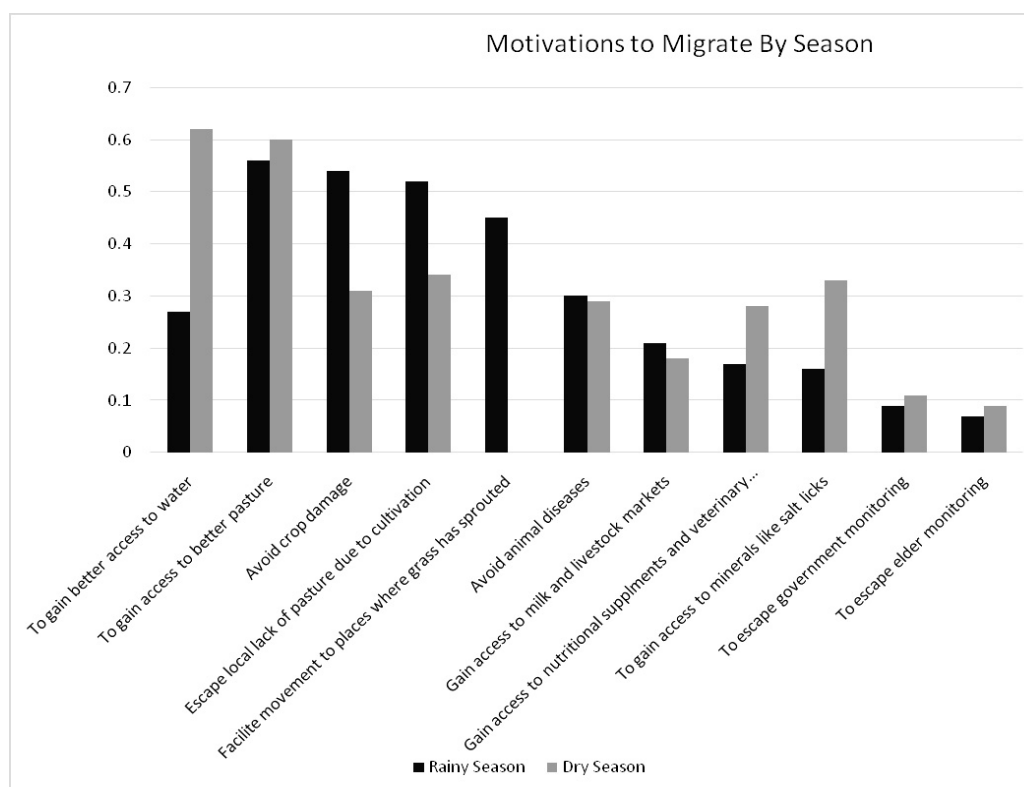


Figure 1 Ranking seasonal motivations to migrate (from Turner et al. 2014)

This indicates that there is clear seasonal distinction in motivations that underlie migration. Avoiding crop damages and accessing recently sprouted pasture are clearly rainy season motivations. Accessing water is much larger a part of the motivation in the dry season.

As another part of this research, investigation into risks and constraints confronting livestock production was conducted. A ranking exercise to identify the most difficult risks and constraints to

livestock production leads to the following results.

A lack of pasture is by far the most dominant limitation facing livestock owners. However, it is worth noting that avoiding areas with animal diseases and finding areas where water is available are also significant factors confronting livestock owners in this area.

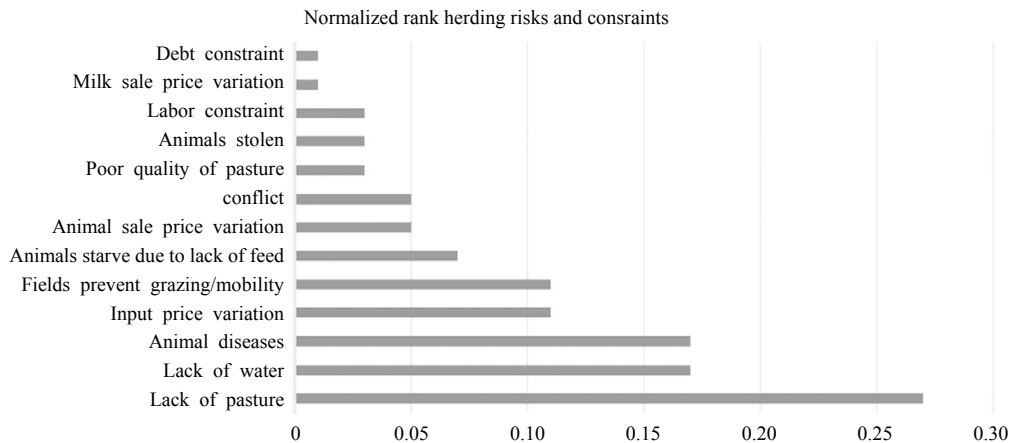


Figure 2 Ranking of herding risks and constraints from McPeak, Turner, and Ayantunde (under review)

4 Focus on Burkina Faso

Livestock production in Burkina Faso generally takes place where livestock production and cultivation are occurring in the same landscape and there is a seasonality to the interaction. To think through how this system works, it is helpful to think of how a given parcel of land might be used in a particular season over the course of a year. Drawing on Dongmo et al. (2012) we can outline land use by using Fulfulde seasonal names. We can start with *seeto*, the start of the rainy season. At this point herders are caught between the exhaustion of pastures that had carried them to the end of the dry season and the anticipated availability of abundant pastures in the near future. One option is to send animals south, or if they already are south keep them there, as rains usually begin earlier on the south to north gradient. Herd splitting also may occur. As this initial phase is the plowing season, there is a small window of opportunity for some animals to graze any remaining crop residue / early sprouts of grasses in fields that have not yet been planted and deposit manure in fields.

We then move to the rainy season, *ndungu*. In this rainy season, herd splitting is a strategy that is frequently adopted. A large part of the herd is moved out of the cultivation zone, generally northward, to make use of pastures where there is temporary water, available pasture, and reduced cultivation pressure. Notably, the fodder available to the north is higher in nutritional content to the fodder that grows in the south (Penning de Vries and Djitéye, 1982). A small herd, generally a milk producing core, is kept at the home village by some families. Dongmo et al. report this smaller 'home herd' is '...allowed to graze on barren hills, noncultivated spaces between fields, fallow land, and livestock trails. Per day, each herd walks about 8-14 km around the village for 8-9 hours in search of forage. The risk of conflict with crop farmers is high during this period and is related to the damage that can be caused by herds to crops.' (p. 117) The herd that is left behind is often going to face challenges such as flooding and insect attacks compared to the herd that leaves the territory. There will also be distinct challenges with ensuring the herd obtains sufficient feed and does not cause crop damage.

The next season is called *yamde*, which is the harvest season. In this season, herds are placed on uncultivated areas like pasture zones and uncultivated fallow fields. Again the potential for conflict is high as crops are present in fields that have yet to be harvested.

As the harvest finishes, we move into the cold dry season called *dabunde*. In this season there is the opening of the harvested fields to herds. Historically, this has been the main period when mutual advantage of cultivators and herders is realized; animals graze crop residues and deposit manure on

fields, thus enhancing soil fertility for the coming rainy season. Krogh (1997) provides an analysis of the nutrient balance in fields is reflective of this process, and how it is an element of keeping millet production potentially sustainable in northern Burkina Faso. In this period, herds are generally not split, milk is plentiful, water is available, and grazing is available. Herds may be placed overnight on harvested fields to allow manure deposits directly in the fields.

The next phase of the year is the hot dry season, *ceedu*. The ‘bush herd’ is separated from the main herd and sent along a transhumance route. Generally, these dry season movements entail moving in a southerly direction. The timing of this can be critical, as water points along the transhumance route may not be permanent sources of water and will dry up as the dry season continues. One other aspect of this move is that the onset of the rainy season is generally sooner in the south than in the north. Herders at the end of the dry season can graze on early rainy season pasture growth before gradually north towards the home territory following the onset of the rains and ensuing pasture growth as they move north.

These movements in West Africa can often involve crossing international borders both into and out of Burkina Faso (Alidou 2016, Bassett and Turner 2008). In this sense the grazing system is multi-national with animals crossing borders and herds residing in different countries for extended periods of time. Often official paperwork is needed to cross the border from one country to another.

Notably, in some cases, instead of following a north to south logic, herders may instead pass the dry season by utilizing natural pasture or crop residue or a destination is along a river where grazing is possible on *bourgou*, *Echinochloa stagnina*. *Bourgoutieres* are areas that combine high quality grazing sites with water availability and become increasingly accessible as river levels decrease (Diarra et al. 2010). As table 1 illustrates, a significant portion of the herd passes the dry season in the village territory rather than on migration outside of the territory.

Vall and Diallo (2009) provide an overview of transhumance by season for western Burkina Faso. To summarize their key findings, we can refer to table one that presents the pastoral calendar corresponding to the seasons described above.

**Table 2 Pastoral calendar from Western Burkina Faso drawn from Vall and Diallo (2009).
Scaling is 6 is very high 1 is very low.**

	Start of rainy season	Rainy season	Start of harvest	Cold dry season	Hot dry season
Availability and accessibility of water	4	5	5	2	1
Availability and quality of pasture	3	6	4	6	1
Risk of conflict with farmers	3	5	6	Starts 4 drops to 1	1
Rules surrounding herd movements	Search for zones of first rains and sprouting pastures	Restoring body condition for animals while avoiding grazing in cultivated fields	Avoid grazing in fields that are being harvested and negotiate grazing contracts	Attend to the rebuilding of reserves and graze on crop residues.	Water the animals and find areas of pasture, if necessary go on transhumance.

Key to animal movements out of the village territory are transhumance corridors. These can be thought of as a network of paths and resting points that allow animals to move across the territory. There is generally a resting point (*gite d’etape-winde*) associated with a watering point at some distance from a settled village. Connecting the resting points are livestock corridors (*couloir-lawol*).

Although not drawn from Burkina Faso, our project recently mapped out the corridors in eastern Senegal and an example of transhumance corridor mapping can be found at this web site <http://couloirs-transhumance.org/>. As described by Kitchell et al. (2014, 2017) and Turner et al. (2015) these are perhaps most helpful to think of as a network composed of corridors rather than a single path. Depending on how rainfall is realized, different paths in the network are followed. The institutional challenge is to recognize and protect the different components of this network in local communities. Attached as an appendix are different maps of transhumance routes in Burkina Faso that I was able to

identify. Gonin and Gautier (2015) page 4 provide a recent map, the OECD (2010) maps are from Security implications of climate change in the Sahel, the FAO map is from a report on the region, and Hellemans and Compere (1990) provide a map of the main transhumance corridors for Burkina Faso based on research in 1988.

Contrasting these maps and noting that this work was based on research in 1988 is important because one thing that is apparent in the literature is that the transhumance / herder-cultivator system is in a transition. To go deeper into the history, Basset and Turner (2007) note that the West African transhumance system in the past moved animals from west to east over the course of the dry season to return to the west with the rains. In a similar fashion, Senegal has also transitioned from seasonal movements southwest to northeast into and out of the Ferlo as boreholes were developed in the Ferlo leading to permanent settlement around the water points. The corridor map linked to above illustrates there is now more of northwest to southeast movement in Senegal. Overall there seems to be a general move towards more north to south and return movements. There are a few key elements to the transition of the north to south movements that merit attention for the Burkina Faso situation.

- The distinction between ‘herder’ and ‘cultivator’ has been blurred. FulBe herders have increasingly sedentarized part of the family and taken up cultivation. Cultivators, such as the Mossi, have acquired livestock of their own. Increasingly it is difficult to allocate a household to a herder or cultivator category by observing production practices as pastoralism and cultivation are intertwined at the household level (Breusers 2001, Breusers et al 1998). Gonin and Gautier (2014) describe two production systems occupying the same space, one is the agropastoral system of the FulBe and the other is a farmer-herder system practiced by traditionally cultivating groups. They note that for this latter category, the increased revenue from cash crops such as cotton can be stored in livestock wealth.

- Further, within the Ffulde speaking population, there are differences with what is happening with livestock ownership between the RimaiiBe and the RimBe. Roughly speaking, RimaiiBe (newly free) are former slaves compared to the RimBe (free). As there are fewer social restrictions on what RimaiiBe can do to earn income, they have been more involved in livelihood diversification and labor migration than the RimBe. They have converted some of this wealth to livestock ownership. (Nielsen and Reenberg 2010)

- A decline in security in the north reflecting instability in the Sahara to Sahel transition zone has made northern movements more dangerous and of decreased attraction. This has recently become particularly acute in northern Burkina Faso: <https://www.acaps.org/node/863/25589/move/top>

- Transhumance corridors have been slowly shifting further to the south. Previously, the southern extent of the transhumance corridor was confronted with the tse tse fly and associated trypanosomias together with other livestock health hazards. Basset and Turner contrast explanations for this shift. One theory is that the severe Sahel droughts of the early 1970 and mid 1980s triggered this as a ‘sudden shift’. They find this less compelling than an alternative explanation that explains this change as a ‘migratory drift’. One element of the migratory drift is related to the drought losses; herders in the north lost animals and the youth from these families as a response migrated to work in the south, sometimes as hired herders for livestock owned by settled cultivators as was noted above. This also allowed herders to establish social connections in the south that could be called upon if they were able to reestablish a herd and return to transhumance with their own herds in the future. Another development was increased cropping pressure and loss of dry season grazing areas like the bourgoutiers described above. As irrigated cropping and dry season gardening expanded, riverine dry season grazing areas in the north were lost and access to water points became more difficult. A final part of this explanation is that with increased access to veterinary inputs, herds could be inoculated to be able to graze in areas which were not accessible in the past.

- Basset and Turner also note that FulBe herders have been slowly adjusting the breed composition of their herds to be able to access pastures in the southern ‘tse tse’ zone. The zebu breed (*senooji*) that the FulBe have traditionally relied on is large, able to walk long distances, and produces a large volume of milk. However, it is susceptible to trypanosomiasis which is spread by the tse tse fly. The Bwaba people in Burkina Faso and Mali herd a humpless breed (Baoule, *mereji*). FulBe began to cross these breeds to create a type of animal called *worsooji* that mixed some of the high productivity

and mobility elements of the zebu breed (*senooji*) with the trypano-resistant elements of the Bwaba's *mereji*. They describe how in the process of about 10 years, a herd could be cross-bred to a point that it would allow a further shift to the south with this herd of *worsooji*. In this way they explain the increasing presence of FulBe pastoralists in northern Cote d'Ivoire.

- Long term climate evidence suggests the 1950s and 1960s had higher seasonal rainfall averages than was experienced in the 1980s and 1990s. The shift south also reflects the changing pattern of vegetation that was correlated to rainfall patterns. (Pastoral Atlas FAO, 2012)

5 Recommendations

We begin by focusing on land use management. In many West African countries, the recent past has been one of decentralization and delegating more authority to local communities. There is a move to organizing at the local level of an arrondissement, commune, communauté rural, or other defined political and administrative entity (Berger 2010). Granier (2010) writes of local conventions as first being developed in Senegal and Mali as part of a move towards decentralization, and then the approach has spread more broadly in West Africa as an approach to land use management.

O'Bannon (2006) notes some of the limitations that confront local communities when attempting to develop local conventions. He quotes an official in Senegal who commented on the decentralization process as receiving an 'empty envelope'; they are authorized to implement decentralized government but no transfer of funding has been associated with this transfer of authority. Another common challenge is that the participatory approach is complicated by the transitory nature of the herders who are only present temporarily to make use of local resources. Decisions are made locally by year round residents and this may not take into account the interest of the transhumant pastoralists. In addition, a notable bias by governments towards the interest of settled cultivators (and bias towards irrigated cultivation) has been noted in the literature on land use in West Africa (Breusers 2001; Breusers et al. 1998). A further complication is that a local convention is designed to govern resource use for some members who are only 'local' for a defined period of time before they become 'local' residents elsewhere as they migrate. Mwangi et al. (2012) note this ambiguity in property rights and membership are a common feature of pastoral systems, and Goodhue et al. (1998) note that the fuzzy nature of rights can be welfare enhancing. However, it makes participatory rule making difficult.

Kitchell et al. (2014, 2017) discuss how the formulation of local conventions confronts what Fernandez Gimenez (2002) described as the 'paradox of pastoral tenure'. On the one hand, a local convention can formalize and regulate livestock access to certain areas of land at a given point in time. However, the open and flexible nature of land use by livestock is open, flexible, and adaptive (Moritz 2013). In a recent paper based on work in Senegal, Kitchell et al. (2017) describe institutional innovations that go along with protecting livestock corridors in agropastoral areas of Senegal. Djiga (2012a, 2012b) has written about environmental law and local conventions in Burkina Faso. He describes conventions as having two main functions. The first is to conserve natural resources and the second is to prevent conflicts related to natural resources. He notes that the Program for Sahel-Burkina work on local conventions funded by GIZ from 1989 reduced conflicts by a significant degree.

There are different kinds of conflict noted in the literature that conventions can help to address. The most prominent is farmer-herder conflict, but one can note different permutations of farmer-farmer, herder- herder and in some cases conflict with fishing oriented populations. Farmer-herder conflict generally centers on crop damage by animals and also by cultivation expanding into areas that had been used for transhumance / watering animals. It is also important to distinguish between conflicts originating with the livestock passing through on transhumance from the conflicts between resident livestock and cultivators. With the transhumants, the key conflict periods are early in the growing season as animals move from south to north and may damage recently planted fields and at the start of the cold dry season when animals in cultivation zones enter fields that have yet to be harvested. There are also reports of conflicts with local cultivators who own livestock who have animals swept up into transhumant herds as they pass by. Further there are conflicts between local herders and farmers when animals are not removed from the village territory during cropping / harvesting season. From a participant in a local convention workshop in Bakel, Senegal we have the following quote: *Les dégâts*

les plus réels dans nos villages ne sont pas les gens qui viennent mais plutôt les habitants des villages eux-mêmes. Les transhumants viennent rarement en temps de pleine campagne ici ; ce sont les éleveurs du village qui causent souvent des dégâts aux agricultures. (Ba, 2015 p. 29) My translation : Most of the crop damage in our villages is not due to people coming from outside but is more frequently attributable to livestock belonging to residents of these villages. The migratory herders rarely come here during the main cultivation season ; it is the livestock herded by residents of the village who are frequently responsible for crop damages.

An interesting methodology for animating discussions of local conventions is provided by the common-pool resources and multi-agent simulations work of CIRAD (see www.cormas.cirad.fr) Bommel et al. (2015) provide an overview of the use of this methodology. An application of this method to an agro-pastoral zone in Senegal was produced by Ba (2015) quoted above. A key intervention for the future for CSOs in Burkina Faso is to coordinate and facilitate local convention development in communities and coordinate them across communities to arrive at some degree of consistency. This can combine their knowledge of on the ground practices with a broader sense of the overall challenge of land use planning to enhance productivity and reduce conflict. In addition, given the context of climate change, local convention development can be coupled with scenario planning (see CARE International, IIED, and CIRAD for examples) to anticipate ways in which the plans could adapt to future changes in the state of nature.

Kitchell et al. (2017) note the dual challenges of establishing local participation and control while at the same time recognizing the vast spatial scale of the transhumance corridors / networks. Alidiou (2016) provides some background on the cross-border dimension of these challenges when animals from Burkina Faso, Niger, and Nigeria enter into Benin. They identify a need for a cross border information and governance strategy together with provision of infrastructure to support transhumance. CSOs could also use their international networks to coordinate these efforts across borders.

Caffrey and Farmer (2014) note a critical institutional factor in Burkina Faso is the Régime Foncier Rural of 2009. They find the ‘rules and regulations are not well understood...’ (p. x) and note that a Millennium Challenge Account program to disseminate information about the law only reached 13% of the communes in the country. This would indicate further work could be done on communicating and clarifying the current land use laws. Also considered in this report is the negative environmental implications of artisanal gold mining that could potentially pose a threat to livestock and farming (and overall health) in Burkina Faso, though it does play a role in the income diversification profile. A different role for CSOs is to continue to disseminate the current meaning of the law to rural areas to ensure people understand their rights and obligations.

Beyond issues of land use management, there is also the possibility of accessing climate change funding for local public good development such as through the BRACED program to enhance resilience in the face of climate change. The BRACED program I am working with in Mali and Senegal has been funding grain storage facilities, vaccination holding grounds, irrigation systems, dry season gardens, forestry projects among other things in agropastoral zones. Part of the program is building up local governance structures and institutions to identify community priorities and implement programs that meet expressed need. Another consortium is working in Mali on the BRACED project (see the link above) and might be possible to establish a collaboration if further funding rounds are developed.

Finally, The International Livestock Research Institute (ILRI) is working in Burkina Faso as part of the USAID Feed the Future initiative on feeding systems for milk production and supporting intensification of dairy systems. At the same time they are working on improving milk hygiene. As intensification and sedentarization are occurring already, training and adoption of new practices could offer some promise for improved health, incomes, and nutrition. There is also likely to be new applied research for development initiatives in the near future as the USAID funded Livestock Innovation Lab is currently reviewing project proposals for work on livestock systems in Burkina Faso and Niger. As the production system evolves, applied research can help identify least cost feeding systems that can support agropastoralists and farmer-herders. CSO partners interested in applying these findings to improve agricultural production could become involved in these efforts.

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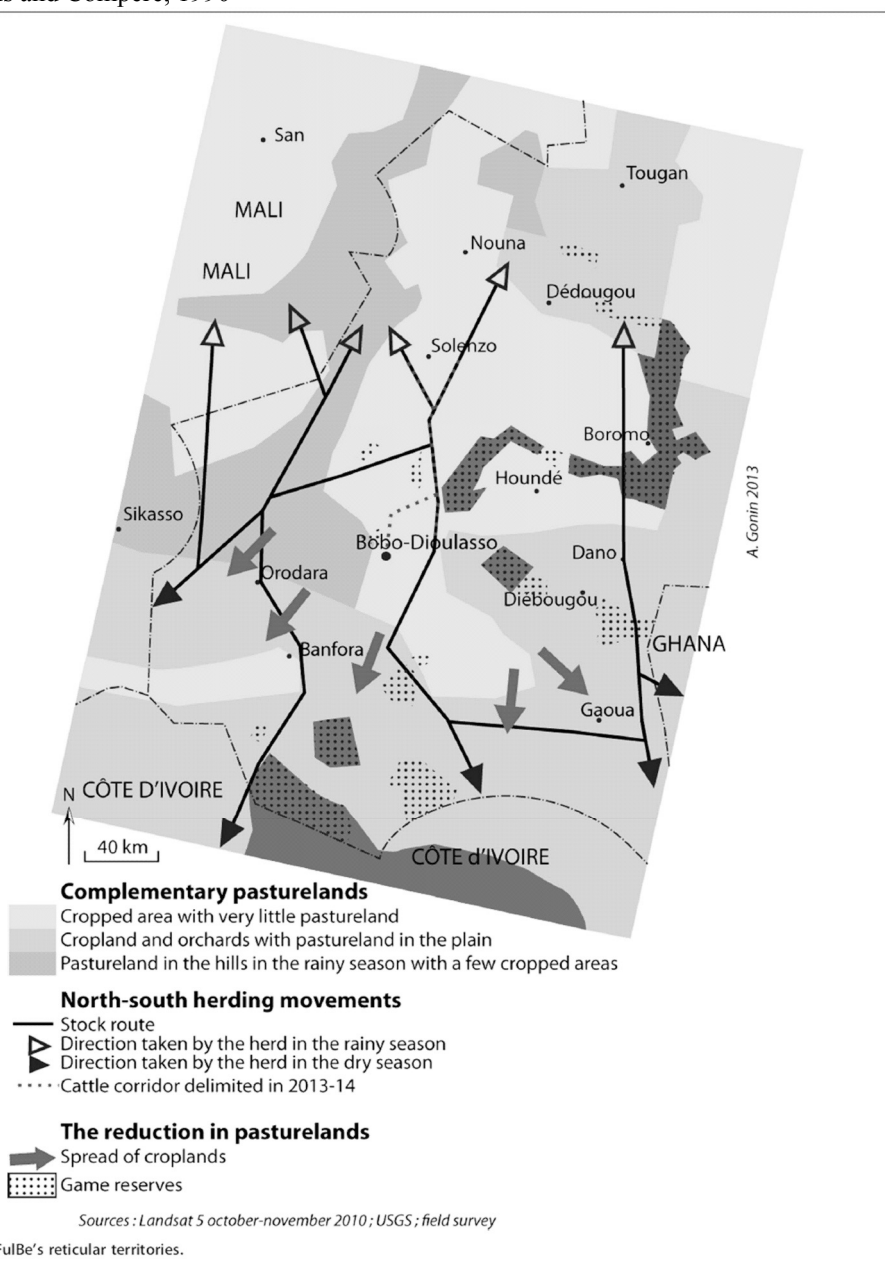
Appendix Maps of transhumance routes in Burkina Faso

Gonin and Gautier 2015

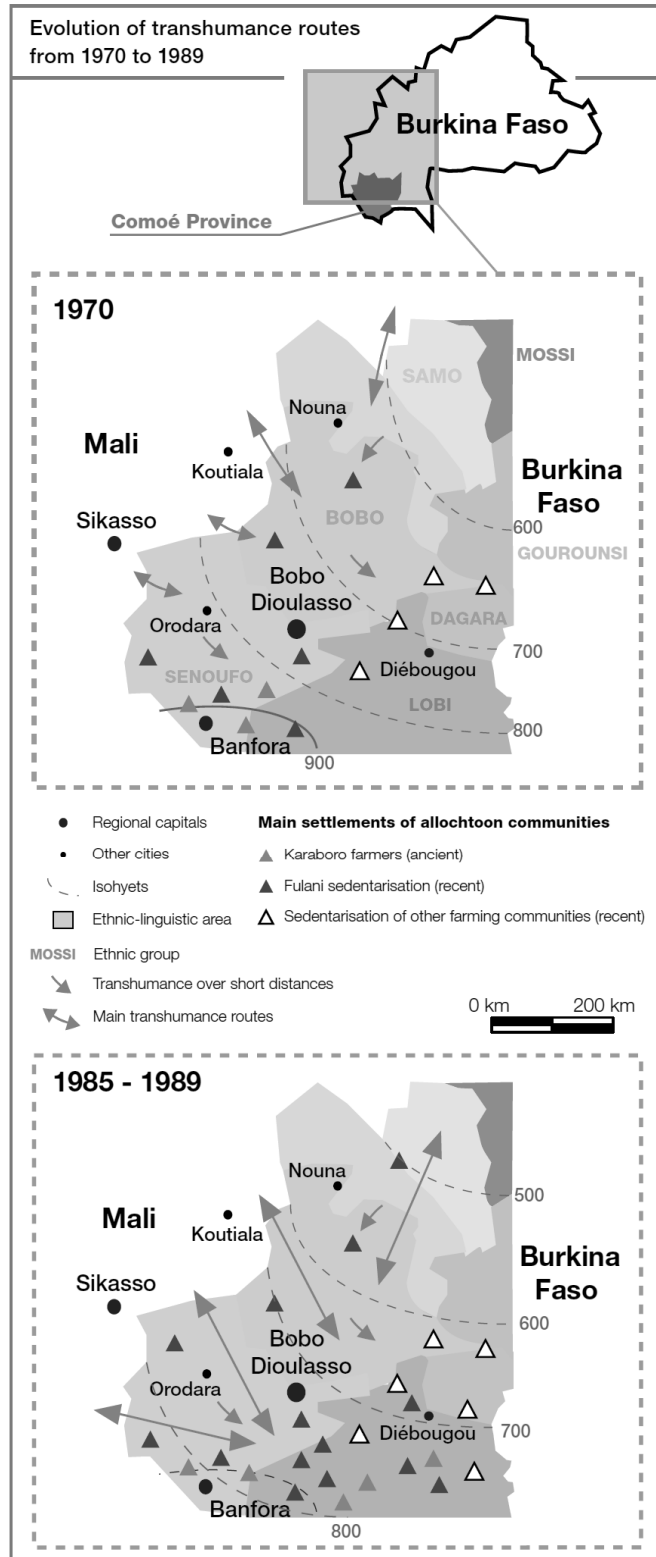
OECD 2010

FAO 2012

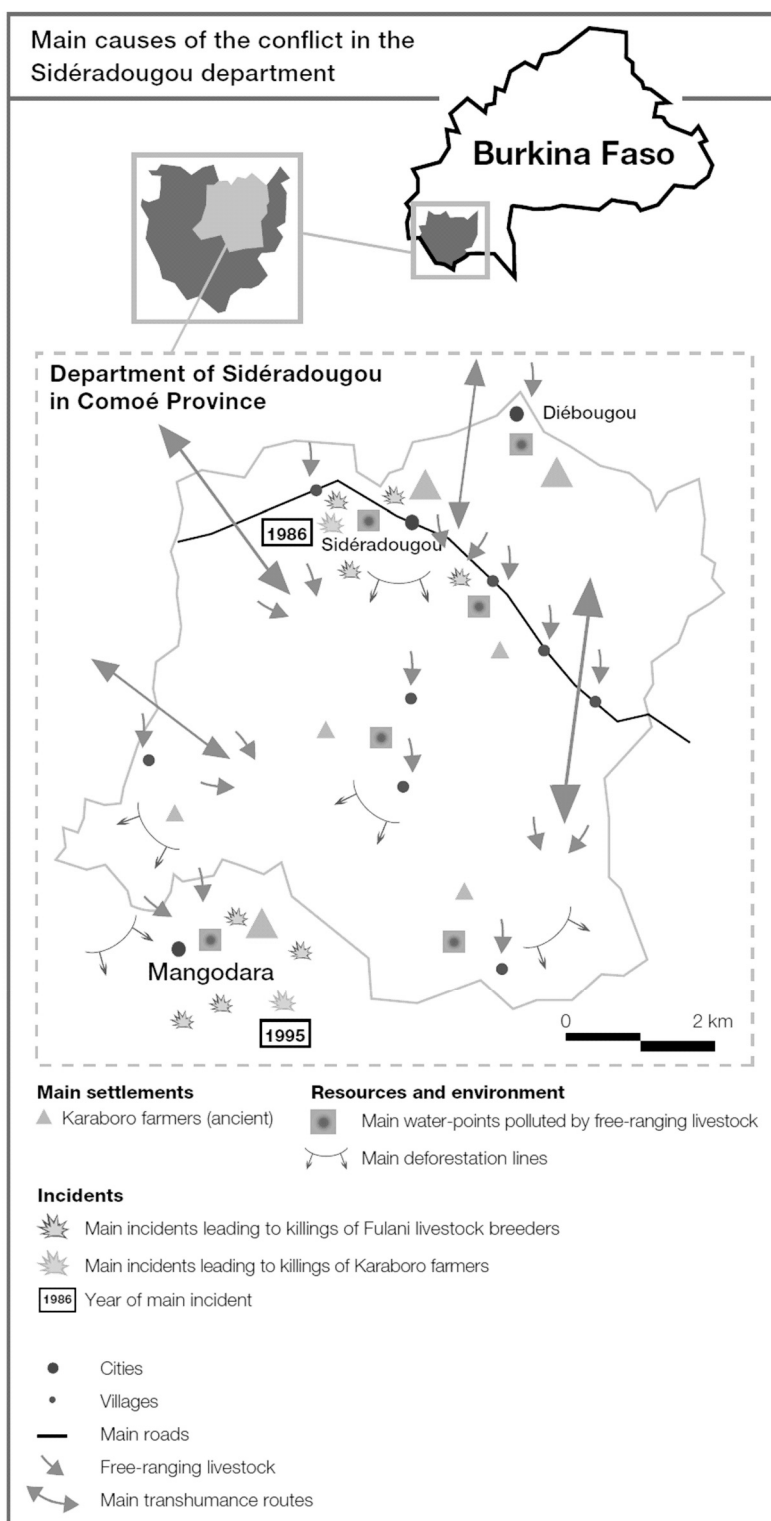
Hellmans and Compere, 1990



Gonin and Gautier 2015



OECD 2010



OECD 2010



FAO 2012

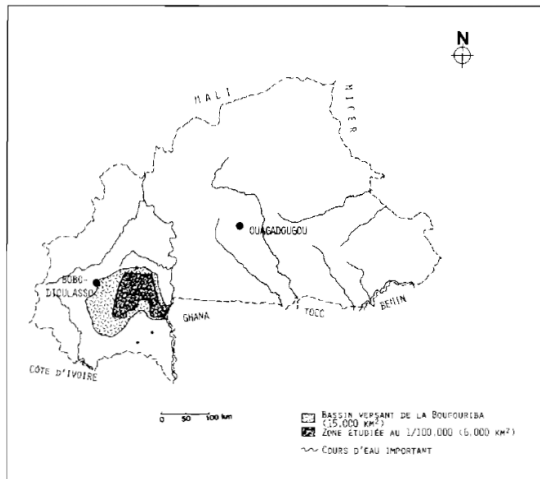


Figure 1. — Périmètre étudié occupant, dans le Sud-Ouest du Burkina Faso, la partie aval du bassin versant de la Bougouriba.

Hellmans and Compere, 1990

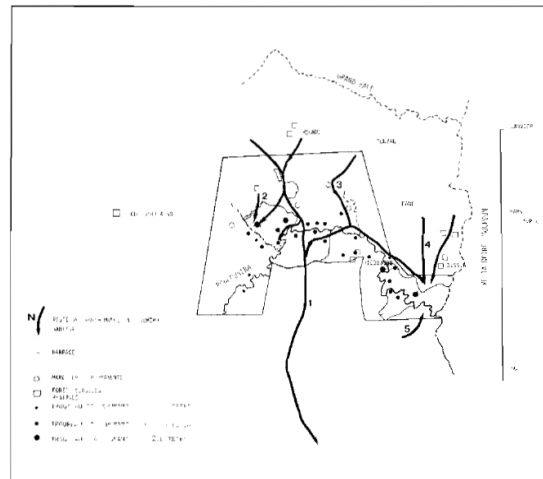


Figure 2. Les 5 grands axes de transhumances affectant le périmètre étudié et distribution des troupeaux en fin de saison sèche.

Africa, China, and the New Global Dispensation *

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Abstract In the last several years there has been historical shifts in the global political economy; China's rise as the most important economic power in the world after the United States represents such a shift. As a result, the new Africa-China rapprochement has attracted global concern and interest mostly because Africa's resources appear to be fully open to the economic and strategic needs of China. For over half a century, Africa traded mostly with the West; it looked mostly to Europe and the United States for development assistance. In 2000, however, African nations and China began a series of meetings dubbed Forum on China Africa Cooperation (FOCAC). There have been six such meetings since then in pursuit of "a new type of strategic partnership" between China and Africa intended to create a win-win economic relationship that transforms the continent.

What do African nations stand to gain from this relationship? Will the continent's 'new' partner become the newest and latest external power to pay lip service to Africa's well-being even as it proceeds to exploit local resources for its benefit? This paper argues that the only way for this relationship to be of mutual benefit is for the continent to conduct its relationships with China from a position of strength and self-interest; to use its resources for the benefit of its peoples; and to pursue people-centered policies. China can, and should, become a true alternative of development hope to the African peoples.

Key words Africa-China, Natural resources, Development, Infrastructure, Partnership

1 Introduction

In this era of continuing global repositioning, the Africa-China rapprochement has come to represent a major component that has attracted, and continues to attract, much commentary. While the continent and China have had relationships historically, the current arrangement took off in earnest in 2006. When 48 African nations met in Beijing in pursuit of relationships that they felt could change their fortunes where development resources were concerned. Since the era of decolonization, African nations have largely looked to Western interests—mostly nations such as Britain, France, Portugal, Belgium the United States, and institutions such as the World Bank and the International Monetary Fund-- for development assistance. In the last few years, however, these nations have made a turn to the East, a change so dramatic that for the first time in history, they have received more from China than all of the West combined....

Will its feverish embrace of new Chinese initiatives become a true, credible, alternative source for development assistance? Or will China become the newest and latest external power to pay lip service to Africa's well-being even as it proceeds to exploit the continent's vast resources for its benefit? Will China provide the manufactured goods while the continent provides raw, unprocessed materials in a maintenance of the age-old dependency syndrome? Or will this be a relationship built upon mutual benefit?

In as much as 'development', however defined, seems to have eluded African nations, any 'new' relationships African nations get into must aim at eradicating mis-development and underdevelopment. For this reason, this paper posits that for the continent of Africa to benefit from its relationship with China, it must, *first*, conduct this relationship from a position of strength and self-interest; *second*, to proceed at all times to use the proceeds of this relationship to benefit its peoples; and *third*, the various African nations must pursue people-centered policies. On the other hand, China can, and should, be

* This paper is part of a larger manuscript co-written with Asgede Hagos entitled In Africa's Hands: Engagement with China: Chance for Self-determination.

sensitive enough to become a true alternative of development assistance to the continent.

From the well-stocked markets of Rumbek to the Chinese oil firms in Sudan's upper Nile; the Chinese weapons in Darfur; and the Chinese laborers building the new presidential palace in Sudan's capital, Khartoum – China, in its many forms, has made a grand entry. (<https://www.csmonitor.com/2007/0625/p12s01-woaf.html>)

China in Africa is perhaps the most concrete manifestation of the seismic shift in African international relations at the dawn of the Twenty First Century. The Sudanese experience captured in the quote above epitomizes the new dimension in development in Africa where, for the first time in about a half century, the source of the bulk of development assistance for Africa has been China rather than Europe and/or the United States. There is now a true Asian consensus with regard to aid to Africa, and China is the jewel in this consensus. China's huge re-entry into Africa has been one concrete way in which its global power has manifested itself.

Predictably, China's involvement in Africa has provoked much debate and discussion. Is China simply the latest imperial power out to exploit Africa's natural resources, putting its own economic interests above environmental and human rights concerns? Or is China's engagement a concrete example of South-South cooperation which has characterized Africa-Asia relations since the 1950s and 1960s? Will this lead to a situation where Africa will begin to shed its unequal relationship with its major trading partners, Europe and the United States? Do China's engagements on the continent position it for unparalleled global power, especially with its new *One Belt, One Road* initiative?

While Africa has had China involved in its affairs for centuries, the present engagement presents a qualitative difference which can have huge benefits as well as potentially bad downsides. The year 2006 was a watershed year in African development history: not only was it the 50th anniversary of the first Chinese embassy in Africa (Egypt), later in November that year, 48 African Heads of State were present for the Beijing meeting of the Forum on China Africa Cooperation (FOCAC). FOCAC that year was the third meeting among the Chinese and Africa which effectively put a stamp on the notion that indeed China was in Africa to stay.

2 Historical background

Humanity began in Africa; thus, the first civilizations began there. Soon after, as people migrated out of Africa, other civilizations began in other places, China being one. China is an old nation, boasting of a civilization over 3000 years old. There is recorded contact between the continent of Africa and China as far back as 202 BC, (Pankhurst; 1961) when some trading took place. In 1345, Ibn Battuta, an African scholar and traveler, reached China and wrote of a wonderful, hospitable country (Ibid). Chinese Emperor Zhu Di of the Ming Dynasty dispatched Admiral Zheng He on a journey to spread Chinese culture around the world. Between 1405 and 1433 Zheng He made several voyages, among which was one that took him to the shores of East Africa, including present-day Somalia and Mozambique.

(<http://www.cctv.com/english/TouchChina/GloryofChineseCivilization/HistoricalCelebrities/MilitaryLeaders/20021224/100353.html>)

It was in the Twentieth Century, however, when Africa-China contacts became more cemented especially during the anti-colonial struggles of the African peoples. After World War II, at the beginning of the Cold War, African students in London took their political struggles back to their homes to directly confront the colonial powers. China became one of the staunchest backers of these movements for dignity and independence, playing a major role at the Afro-Asian Solidarity Conference in Bandung, Indonesia, in 1955. Premier Zhou En-Lai led the Chinese delegation to that conference, and strongly backed the anti-colonial struggles, saying that 'Africa was ripe for revolution'. Chinese support was critical in many connected ways: political, ideological, and economic. Indeed, the most visible and concrete support was an ambitious railway project connecting Tanzania and Zambia which was at once an economic and a political project: it was built to prevent the two nations from total reliance on the then apartheid South Africa and Southern Rhodesia. (Bailey, 1975; 1976).

Chinese activities in Africa followed this idiosyncratic fashion all through the 1960s and 70s, as it wooed Africa and the rest of the world in accepting it (Peoples Republic of China) as *the* true China.

With regard to Africa, China's differences with the former Soviet Union tended to let it play second fiddle in its dealings with Africa, mostly professing more ideological support than any serious economic relationships.

China's economic 'glasnost' under leader Deng Xiaoping started in the late 1970s through the 1980s, and apart from loosening economic policy at home, also opened the country to the world, including Africa. Africa's resources suddenly became crucial to a Chinese economy that was hungry; stronger economic ties ensued. For instance, with respect to trade with the whole continent of Africa, the volume increased exponentially—700%—since 1990; as the Chinese themselves have documented:

scale of China-Africa trade has increasingly expanded. China-Africa bilateral trade volume was only US\$12.14 million in 1950, it rose to US\$100 million in 1960, and exceeded US\$1 billion in 1980. After reaching the US\$10 billion mark in 2000, China-Africa trade has maintained a momentum of rapid growth ever since. In 2008, China-Africa bilateral trade volume exceeded US\$100 billion, of which US\$50.8 billion is China's exports to Africa and US\$56 billion is imports from Africa. The average annual growth rate of China-Africa trade between 2000 and 2008 reached 33.5%, with its proportion in China's total foreign trade volume rising from 2.2% to 4.2%, and its proportion in Africa's total foreign trade volume increasing from 3.8% to 10.4%. Although China-Africa trade volume dropped to US\$91.07 billion in 2009 as a result of the international financial crisis, China became Africa's largest trade partner that year for the first time. As the global economy recovered, China-Africa trade also maintained a favorable recovery and development momentum. From January to November in 2010, China-Africa trade volume reached US\$114.81 billion, a year-on-year growth of 43.5%. (<http://english.cri.cn/6909/2010/12/23/2741s611673.htm>)

These exploding economic ties have been underscored by a huge influx of Chinese nationals—official and unofficial—across Africa, now estimated to be close to a million by 2010 (<http://www.guardian.co.uk/world/2011/feb/06/chinas-economic-invasion-of-africa>). This was in turn boosted by a conscious decision by the Chinese in their quest to take on a much larger global presence largely as a result of their economic needs. In 2000, the Chinese organized the first in a series of meetings that have come to be known as Forum on China Africa Cooperation (FOCAC). At this initial forum—FOCAC I—the Chinese President, Jiang Zemin, Vice President Hu Jintao, and Premier Minister Zhu Rongji were present to demonstrate Chinese commitment to Africa. On the other side, there were four African Presidents, but more importantly, all African nations sent representatives to the meeting. Out of the meeting came the Programme for China-Africa Cooperation in Economic and Social Development. (Appendix I). Especially significant was section 1.2 of the document, which states:

The Ministers also agree that, *in view of the present unjust and inequitable world order. China and African countries should position themselves to influence the establishment of a new world order which will reflect their needs and interests.* To this end, they agree to adopt a workable programme towards the creation of a new strategic partnership for sustainable development in the 21st century (my emphasis; FOCAC I: Program...see Appendix I)

Officially called the First Ministerial Conference of the Forum on China Africa Cooperation (FOCAC), this meeting served as an indication that something big was about to be embarked upon between the two areas in forming a 'strategic partnership' which would have an impact at the global level.

FOCAC II followed in Addis Ababa, Ethiopia in 2003. In addition to the usual suspects from the Chinese side—Premier, other top officials, there were, on the African side six presidents, three prime ministers and heads of government from forty-four African nations. Adding to the importance of the moment was the presence of the African Union leaders, and representatives from the United Nations.

FOCAC III in 2006 was the most ambitious gathering of the Chinese and Africans to date. At that meeting, for instance, you had more African Presidents and heads of governments participating than had been at an AU meeting. In other words, by 2006, Africans had become convinced that the growing relationship with China was truly going to be a significant source of development funding. And because the Chinese also seemed to commit many resources to the relationship, there was a renewed commitment to

a new type of strategic partnership ...featuring political equality, mutual trust, and economic

win-win cooperation... Priority will be given to cooperation in agriculture, infrastructure, industry, fishing, information technology, public health and personnel training to draw on each other's strengths for the benefit of the two peoples, according to the declaration. (http://english.focacsummit.org/2006-11/05/content_5166.htm)

To date, there have been three more FOCAC meetings, FOCAC VI being the latest one in South Africa in 2015. Clearly, there is a reason the Chinese insist on speaking in such friendly language to Africa; it appeals to the latter whose relations and relationships with outsiders have largely been characterized by exploitation, unequal contacts, and recipients of largesse as opposed to working as partners. China is determined to flip this script, difficult as it turns out to be. After all, China is *one* country, with more people than all of the 54 African nations put together. Further, while China does have a policy of dealing with Africa as a 'bloc', it has nonetheless been practical by independently charting a different course with each nation. Obviously, this is bound to show weaknesses in the resulting relationships, and does point to a situation where clearly, the relationships seem weighted towards China for the foreseeable future. 'Equal' partnership is therefore more the rhetoric and hope than reality. Even as China declared FOCAC III as the time for '*Friendship, Peace, Cooperation and Development*' (*youyi, heping, hezuo, fazhan*) (<http://www.soas.ac.uk/taiwanstudies/eats/eats2008/file43256.pdf>), one sees a situation where African nations must begin to exert some independent-minded policies in their relationships with China.

Nevertheless, since that meeting in 2006, China has been in Africa in a very big way; the total volume in trade between the two (imports and exports combined), that year was \$40 billion, up from \$10 billion after FOCAC I (2000); \$100 billion in 2010, \$160 billion in 2011, and over \$200 billion in 2015 (<http://www.sais-cari.org/data-china-africa-trade/>)

Chinese resources flowing into Africa is a clear and significant sign of their determination to meet words with deeds on the continent. In 2007, when it committed \$9 billion worth of direct foreign investment in Africa, the World Bank for instance was only able to marshal about \$2 billion. This concrete Chinese engagement in Africa has caught the rest of the world off-guard. Africa's traditional economic partners in Europe and the United States seem concerned with this. Indeed, some commentators see it in the worst possible light, describing China's presence as a threat to "... undermine American and European efforts to promote peaceful, pluralistic, and prosperous societies in the region" (<http://www.heritage.org/research/reports/2006/02/chinas-influence-in-africa-implications-for-the-united-states>).

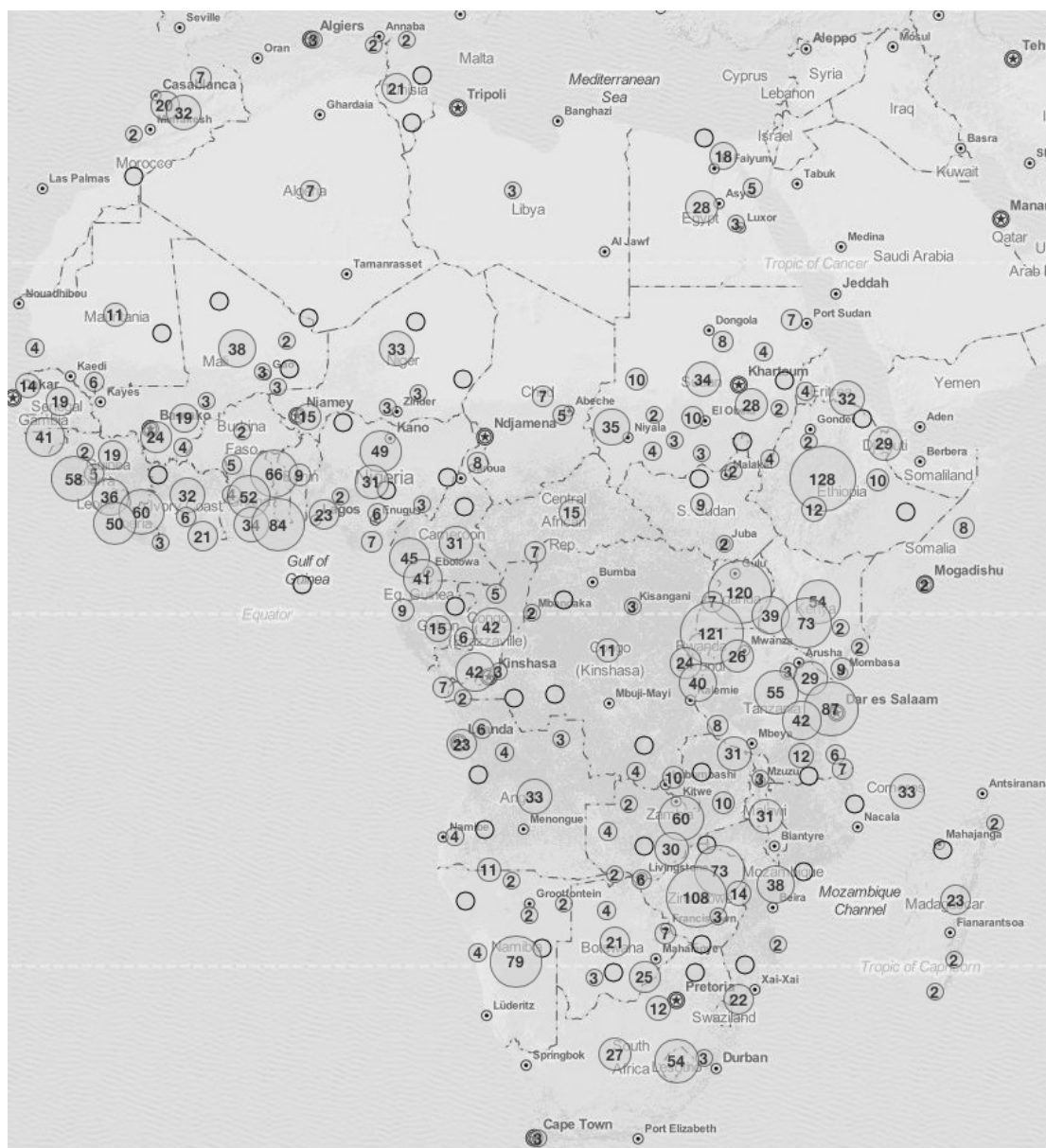
Others have a more nuanced approach that recommends that rather than competing with China, the US should find areas in which it can serve Africans better—such as in higher education: "... Instead of polarizing the discussion on China's African adventures, the United States would best serve its own diplomatic desires by better meeting Africa's development needs." (<http://sites.duke.edu/sjpp/2011/america-v-china-battleground-africa/>). As new global realities push the African continent towards its encounters with more security issues—and therefore the presence of more traditional allies such as France, Britain and the United States—the Chinese interest and presence have become an acceptable part of the new global reality.

3 China's needs in Africa

What has led China to go big in Africa? Simply, China's needs, both economic and political. With an economy growing over 9% a year for the last few years, China needs resources, especially in energy; secondly as a major superpower—now the globe's second biggest economy, and increasingly active at the UN—politically making and cultivating friends globally is imperative.

The continent of Africa is the world's most endowed expanse of land holding almost all the resources all nations—at all stages of development—need. The continent is a required stop on any nation's highway to mature economic status. So it is not surprising that China will finally invest as heavily as it has done in Africa. Indeed, it is not coincidental that the places where China is expending most of its resources are in the most technically advanced African nations—South Africa, Egypt—or those with the most resources, especially oil—Sudan, Angola, Nigeria, Democratic Republic of the Congo, Libya, Algeria, and Equatorial Guinea. The following map illustrates how busy China has been

on the continent with regard to resources:



Source: Stratfor Global Intelligence, 2012.

To illustrate with a representative sample, for instance since 2010, China had either *invested or pledged* to invest in the following nations (among others):

- | | |
|--|---------------------|
| Angola: (Construction; oil): | >\$10 billion |
| Sudan: (Construction; Oil) | \$1-\$5 billion |
| South Africa: (Gold, Diamonds, manufacturing): | >\$10 billion; |
| Zambia: (Copper, Iron Ore, Construction) | \$5-\$10 billion |
| Nigeria: (Oil, Manufacturing, Rail.) | \$5 billion |
| Tanzania: (Rail, Construction) | \$ \$5-\$10 billion |
| Ghana: (Construction, Oil, Rail) | >\$5 billion |
| Algeria: (Construction) | \$1-\$5 billion |

Equatorial Guinea: (Oil,)	\$2 billion
Egypt: (Manufacturing)	\$1-\$5 billion)
Uganda: (Oil)	\$1 billion)
Chad: (Rail, Construction)	\$2-\$4 billion
Namibia (minerals, tourism)	\$1-2 billion
DR Congo: (cobalt, copper, coltan)	\$5 billion

Clearly, China has insured itself that its out-of-this-world economic growth will continue. Africa's monopoly of some of these strategic minerals—among them cobalt, platinum, copper, uranium—will keep China going for a long time to come. Further, as the continent becomes the new source of much of the world's oil supply, China's economy will be assured of its energy needs; it is estimated that in the next few years, the Gulf of Guinea will be the source of a quarter of China's oil needs.

In the political sphere, China has always courted Africa to rally behind its One-China policy. This has paid off as Taiwan, formerly active on the continent, has seen its fortunes there dwindle. Indeed, it appears that only two African nations at present have any connection with Taiwan (Swaziland and Burkina Faso) <https://www.bloomberg.com/news/articles/2017-01-24/chinese-billions-fail-to-sway-taiwan-s-last-two-allies-in-africa>.

In addition, China has become a great supporter of Africa's efforts at integration. One concrete manifestation of this was China fully paying for the construction of the new headquarters of the African Union. In January 2012, at the annual AU meeting in Addis Ababa, the Chinese turned over the keys to a new, \$200 million building to the leaders of Africa. The Chinese have gone out of their way to insist that at the root of their interests on the continent is their ideological affiliation with fellow 'developing nations'; and that its development path is one it would recommend to Africa nations. The Chinese see this as a very concrete step towards more of Africa following in its footsteps with regard to development.

So far, the evidence demonstrates that the current phase of Africa China relations has been economically active for the continent; as noted elsewhere in this paper, Chinese investment has been massive and spread all across the continent. The two areas of the most economic activity are in trade and the building of infrastructure. In the former, the leap in the volume of trade between China and all of Africa reached a high of over \$220 billion dollars in 2014 (<http://www.sais-cari.org/data-china-africa-trade/>); it dropped to a still respectable \$180 billion in 2015. Trade clearly has never been higher, and this is expected to continue.

Chinese exports to Africa span the gamut from cheap textiles and toys, to industrial goods such as heavy machinery, to high technology items such as telecommunications equipment and electrical materials. Currently, the high volume of trade exhibits an imbalance in favor of China largely because the majority of the African countries are buyers and recipients, not producers, of these items. This must change if the relationship is to be mutually beneficial. However, in the area of oil, it appears that China will greatly increase its reliance on Africa as it imports even more, especially from the Gulf of Guinea.

The rise in trading has led to an increase in Chinese FDI on the continent (\$100 billion)

<http://www.heritage.org/research/projects/china-global-investment-tracker-interactive-map>),

almost 20% of its worldwide total. This is significant and underscores serious Chinese interests as it has encouraged over 2000 Chinese companies and almost a million Chinese people to invest in areas as varied as energy and oil exploration, agriculture, electronics and telecommunications, and sports. Indeed, Chinese involvement in the building of infrastructure—roads, bridges, hydro-electric power, railways—constitute perhaps the most positive aspects of the rapprochement.

4 Drawbacks

Chinese presence is concrete and active all across the continent. Nobody can underplay China's engagements in almost all the African countries since 2000. However, after several years of the activity, the evidence available also suggests that the relationship is somehow still developing. After all, Africa is still only 3% of China's investment destination; and in spite of \$200 billion dollars in trade, this is still only 5% of Chinese worldwide trade. (Sun; 2014).

Perhaps more important, the relationship may be fraught with other concerns, at the top of which is a perceived *culture clash* between the increasing number of Chinese workers—skilled and unskilled—brought in and the local people across all the economic sectors. As Chinese investments have shot up, the continent has become a magnet for Chinese in both public and private instances migrating to Africa. While numbers are not very reliable, the figure that dominates the news is about a million Chinese in Africa, a figure which is growing rapidly. There is evidence that the Chinese come in with preconceived negative images about Africa and Africans that get in the way of good relationships (Cheng, 2011). In places where a great number of the Chinese came on their own seeking their fortunes, the results have been literally deadly. For instance, in the individual mining business in Ghana called ‘galamsey’, the Chinese have found a presence since about 2006. Ghana laws specifically state that only Ghanaian nationals can engage in this business; however, the Chinese have infiltrated the business—which makes their activities illegal—and this has led to a diplomatic row between the two governments. The Government of Ghana (GOG) has sought to expel Chinese who are engaged in the business. (see the following links; <http://edition.myjoyonline.com/pages/news/201207/90591.php>; <http://exposeghana.com/tag/chinese-galamsey/>). There have been deaths of Ghanaians and Chinese in this on-going debacle.

Perhaps related to this cultural deficit of the Chinese is the vexing concern about the belief that the Chinese prefer to bring in their own workers rather than hire locals; in almost all the contracts signed, there has been the need to insist on certain Chinese quotas (<http://www.chinaafricarealstory.com/p/chinese-workers-in-africa-anecdotes.html>). Clearly, a major part of the negotiations between African nations and the Chinese should be the former’s insistence that the Chinese should hire much more local labor—both skilled and unskilled—as a way to build local capacity.

A real potential for the continent to become dependent on China exists. Whether it is trade, investment, or infrastructure, the Chinese, after a decade or so, are operating primarily from commercial motivations rather than as partners bent on bringing prosperity to ‘fellow’ developing nations. In other words, while the political rhetoric has been lofty, the actual actions and activities of the Chinese have been very much commercial in execution, in purely cost-benefit terms.

A \$3 billion loan agreement between Ghana and China signed in 2011 illustrates this point. First, the loan was issued in the name of the Chinese Development Bank; second, among the terms of the agreement was that Ghana will pay for the loan with its oil revenue. Further, among the ‘fees’ Ghana as a borrower had to pay were ‘...an-upfront fee equal to zero point two five percent (0.25%) of the Total Commitment...’ (Parliamentary Debates; 2011). There was also a ‘Commitment fee’ of ‘...1% per year on the undrawn and uncanceled portion of the total...’! In other words, the Government of Ghana could pay up to 1% of \$3 billion a year if there was no disbursement of the loan! (Ibid). The majority of the loan had not been disbursed as of 2015, and the GOG had paid at least \$30 million each of those years.

(<http://graphic.com.gh/Politics/minority-raises-issues-with-chinese-loan-again.html>).

With regard to trade, the majority of the transactions represented Chinese consumer and manufactured goods dumped on many African nations—textiles, medicines, furniture, electrical gadgets, among others. In return, most of the African nations continued to provide the raw materials—crude oil, minerals, timber. In textiles, for instance, Chinese exports to the continent have undercut the local textile industries in major African nations.

Another drawback in the Africa-Chinese engagement is the fact that we have 54 nations usually dealing individually with the one country, China. As most of the African countries begin to look ‘east’, they may need to do so less as individual entities and more as organized blocs. In the same way that for years now African nations have tried to create both regional economic blocs and a true continental union, these nations must promote a united front as much as possible in their dealings with China. The FOCAC concept where there is a rotating biennial summit seems to present the best mechanism for this. For instance, with so many African nations joining the league of oil producers and exporters, it may be incumbent on them to form a pan-African oil group in dealing with the increasing Chinese oil needs from Africa, much as the Organization of Petroleum Exporting Countries (OPEC) operated on behalf of the major oil producers globally decades ago.

5 What can be done?

China is in Africa in a big way; the Chinese engagement in Africa has been one of the major global paradigm shifts since the end of the Cold War, circa 1989. The question is, how can the African governments manage this new dispensation? Clearly, there is a need for a comprehensive Africa policy that needs to be developed at the continental level; countries must work together more, especially to prevent China playing one against the other. African leadership must seek new policies that give the continent better negotiating positions in the signing of agreements. The continent cannot afford to create the age-old conditions that had it as just providing raw, primary products without adding any value. The time has long come—and indeed gone—when these economic relationships must be mutually benefiting, structured in a way that Africa gets its true value.

African leadership must use the windfall from China's engagement to lift its peoples out of underdevelopment, primarily through a diversification of its economies. There must be investments in education and human resources training, up to date enough to manage these opportunities.

So far, evidence points to a mixed environment; the relationship seems to be a double-edged sword. On one hand, it has the trappings of dependency, as the Chinese have managed to preach 'strategic partnership' but their actions have been based on cold, business terms. However, all across the continent one can see concrete evidence of Chinese influence: roads, railways, real estate and housing, mining companies, manufacturing concerns, dams, among others. Ultimately, the most important ingredient in this relationship is the proper management of it by Africa's leaders. At all times, this leadership must be guided by the concrete social development needs of its peoples and societies. Africa must be guided by its permanent interests, not necessarily insist on permanent friendship with China. No matter what happens, we can only blame African leadership if they are unable to manage these economic relationships with China to the benefit of its peoples.

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APPENDIX I

<http://www.fmprc.gov.cn/zflt/eng/wjjh/hywj/t157834.htm>

Programme for China-Africa Cooperation in Economic and Social Development

The Forum on China-Africa Co-operation - Ministerial Conference 2000 was held in Beijing, China from 10 to 12 October 2000. Ministers from China and 44 African countries exchanged views and are convinced of the imperatives for a dynamic, new strategic partnership between Africa and the PRC. The Ministers commit themselves to co-operating in all fields, especially social and economic development, on the basis of equality and mutual respect with a view to renewing, developing and expanding China-Africa co-operation in the 21st century.

1. Foreword

1.1 The Ministers reviewed with satisfaction the results of the co-operation between China and African countries over the past 50 years. The Ministers believe that such co-operation, not only directly benefits their peoples, but also enhances friendship and mutual understanding. The Ministers note that China and African countries have made great efforts in recent years to explore new forms of co-operation, particularly between enterprises. They, however, note that both Africa and China still have great potential, which should be properly managed and strategically directed for their mutual

benefit.

1.2 The Ministers also agree that, in view of the present unjust and inequitable world order. China and African countries should position themselves to influence the establishment of a new world order which will reflect their needs and interests. To this end, they agree to adopt a workable programme towards the creation of a new strategic partnership for sustainable development in the 21st century.

1.3 The Ministers further observe that globalization currently presents more challenges and risks than opportunities to the vast number of developing countries and therefore express their determination to strengthen the existing co-operation between China and African countries in all fields. They also agree to earnestly explore new ideas and strategies to develop their respective economics and enhance their capabilities to participate in globalization.

1.4 In pursuit of the foregoing objectives the Ministers reiterate that China and African countries will honor the following principles of co-operation for their future development:

- 1.4.1 equality and mutual benefit
 - 1.4.2 diversity in form and content
 - 1.4.3 emphasis on practical results
 - 1.4.4 pursuit of common progress
 - 1.4.5 amicable settlement of differences
2. Inter-governmental Co-operation

2.1 The Ministers maintain that the two sides should use and improve the existing bilateral consultation mechanisms to strengthen inter-governmental links, explore new areas of co-operation, closely monitor the progress in their existing co-operation and share experiences in order to enhance their mutually beneficial partnership. In light of the development and changes in their bilateral economic and trade relations, the two sides agree to continue to review and conclude agreements as necessary, with a view to encouraging preferential market access for products from African countries into China.

2.2 The Ministers agree to promote the exchange of high-level visits and conduct regular inter-governmental dialogue and co-operation, so as to create a favorable climate for business contacts and trade between China and Africa. In addition, they undertake to promote positive interaction with relevant trade and commercial organizations and assist in the establishment of effective communication links between such organizations in China and Africa, in order to ensure that they play an active role in the development of our economies.

2.3 The Chinese government undertakes to continue to co-operate with and provide development assistance to African countries, focusing on the promotion of local industries, sourcing of local materials and the creation of employment. Such development assistance should support national policies of African countries and be awarded in consultation with national governments. Projects will be aimed at the utilization of local expertise and materials, the creation of local employment and the development of human resources of African countries.

2.4 To support African countries in their economic and social development, the Chinese side undertakes to continue providing assistance to African countries, within its capacity, in light of specific economic conditions of the recipient countries and within the framework of South-South co-operation. This support will mainly take the form of aid grants, concessional loans and interest-free loans to be mainly used in areas determined by both sides.

3. Trade and Investment

3.1 The Ministers acknowledge progress in the area of trade and investment promotion and express their readiness to develop a strategy by creating an enabling legal and business environment, so that such co-operation will gradually play a leading role in the China-Africa economic partnership.

3.2 The Ministers agree to conclude an appropriate legal framework on:

- 3.2.1 trade promotion and capacity building;
- 3.2.2 encouragement, protection and guarantee of investments;
- 3.2.3 avoidance of double taxation;
- 3.2.4 enhancement of co-operation in marine shipping and air transportation

3.3 The Ministers agree to undertake joint efforts to improve trade and investment environment

through such measures as granting each other preferential treatment in conformity with existing national laws, equitable treatment to all investors together with investment guarantees and just settlement of eventual disputes, in accordance with internationally accepted rules and practices.

4. Trade

4.1 The Ministers note the necessity to move towards balanced and enhanced trade and acknowledge the need to assist in improving the production capacity in Africa and in diversifying the composition of African exports. They pledge to collaborate and share experience in overcoming Africa's export dependence on primary commodities, single products and raw materials.

4.2 The Ministers stress the need to harmonize their trade policies and to participate actively in trade negotiations, including within the framework of the WTO, in order to ensure that the multilateral trading system contributes to enhanced competitiveness, economic growth and sustainable development of their countries.

4.3 The Ministers express the readiness of their business communities to vigorously explore and benefit from all opportunities offered by their respective markets, in an enterprising spirit, while complying with internationally accepted norms and quality standards in their exported products.

4.4 Noting with concern the imbalance in the two-way trade and the need to address it as soon as possible, the Chinese side undertakes to:

4.4.1 encourage its enterprises to give preference to the import of African products in the light of market demand and conditions;

4.4.2 strive to make its investment and trade centers in Africa a success, and to facilitate the establishment of similar centers of African countries in China, so that these centers will play an effective bridging role in facilitating exchanges and communications between enterprises of the two sides;

4.4.3 establish a China-Africa Joint Business Council in co-ordination with the Chambers of Commerce of African countries and professional organizations, so as to put in place a dialogue and consultation mechanism with African enterprises and promote economic co-operation and trade between them; and

4.4.4 establish a China-Africa Products Exhibition Center in China to promote two-way trade and facilitate access for African products to the Chinese market.

4.5 The Ministers state importance of providing better and preferential access to the Chinese market for African exports of commercial importance.

4.6 The Ministers agree to ensure better access to each other's market, in the context of multilateral trade liberalization and progress made with due regard to regional integration arrangements in Africa.

5. Investment

5.1 The Ministers pledge to encourage mutual investment by their enterprises, the exchange of experience in business management, the setting up of joint ventures or sole ownership enterprises, including small or medium ones and the establishment of joint business for a, as key factors in the China-Africa economic partnership.

5.2 The Chinese side will set aside special funds to support and encourage investment by well-established Chinese enterprises in African countries to set up joint equity or co-operation projects adapted to local need in terms of job creation and transfer of technologies.

5.3 The Chinese side agrees to share with African countries its experience in the field of investment promotion relating to the establishment and management of free and special economic zones.

5.4 The Minister agree to identify their complementarities in order to invest in common projects through bilateral and/or trilateral co-operation channels.

5.5 They agree that the Joint Business Council to be established between their public/private sectors will be aimed at organizing regular business meetings among their economic operators and professional organizations as well as training seminars on doing business with special focus on their market specific aspects.

5.6 The Minister express their readiness to develop further, as necessary, the finance schemes

needed to implement mutual investment and economic partnership between China and Africa.

6. Co-operation in Engineering and Other Infrastructural Projects

6.1 The Minister positively appraise the co-operation between the two sides in engineering projects in African countries. The Chinese side will continue to encourage well-established Chinese enterprises to participate in economic and infrastructure construction and development projects in African countries. It also expresses its readiness to make available its modern and appropriate technologies, as well as managerial expertise, in various areas such as engineering contracting, technical and management co-operation. It will also encourage these enterprises to enhance co-operation with their counterparts in Africa and employ, as well as train more local people, including the usage of locally available resources. In such co-operation, the Chinese side may also consider accepting various forms of payment such as payment in kind, to ease African countries' financial burden and help increase their export to China.

7. Financial Co-operation

7.1 Noting that co-operation between financial institutions of China and African countries has just started, the Ministers express their determination to encourage them to vigorously look into the possibility of co-operation in such forms as parallel and co-financing arrangement. They believe that it is imperative to continue to enhance financial co-operation between China and the African Development Bank Group (ADB), the Eastern and Southern African Trade and Development Bank (PTA) and other multilateral financial institutions in Africa, in particular to implement the bilateral agreement on technical co-operation concluded between China and the ADB.

8. Debt Relief and Cancellation

8.1 The Ministers note with concern that the heavy debt burden not only seriously hampers the economic growth of African countries, but also causes worsening social problems. They welcome the international efforts for debt relief or cancellation over the past few years and call on developed countries and international financial institutions that are main creditors to fulfil their commitments at an early date. The momentum on debt relief over the past years must be maintained and developed.

8.2 The Chinese side notes that African debt to China does not constitute the bulk of the continent's debt stock and that China is herself a developing country and a net debtor. Notwithstanding this, the Chinese side expresses its readiness to help relieve the debt burden of African countries. In this connection, the Chinese side undertakes to reduce or cancel debt amounting to 10 billion RMB yuan owed by the heavily indebted poor countries and least developed countries in Africa in the coming two year. The details will be discussed through bilateral channels.

8.3 The Ministers recognize that China, as a permanent member of the United Nations Security Council, is a significant partner in developing support around the issue of debt relief for Africa.

9. Tourism

9.1 The Ministers acknowledge that tourism is an important economic activity which has the potential for generation financial resources that will help Africa's accelerated economic growth, the creation of employment opportunities and the alleviation of poverty. They agree to co-operate in promoting tourism and undertake to encourage investment in the development of tourism infrastructure and capacity, with specific focus on the development of small, micro and medium enterprises.

10. Migration

10.1 The Ministers agree that their respective governments will facilitate the processing of applications for work permits and visas, in line with the existing legislation and policy pertaining to migration, and that deficiencies will be addressed within the framework of bilateral agreements.

11. Agricultural Co-operation

11.1 The Ministers express their readiness to share their respective countries' experience in various fields of agricultural development and fisheries.

11.2 Realizing the vital importance of agricultural development to eliminating poverty and ensuring food security, the Ministers are determined to take all the necessary measures to ensure successful co-operation in this area.

11.3 The two sides also agree to further explore effective ways of trilateral co-operation among China, African countries and the relevant international institutions such as the United Nations Food

and Agriculture Organization (FAO).

12. Exploration and Utilization of Natural Resources and Energy

12.1 Cognizant of the importance of their respective natural resources, the two sides agree to co-operate in the use of such resources. China agree that Africa needs to benefit its agricultural, mineral and metallurgical resources, in order to generate industrial economic activities. In this regard, China agrees to promote investment in, and exploration and beneficiation of metallurgical resources and that such beneficiation should be done in Africa.

12.2 The Ministers agree to facilitate the exploration and beneficiation of such resources on a reciprocal basis with due consideration to sound environmental practices.

13. Scientific, Technological and Cultural Co-operation

13.1 Aware of the importance of scientific, technological and cultural co-operation, the two sides commit themselves to:

13.1.1 enhancing co-operation in the areas of basic and applied research, and development and transfer of technology;

13.1.2 supporting the upgrading of Africa's indigenous technologies;

13.1.3 working together for the extension of technologies already developed and employed, such as utilization of solar energy, disaster prevention, management and relief, as well as development of water resources, so as to make them serve the economic revitalization of both China and African countries; and

13.1.4 increasing cultural exchanges, particularly the exchange of visits by high-level cultural delegations and sports and art groups, setting up more art exhibitions in each other's territory, and making a greater effort to study and promote each other's culture.

14. Co-operation in Medical Care Public Health

14.1 Recognizing the positive role of the Chinese medical teams in Africa and grateful for the efforts of the Chinese government in this regard, the African Ministers welcome the commitment made by the Chinese side to send more medical teams to African countries and they promise to create suitable working and living conditions for these teams.

14.2 The Chinese side agrees to give positive consideration to the requests of African countries and promises to continue to provide them with medical equipment, facilities, medicine and more training to local medical personnel, and promote co-operation in the use of traditional medicine and pharmacy, so as to ensure more fruitful results in such co-operation.

14.3 The two sides agree to conduct co-operation in such areas as reducing infant and maternal mortality rates, and preventing and treating HIV/AIDS, malaria, tropical and other diseases.

15. Education and Human Resources Development

15.1 The Minister agree to expand co-operation in education and human resources development. The Chinese side pledges to:

15.1.1 grant more scholarships to African students to study in China, continue to send teachers to Africa to help local institutions of higher learning improve their disciplines and specialties, and set up channels of communications between universities of the two sides for the study of the Chinese and African civilizations; and

15.1.2 establish an African Human Resources Development Fund and gradually increase financial contribution to the Fund for the training of professionals of different disciplines for African countries.

15.2 The two sides agree to work out country-specific training plans through appropriate channels, identify specific co-operation projects and facilitate their implementation.

16. Environmental management and Bio-diversity

16.1 The Ministers support international efforts towards environmental management and sustainable human development. The two sides express their commitment to the key elements of the various environmental conventions and undertake to forge closer co-operation and joint participation in capacity building for integrating environmental management in national development.

16.2 In pursuit of this, China and Africa undertake to co-operate in all fields of environmental management, including pollution control, bio-diversity conservation, protection of forest eco-systems, fisheries and wildlife management in order to ensure economic and sustainable human development.

17. Trilateral Co-operation

17.1 The two sides stress the importance of the development of trilateral co-operation to achieve the objectives contained in the present programme of co-operation and the promotion of Sino-African relation, notably within the framework of South-South co-operation. They note that such an initiative will lead to the effective utilization of available financial resources for the further development of human and natural resources of the countries involved.

18. Co-operation on Arms Control

18.1 The Ministers express deep concern at the large influx of small arms and light weapons to conflict areas in Africa and agree that this constitutes a threat to peace, security/stability and development on the continent. They pledge to fully co-operate at international level to prevent and combat the problem of illicit proliferation, circulation and trafficking of small arms and light weapons.

19. Multilateral Co-operation

19.1 Convinced of the pivotal importance of closer South-South co-operation under the current circumstances, the two sides agree to:

19.1.1 strengthen co-operation and consultation at multilateral level for such as the UN System, UNCTAD, and the WTO, so as to safeguard the common interests of the developing countries; and

19.1.2 co-ordinate positions in reforming multilateral economic and trade regimes and formulating relevant rules, with a view to increasing the collective bargaining capacity of developing countries, and make joint efforts towards the democratization of international relations and the establishment of a just and equitable new international economic order.

19.2 The Ministers agree to work for the reform of the United Nations and particularly the UN Security Council that will be geographically representative. We call for the recognition of the legitimate place due to Africa in the Security Council, the organizations and specialized agencies of the United Nations system.

20. Follow-up Mechanisms

20.1 The Ministers agree to establish corresponding committees for follow-up actions of the Forum on China-Africa Co-operation at Ministerial level.

20.2 The two sides agree to set up joint follow-up mechanisms at various levels. Under these mechanisms, the Ministers will meet in three years time to evaluate progress in the implementation of the Programme, Senior Officials in two years time and Ambassadors resident in China on a regular basis. The Senior Officials Meetings and the Ministerial Conferences will be convened in China and Africa on an alternate basis within the framework of the Forum on China-Africa Co-operation.

The State of CSR's Research in Ghana: What Do We Know and Do Not Know?

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Abstract As a result of the globalization and its consequences such as multi-nationalisation of companies, CSR has become one of the dominant themes attracting the attention of researchers, policy makers, practitioners, educators and international multilateral organisations, such as the World Bank, the EU and the OECD. Whilst research in the field has advanced, aside South Africa, less can be found in most countries in Africa. A sample of reviews on extant studies on the topic has been done to summarise the state of knowledge in the field and recommendations for future research made. Yet few papers on Africa can be seen from the synthesis of the global studies. The current study contributes to CSR's knowledge in Africa by synthesising 115 CSR's studies from Ghana between 2006 and 2016. Using an analysis based on Aguinis & Glavas (2012), coupled with descriptive statistics, the results show that among organizational, individual and institutional level analyses, CSR's studies on Ghana focuses wholly on institutional level analysis. In terms of the issues addressed so far, CSR and firm performance related studies dominate. With sectoral focus, banking and the mining sectors dominate the studies. With regard to author collaborations, two author papers dominate, whilst regarding the author's institution, academics from the University of Ghana dominate the sample. Implications of the on findings for policy, practice and theory are suggested.

Key words CSR, Ghana, synthesis

1 Background

Researches on CSR activities, their usefulness, challenges and many other related issues have been globalised. This is attributable to the vital role CSR plays in the development of economies (Ismail, 2009). Researches on CSR, have over the years, brought to the limelight numerous critical issues associated with CSR execution. While some reveal attitudes of managements towards CSR (Abugre, 2014); CRS communication (Hinson et al., 2010), assurance and capacity building requirements (Koutra and Edwards, 2012); others explain the link existing between marketing and CSR; financial performance and national development effects of CSR.

It is worth mentioning that some CSR studies come up with intriguing findings that pave broader ways for more successful and more fascinating researches in the future.

Corporate Social Responsibility (CSR) has become a global issue of interest to practitioners, academicians, policy makers, corporate bodies and entrepreneurs, coupled with growing literature. Although the concept of CRS seems relatively new to the business world, its revolution dated as far back as the 1930s, with a study by Dodd (1932) in Harvard Law Review Article (Taneja, Taneja and Gupta, 2011). Dodd (1932) stated that in addition to the role of managers to their shareholders, they also have a responsibility to the society they operate in. Researchers such as Wartick and Cochran (1985); Carroll (1979) and Preston (1975) however, credited the book by Bowen (1953) on "Social Responsibility of Businessman" as the starting point of theorising the role of corporations in the society. From this period CSR resumed its relevance in the 1990s and became a relevant issue in modern economic phenomena, drawing attention from the business press, academicians, policy makers, practitioners, theory builders and consumers (Lee, 2008). For business environment, Lemus (2016) considers CSR to be a part of financial reporting standards. Studies such as Bonson and Bednarova (2015) and Yu and Ting (2012) confirmed its importance in auditing by reporting high auditor quality standards for firms that incorporate CSR into their financial reporting standards. Benefits of CSR on the firm's performance have also been overwhelming from various researches, in particular: improved employee productivity (Trevino & Nelson, 2004, Valentine & Fleischman, 2008), ensures risk

management (Cheng, Lam, Kwok, Ng and Fung, 2012, Dhaliwal, Li, Tsang and Yang, 2011), enhanced operating efficiency (Porter & Kramer, 2002, Brammer & Millington, 2005), capital market benefits and product market gains (Godfrey, 2005, Dhaliwal, Radhakrishnan, Tsang and Yang, 2012, Menon & Kahn, 2003, Bloom, Hoeffler, Keller and Meza, 2006) and earnings quality (Chih, Shen and Kang, 2008, Kim, Park and Wier, 2012).

Corporate Social Responsibility is a currently a growing issue in Africa, evidence of this include, but not limited to the massive support of the CSR initiative from the African Peer Review Mechanism (APRM) (Corrigan, 2014). Conceptualizing the concepts in Africa, it is contended that the concept is having a more Western orientation. (Visser and Tolhurst, 2010). Scholars (e.g. Frynas, 2005; Blowfield, 2005; Fox, 2004; Utting, 2003) also saw the concept of CSR to be more tune to the North (Western societies) than the South. Newell (2005) and UNRISD (2003) believed CSR conditions described in mainstream CSR are non-existent in developing countries. Margolis and Walsh (2003) confirmed early studies and argued that the impact of CSR in developing countries is often overlooked in support of Western driven goals. This lead to the formation of the South-centred agenda with focus on determining the potentials of CSR and the limiting factors that affect the practice in the global South (Lund-Thomsen, 2005). Whiles ongoing discussions have commended the South-centred CSR to be instrumental to CSR maturity on the continent, Africa, Idemudia (2011) believes the concept is yet to reach its potential fully. The study attributed the challenges to the adoption of haphazard focus of analysis seen in the lack of emphasis on the relationship between CSR and its outcomes (context, development and practices) in prevailing literature. Idemudia (2011) therefore called for inclusion of southern perspective into the concept of CSR to stipulate how the concept can contribute to sustainable development in Africa.

Researchers (e.g. Bagire, Tusiime, Nalweyiso and Kakooza, 2013; Muthuri, Moon and Idemudia, 2012; Vertigans, 2011; Noyoo 2010) as a branded form of exploitation that existed in the colonial days through the role of transitional corporations (TNCs). Muthuri et al. (2012) believed the concept of CSR in Africa is enclosed on apartheid, colonialism and ethics of slavery. According to GTZ (2009), “the operational definition of CSR in the sub-Saharan region seems to lead towards corporate social investment” thus presenting an opportunity and a challenge for further research. Orock (2006) also holds the view that TNCs could not respond adequately to the pressing needs of Africans despite the massive investments they generated. TNCs also aids in making African countries poorer with widening income inequalities instead of eradicating poverty (Idemudia, (2014; Corrigan, 2014).

A study conducted by Idemudia (2014) (corporate social responsibility and development in Africa: issues and possibilities) also revealed that the CRS concept is not a current issue in Africa. Whiles Muthuri (2013) and Visser (2006) alleged the literature on CSR is now developing in Africa, with dominance seen in researches carried out in South Africa. Although the expectation of African on CRS is growing with researches carried out by Kolk and Lefant (2013) (Central African countries), but Gokulsing (2011) (Mauritius) and Corrigan (2014) argues that CSR and corporate governance acceptance in African remains uneven. Consequently, thinking about the concept of CSR on the continent of Africa seems to be at the infant stage. Corrigan (2014) concludes that the concept of CSR practice proposed by APRM has not lived up to expectation. The experiences are, however mixed, with most stakeholders in less developed countries showing little commitments about CSR’s issues.

Idemudia (2014) categorised into three dimensions the determinants of CSR in Africa, namely the internal, external and traditional factors. In this research, the author, further put forward three principal arguments in favour of the need for adoption of CRS in Africa. The first argument concurs with the governance deficit argument raised by Fitzpatrick et al. (2011). Idemudia (2014) observed that with the overwhelming governmental failure in Africa, most transnational national corporations (TNCs) were able to build on it and exploit the local population (in terms of cheap labour, social and environmental cost). The arguments raised support studies carried out by Alstin and Afrionis (2013) and Campbell, 2012) who also found similar results. The second argument goes for the business case, which is consistent with studies conducted by Gracia-Rodriguez et al. (2013). The study believed that effective adoption of CSR will help NTCs to reach a win-win outcome for themselves and the environment (society) they operate. Idemudia (2014) presents the third and last argument for the changing social

expectation. The study proposes that NTCs are not separated from the society they operate in, but form part of it. Thus, they are liable to the changing needs of the society and their expectations in order to maintain their relevance. For the way forward for CSR adoption in African countries, Idemudia (2014) presents two issues: the need for CSR to be more aligned with developmental objectives and also for CSR analysis to move away from a business perspective and focused on factors that drives CSR initiatives as well as constrain its ability to contribute to development.

Relative to the global landscape research interest in CSR is flourishing and so more evidence is needed from Africa to compare and contrast with extant studies. Among the extant studies on the issue include, but are not limited to the following. Margolis et al. (2009) in their analysis of the 251 studies discussed by Moser and Martin (2012) using meta-analysis also reported a positive relationship between the overall performance of firms and CSR. Results from their analysis confirmed similar studies carried out by Brammer and Millington (2005), Godfrey (2005) and Saiia, Carroll and Buchholtz (2003). Kim et al. (2012) also revealed that CSR practicing firms are less likely to be subjected to investigations by the Security and Exchange Commission (SEC) of their respective countries. Barnea and Rubin (2010) and McWilliams, Siegel and Wright (2006) also noted a boost in manager's self-interest and confidence as a result of adoption of CSR.

With regards to corporate governance and CSR, Jo and Harjoto (2012:2011) uses a range of variables (board independence, anti-takeover provisions, CEO leadership, institutional ownership) as proxies for corporate governance and found a positive relationship between the two variables. Other findings from the study found the lag of corporate governance and CSR to be positively related while lag of CSR shows insignificant relationship. Rupley, Brown and Marhall (2012) also reported a positive association between board diversity, independence and expertise and firms that practice voluntary environmental disclosure. A study conducted using market data from Korea by Oh, Chang and Martynov (2011) also found institutional ownership and CSR to be related positively. Similar results were obtained by Li and Zhang (2010) with data from China firm (CSR positively related to corporate ownership). In a related study, Brown and Dacin (2006) found high CSR firms to have a high probability of receiving favourable media treatment from both the media and policy makers.

A study conducted by Nejati, Shafaei, Salamzadeh and Daraei (2011) (ten top universities in the world) reported an embrace of CSR by these universities. Other studies include Wang (2011) (Education for sustainable development); Mathar (2010) (Integration of the earth charter into education activities in Germany). Ismail, Johar, Rasdi and Alias (2014) (School as a stakeholder of CSR Program: Teacher's Perspective on Outcomes in School Development) revealed that CSR programs helped in student achievement, skills enhancement of teachers and conducive environment for student learning. The relevance of CSR continues to receives immense endorsement from major international bodies (e.g. Organisation of Economic Co-operation and Development, United Nations and International Labour Organisations) as a result, they have recognized guidelines and staffed departments established to research into the promotion of CSR (Lee, 2008). For instance, the European Commission (2001) helped in creating awareness of CSR by providing CSR analysis as a concept that motivates firms to voluntarily contribute to societal needs and clean environment.

Gelb and Strawser (2001) also found firms with good CSR performance to have improved financial and CSR disclosures. Several researches have also been conducted on the determinants of disclosure of CSR by firms (Chih et al., 2010; Reverte, 2009; Holder -Webb, Cohen, Nath and Wood, 2009; Cormier & Magnan, 1999). Malik (2015) on the other hand studied the determinants of CSR disclosure and reported corporate size, social constraints, management decision making horizon, economic performance, industry category, strategic posture, management decision horizon, information asymmetry, stakeholder power, systematic risk, media exposure and regulatory requirements. KPMG (2011) report presents interesting findings on the impact of CSR disclosure by firms. The report found a greater number of firms to be engaged in CSR activities (investing millions of dollars) and produce CSR reports irrespective of firm structure, ownership and size. Malik (2015) believed firms will not be motivated to invest a lot in CSR activities if the returns are negative. The study, therefore, encouraged managers to engage in CSR practices since it has a positive effect on firms. Dhaliwal et al. (2012) also noted firms forecast by analysts to have associated with lower errors for firms that issued CSR reports

and concludes that there is a positive signal associated with CSR disclosure on a whole and it enhances the relevance of further information that firms disclosed in value terms.

With the need for studies from Africa to corroborate with extant findings in paragraph (1-4). This study sought the gap in part with regard to the dearth of literature on CSR in Africa, so doing, it undertakes a synthesis of CSR's studies on Ghana from 2006 – 2016. The motivation is to situate the findings in the context prior synthesis of global CSR's literature which contains few Africa literature, especially sub-Saharan Africa (see Lee, 2008; Aguinis & Glavas, 2012; Malik, 2015). To address the issue, three questions inform the study, namely: which topics are over or under researched? Which methods drive existing studies in Ghana? Which sectors have received the most research attention? The objective of the paper is to contribute CSR's research on Africa, by presenting what has been done on Ghana to date in terms of sectors, themes, methods and key findings. So that researchers will reflect on questions which may appear critical, yet have not received research attention to enhance public policy, education and practice. The rest of the paper is structured as follows. Section 2 deals with method; whilst sections 3 and 4 deal with the findings and discussions respectively. Sections 5 deals the implications of the study respectively.

2 Methodology

Literature for this study discusses the general notions of CSR in Ghana. It also synthesized available published works in selected in recognized journals from the year 2005 to 2014. The papers were identified using the manual bibliographic search method, a computerized/electronic method based on bibliographic databases such as: Science direct, Emeralds insights and google scholar. Overall, 147 papers were retrieved, but a sample of 115 papers which met the criteria below were used for the study. The criteria used for a study to be qualified to be included in the study were: a) that the paper is based on Ghana's data; b) that the study shows the method used, d) that it reports data analysis and findings; e) mentions the sector used and d) being within 2006 – 2016 as being the scope of the study. These works were reviewed based on the title, the year of publication, the issued explored, and the geographical location of the empirical data as well as major findings. Frequency table and scatter plot was used to analyze the trend of research works in the area to establish scope and the direction of CSR's work on Ghana within the selected time horizon. The analysis of the content of the 115 papers was based on Aguinis & Glavas (2012) and Lunenberg et al. (2008), consequently, the study sought to identify whether or not a study uses organizational level, institutional level and individual level analysis. Following Aguinis & Glavas (2012) and Lunenberg et al. (2008), institutional level of analysis concerns studies that are based on laws, regulations as well other macro level factors within an external environment of an organisation. Organisational level factors concern factors that come from the management of the organization to drive CSR; examples are firm mission, values, size and type of ownership. Individual analysis concerns influence on the CSR's initiative with an organization which comes from individual members within the organisation, example, supervisors and individual employees. From these broad level analysis, we also sought to identify whether or not the study is based on predictor of CSR's initiatives, mediators and moderators of CSR's outcome relationships and CSR's outcome studies. All these types of analyses whether it is individual, organisational and/or institutional level predictors. In line with Aguinis & Glavas (2012), whilst mediators are the factors which explain the procedures, processes and the mechanism between CSR's outcome relationships, moderators concerns conditions that allow the predictors and the mediators to cause CSR's outcomes. CSR's outcomes are the consequences of CSR's initiatives. The analyses are individual, organizational and institutional.

3 Results and analysis

Table 3, Appendix A summaries the description of the 115 papers. In this Table the author (s), location of the study, the issues addressed and sample of key findings are brought.

3.1 Issues explored

In entirety, the 115 CSR researches sampled centered on 16 broad issues. Papers centering on the challenges of CSR; CSR and waste, among others. Papers that focused on the CRS and oil and industries constituted 3.48% of the sample. Studies focusing on CSR and mining sector makes up

17.39% of the sample while those into CSR and financial performance accounted for 24.34% of the sample. Furthermore, 23.48 % and 11.3% of the sample addressed HRM, management and CSR and CSR and communication. Nearly 4.35% concentrated on CSR and compliance with the law and other policy regulations; 2.6% dealt with CSR, marketing and marketing orientation. Overall, papers relating to CSR and corporate performance, management and CSR in mining related issues dominated the papers researched on Ghana. Themes such as CSR and corporate reputation, tourism, assurance and migration were the least researched issues. Table 1 presents the proportions of the issues.

Table 1 Issues explored

Theme	Frequency	% Frequency
Challenges and hindrances of CSR	3	2.608695652
Waste production, its effects and CSR	4	3.47826087
CRS and mining sector	20	17.39130435
CSR and financial performance, competitive advantages national development, development	28	24.34782609
CSR Compliance	5	4.347826087
CSR communication	13	11.30434783
Market orientation, marketing & CSR	3	2.608695652
CRS in oil and energy industries	4	3.47826087
HRM, management and CSR	27	23.47826087
Architecture and project alignments CSR	2	1.739130435
CSR and assurance	1	0.869565217
CSR and Corporate reputation	1	0.869565217
Migration & CSR	1	0.869565217
CSR's developments in the future	1	0.869565217
CSR & Tourism	1	0.869565217
CSR & Sustainability	1	0.869565217

Source: Compiled from the literature used in the study

3.2 Sectors of CSR Researches

Among the papers sampled for this study, it is revealed that 14 independent sectors were researched. CSR studies in the multisector (comprising of a combination of sectors), the banking and mining sectors correspondingly make up 33.9% 16.5% and 19.1% of the papers reviewed. Additionally, waste management, trade and telecommunication constitute approximately 5.2%, 6.08% and 4.35% respectively. Again, forestry pools 2.6% whereas craft, petroleum, agriculture, tourism and construction sectors each accounts for about 1.74% of the studies examined. The pie chart below is a graphically presents the sectors of focus of CSR researches sampled for the study. In all CSR's work on Ghana have dominated the banking and mining sectors. Figure 1 and Table 1, Appendix A present the proportions of the sector representations.

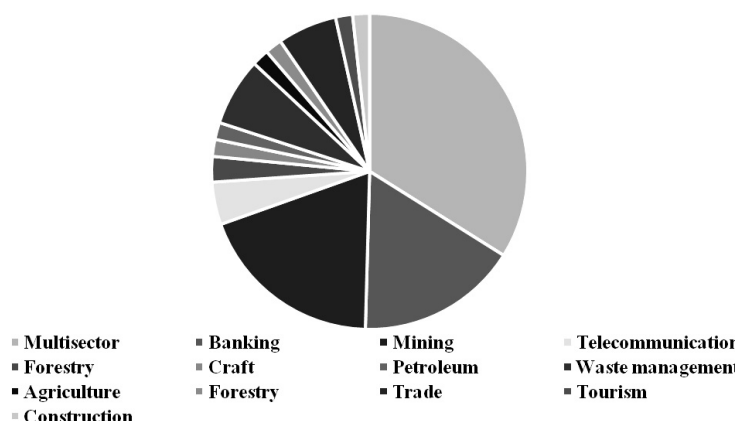


Figure 1 A bar chart showing the frequencies of the sectors researched

Source: Compiled From the literature

4 Methodological approaches

A critical look at the methodological approaches indicates that 26 (22.6%), 10 (nearly 8.70%) and 1 (about 0.87%) of the sample make use of thematic, deductive and ethnographic approaches in arriving at their results respective. In 5 (nearly 4.35%) of the papers adopted Factor and exploratory analyses are each employed for this study. Content analysis serves as the method of analysis for 11 (9.57% of the) papers whereas a paper employ data envelopment analysis technique. Also, a combination of content analysis and descriptive statistics; exploratory and content analyses; and content and thematic analyses are adopted each of 3 papers. Of the 53 empirically quantitative papers reviewed, 50 stick to descriptive statistics in realising their results; 2 use OLS whereas the remaining paper uses ANOVA. Overall, descriptive quantitative analysis dominates the methods used, followed by pure qualitative methods. Table 2 summarizes the results.

Table 2 Summary of methods used in sampled SME studies

Type of paper	Methodology	Frequency	% Frequency
Empirical qualitative	Thematic Analysis	26	22.60869565
	Deductive approach	10	8.695652174
	Ethnographic research analysis	1	0.869565217
Empirical mixed	Content analysis and descriptive analysis	1	0.869565217
	Exploratory and comparative analysis	1	0.869565217
	Exploratory analysis	5	4.347826087
	Factor analysis	5	4.347826087
	Content analysis	11	9.565217391
	Content and thematic data analysis	1	0.869565217
	Data Envelopment Analysis	1	0.869565217
Empirical quantitative	Ordinary Least Square (OLS) analysis	2	1.739130435
	ANOVA	1	0.869565217
	Descriptive statistics	50	43.47826087

Source: Compiled from the literature

4.1 Nature of author collaboration

The nature of collaboration that exists among authors of the sampled studies used in this research is summarised in Table 3. It is revealed that single-person authorship accounts for nearly 26.96% of the papers understudied. Two and three-person authorship constitutes 36.52% and 21.74% respectively. Whereas four and five-person authorship together make up 10.4% of the sampled studies, six and seven-person authorship orderly pool 3.5% and 0.87% of the papers considered for this study. In conclusion, two authorship dominated CSR's research in Ghana.

Table 3 Nature of collaboration among authors

Nature of collaboration	Frequency	% Frequency
Single authorship	31	26.95652174
Two authorship	42	36.52173913
Three authorship	25	21.73913043
Four authorship	3	2.608695652
Five authorship	9	7.826086957
Six authorship	4	3.47826087
Seven authorship	1	0.869565217

Source: Compiled from the literature

4.2 Author institutions

Although, the study is based on CSR papers on Ghana, yet authors collaborate from different institutions in different countries. Of the 115 papers, authors that are based on the University of Ghana dominated the sample constituting 15%, followed by Central University, 15% and Kwame Nkrumah University of Science and Technology coming third with 14%. Table 4 represents the author's institution.

Table 4 Authors' institutions of affiliation

Name of institution	Frequency	% Frequency
Aalborg University, Denmark	2	1.379310345
Accra Polytechnic	1	0.689655172
Adventist Senior High School	4	2.75862069
African University College of Communication	1	0.689655172
African University College of Communication, Ghana	1	0.689655172
Agricultural Development Bank	1	0.689655172
Birmingham City University	2	1.379310345
Brock University	2	1.379310345
Cape Coast Polytechnic	1	0.689655172
Central University College	16	11.03448276
Christ Apostolic University College	1	0.689655172
Christian Service University College	1	0.689655172
Council for Scientific and Industrial Research	1	0.689655172
Ejisuman Senior High	1	0.689655172
Forestry Research Institute of Ghana	1	0.689655172
Ghana Institute of Management and Public Administration	1	0.689655172
Ghana Nature Today	1	0.689655172
ICITD Southern University	1	0.689655172
Independent Researcher, Kumasi, Ghana	1	0.689655172
Jiangsu University, China	4	2.75862069
Koforidua Polytechnic	2	1.379310345
Kumasi Polytechnic	1	0.689655172
Kwame Nkrumah University of Science and Technology	14	9.655172414
Leeds Beckett University	2	1.379310345
Lund University	2	1.379310345
National Research University Higher School of Economics	1	0.689655172
North Umbria University	2	1.379310345
Pennsylvania State University	1	0.689655172
Queen's University	1	0.689655172
Raoul Wallenberg Institute of Human Rights and Humanitarian Law	1	0.689655172
South Africa and University Of Pretoria, South Africa	1	0.689655172
Swansea University	1	0.689655172
The Supreme Court of Ghana	1	0.689655172
Tomas Bata University in Zlin, Czech Republic	2	1.379310345
University College of Management Studies	2	1.379310345
University of Alberta	4	2.75862069
University of Bologna	2	1.379310345
University of Bonn	1	0.689655172
University of California	1	0.689655172
University of Cape Coast	4	2.75862069
University of Cape Town	1	0.689655172
University of Connecticut	1	0.689655172
University of Copenhagen	1	0.689655172
University of Education	3	2.068965517
University of Electronic Science & Technology of China	2	1.379310345
University of Free State	1	0.689655172
University of Ghana	22	15.17241379
University of Huddersfield	1	0.689655172
University of Leicester	2	1.379310345
University of Mines and Technology	3	2.068965517
University of Nottingham	3	2.068965517
University of Oxford	1	0.689655172
University Of Professional Studies	5	3.448275862

Name of institution	Frequency	% Frequency
University of Sharjah	1	0.689655172
University of Technology Sydney, Australia	3	2.068965517
University of Warwick	1	0.689655172
University of Western Ontario London	3	2.068965517
Vaasa University of Applied Science	1	0.689655172

Source: Compiled from the literature

4.3 Level of analyses

Table 5 summarizes the level of researches of and the nature of variables considered in the sampled papers. Per the Table 5, studies undertaken on CSR sampled for this study are of organisational level. The nature of variables is such that, 37% and 78% of the studies look at predictors and outcomes respectively. Consequently, no institutional and individual level studies are involved. In terms of method of data analysis, current methods do not consider moderator and mediator variables of CSR's relationship outcomes.

Table 5 A Tabulation of Level of Researches and Nature of Variables

Level of Research	Type of Variable	Frequency	% Frequency
Organisational level	Organisational level predictor	37	32.17391304
	Organisational level outcome	78	67.82608696

4.4 Journals used

Table 2, Appendix A, presents the journals used for the study. Of all the journals used, International Review of Management and Marketing dominated, accounting for 4%, followed by International Journal of Bank Marketing and International Journal of Business and Social Science each accounting for 3%.

5 Conclusion & discussion—What do we know and do not know

In terms of which themes have been over and/or under researched—research question 1- the results show that CSR and organization related performance, CSR and management, CSR practices in organisations, in particular CSR's activities the mining sector dominate issues addressed in Ghana. On the other hand, issues such as CSR and stakeholder participation, tourism CSR and CSR and assurance are among the under researched themes. Unfortunately, key sectors such the telecommunication industry, construction (real estate) and tourism and/or hospitality are among the under-researched sectors, whilst the banking and the mining sector dominate the sample.

In the terms of methods, qualitative and descriptive analysis dominates. There is a low level of advanced statistical techniques such as, structural equation modelling, logit and profit regression on CSR's studies on Ghana. Extant studies have also focused solely on cross-sectional data.

Unlike Aguinis & Glavas (2012) and Lunenberg et al. (2008), there is a significant gap on individual and institutional level CSR's analysis in Ghana. Both predictors, outcome studies and moderation and mediation of CSR's outcome relationship studies are lacking on CSR's studies on Ghana. Of the institution of author collaborations, scholars from the University of Ghana lead the studies.

In terms of the themes which have received much research attention (e.g. organization related performance, CSR and management, CSR practices in organisations), one reason may be that in Ghana private sector organisations appear more organised, in terms of data availability and systems. So most researchers found it convenient to conduct firm level analysis. As regards the sectors that have received much research attention (e.g. mining, banks), an argument that can be advanced is that although the agriculture sector is the mainstay of the Ghanaian economy, yet with regard to skilled labour employment, it is the service sector that is driving the economy, especially the financial institutions. Consequently these sectors have received more research attention because, it is the growing sub-sector of the Ghanaian economy with a well organised structures and so most researchers have acquaintances in these firms (e.g. former or past students) who help them to obtain data.

In terms of themes, the institutional and individual level studies are scarce because these are unfamiliar topics and researchers might feel that measurement instruments and data availability may pose barrier. Yet without an in-depth understanding of these themes, coupled with existing ones, our understanding will be difficult to be full regarding what is known and not known in the field.

6 Implications of the study

Undoubtedly, CSR studies have encapsulated a number of facets. This study has not only uncovered various methods, sectors and themes, among others. More importantly, it sets the trend for future researches on SMEs as it brings to light what crucial themes are yet to be researched and robust methodologies are in desuetude.

From a scholarly viewpoint, current studies on CSR looks too descriptive and therefore future studies must seek to employ advanced statistics to validate existing findings. Whilst sectoral and individual level analysis seem so crucial in the field, current studies on Ghana deals with more of organizational level analysis to the neglect of the other two. Whilst hospitality is booming in Ghana because of the globalization process, few papers have focused on tourism CSR and well as CSR and the telecommunication companies.

In terms of public policy, government fund academics to unearth the under-study areas such as tourism, construction and the telecommunications. This will balance the knowledge gap in policy formulation.

Educators such as PhD supervisors must focus on the under-researched areas in most of the doctoral training to wet prospective PhD candidates' appetite to fill existing gaps on CSR in Ghana.

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Appendix A

Table 1 Sectors of research

Sector	Frequency	% Frequency
Multisector	39	33.91304348
Banking	19	16.52173913
Mining	22	19.13043478
Telecommunication	5	4.347826087
Forestry	3	2.608695652
Craft	2	1.739130435
Petroleum	2	1.739130435
Waste management	6	5.217391304
Agriculture	2	1.739130435
Forestry	2	1.739130435
Trade	7	6.086956522
Waste Management	2	1.739130435
Tourism	2	1.739130435
Construction	2	1.739130435

Table 2 Journals of Publication

Name of Journal	Frequency	% Frequency
Africa Today	3	2.60869565
African Journal of Economic and Management Studies	1	0.86956522
African Journal of Hospitality, Tourism and Leisure	1	0.86956522
American Journal of Industrial and Business Management	1	0.86956522
Antipode	1	0.86956522
Asian Journal Of Business and Management Sciences	1	0.86956522
British Journal of Economics, Finance and Management Sciences	2	1.73913043
Business and Management Research	3	2.60869565
Business and Society Review	2	1.73913043
Canadian Journal of Development Studies	1	0.86956522
Communication Research And Practice	1	0.86956522
Corporate Governance Journal Emerald Insight	3	2.60869565
Corporate Governance: The international journal of business in Society	1	0.86956522
Corporate ownership and control	1	0.86956522
CSR, Sustainability, Ethics & Governance	1	0.86956522
Development in Practice	1	0.86956522
Environment and Natural Resources Research	2	1.73913043
European Journal of Business and Innovation Research	3	2.60869565
European Journal of Business and Management	1	0.86956522
European Journal of Business and Social Sciences	2	1.73913043
Ghana Mining Journal	1	0.86956522
Global Partnership Management Journal	4	3.47826087
Int. J. Banking, Accounting and Finance	1	0.86956522

Name of Journal	Frequency	% Frequency
International Forestry Review	1	0.86956522
International J. Banking, Accounting and Finance	1	0.86956522
International Journal of Academic Research in Accounting, Finance and Management Sciences	2	1.73913043
International Journal Of Bank Marketing	4	3.47826087
International Journal of Business and Management	1	0.86956522
International Journal of Business and Social Science	4	3.47826087
International Journal of Economics, Commerce and Management	1	0.86956522
International Journal of law and Management	2	1.73913043
International Journal of Thesis Projects and Dissertations	3	2.60869565
International Review of Management and Marketing	5	4.34782609
Journal of Corporate Governance	1	0.86956522
Journal of Entrepreneurship and Business	1	0.86956522
Journal of Accounting and Taxation	1	0.86956522
Journal of Business and Retail Management Research (JBRMR)	1	0.86956522
Journal of Communication Management	1	0.86956522
Journal of Contemporary Research in Management	1	0.86956522
Journal of Engineering, Design and Technology (Emerald Insight)	1	0.86956522
Journal of Entrepreneurship and Business	1	0.86956522
Journal of Environmental Management	2	1.73913043
Journal of Environmental Planning and Management	1	0.86956522
Journal of Human Resource and Sustainability Studies	1	0.86956522
Journal of Information, Communication and Ethics in Society	3	2.60869565
Journal of Interdisciplinary Conflict Science	1	0.86956522
Journal of Management and Strategy	1	0.86956522
Journal of Social and Development Sciences	1	0.86956522
Journal of Travel Research	1	0.86956522
Journal of Waste Management	1	0.86956522
Management of Environmental Quality: An International Journal	2	1.73913043
Management of Environmental Quality: An International Journal	1	0.86956522
Mediterranean Journal of Social Sciences	1	0.86956522
OASIS Open Journal	2	1.73913043
Open journals Acta Commercii	1	0.86956522
Oxford University Press and Community Development Journal	1	0.86956522
Research Gate	4	3.47826087
Resources Policy	2	1.73913043
Safety Science, Elsevier	1	0.86956522
Social Responsibility Journal	2	1.73913043
Social Responsibility Journal, Emerald Insight	1	0.86956522
Society and Business Review	2	1.73913043
South African Journal for Communication Theory and Research	2	1.73913043
The Extractive Industries and Society, Elsevier	1	0.86956522
The International Journal Of Business & Management	1	0.86956522
The International Journal of Business In Society	2	1.73913043
Thunderbird International Business Review	3	2.60869565
TRÍPODOS journal	3	2.60869565
Waste Management Journal	1	0.86956522

Table 3 Issues explored

Author (s)	Country	Issued explored	Key findings
Asase et al. (2009)	Ghana	Comparison of municipal solid waste management systems in Canada and Ghana	CSR transforms waste management in cities e.g. Kumasi, Ghana

Author (s)	Country	Issued explored	Key findings
Ofori and Hinson (2007)	Ghana	CSR perspectives of leading firms in Ghana.	Most companies in Ghana, subscribe less to the contemporary notion of CSR; their activities are less strategic, less moral and ethical in their approach.
Ohene-Asare and Asmild (2012)	Ghana	Banking efficiency analysis under CSR.	The relative performances of some of the banks might be underestimated or overestimated if CSR is not considered.
Tschakert (2009)	Ghana	A Radical re-imagination of the artisanal gold mining sector in Ghana	Huge CSR issues are associated with artisan mining
Mares (2012)	Ghana	CSR and Compliance with the Law	CSR supports existing law
Hinson (2011)	Ghana	Online CSR reportage of award-winning versus non award-winning banks in Ghana	Some banks in Ghana have weakest online CSR reportage
Ofori (2010)	Ghana	The views of top executives and management on corporate social responsibility and ethics in Ghana.	Most organizations in Ghana focus on externalities to the neglect of the internal issues that bother on employee well-being.
Ndzibah (2009)	Ghana	Explore CSR in the context of the dumping of electronic waste.	Companies are involved in various CSR activities like support for education, sponsorship of events and cash donations.
Marfo, Oduro Amoako and Amaning (2014)	Ghana	Exploring the persistent growth in investors on ethical concerns	Some MNCs find it costly to recycle their dumping and the hazards affect the environment.
Boateng and Madichie (2010)	Ghana	Banks communication of CSR in their programmes.	There is evidence for some banks whilst others are not.
Abugre (2014)	Ghana	Examining the managerial role in the practices of CSR in developing economies.	Even award winning banks in Ghana have some of the poorest CSR communication content on their corporate website.
Tawiah and Dartey-Baah	Ghana	Understanding of CSR under various sectors in Ghana.	Managerial role in the practice of CSR is limited and ineffective in Ghana.
Amponsah-Tawiah & Darteh-Baah (2015)	Ghana	CSR in Ghana	Business ethics now seems to be imposing positive moral values on commercial enterprises.
Koutra and Edwards (2012)	Ghana	Capacity Building through Socially Responsible Tourism	Foreign firms should be guided mainly by legal requirements in their CSR adoption decisions.
Abugre and Nyuur (2015)	Ghana	Organizations' commitment to and communication of CSR activities: insights from Ghana	Non-environmentalist approaches to implementing CSR activities must be granted equal level of considerations.
Kuada and Hinson (2012)	Ghana	CSR Practices of Foreign and Local Companies in Ghana	There should be a law on CSR in Ghana and a course on CSR to train experts in that area.

Author (s)	Country	Issued explored	Key findings
Owusu-Ansah (2013)	Ghana	CSR in Ghana: A Comparative Analysis and Business Imperative	Companies act in a surrogate governmental capacity as a result lack of engagement and action by government agencies at all levels.
Garvin et al. (2007)	Ghana	Community-company relations in gold mining in Ghana	Transparency and accountability are also needed to promote cooperation rather than collision among stakeholders.
Amponsah-Tawiah et al. (2015)	Ghana	Turning potential collision into cooperation in Ghana's oil industry	Level of understanding of the concept as evidenced by their practices is limited to philanthropic activities.
Adu - Boahen et al. (2014)	Ghana	Assessment of management attitudes on CSR in Ghana	Ghanaian society and business people have a positive attitude towards the profit motive and the business bottom-line.
Hinson and Kodua (2012)	Ghana	Examining the marketing-CSR nexus	Shortcomings of strategies whether bilateral or multilateral, public or private that, in an attempt to respond to problems of risk and legitimacy faced by mining companies, have led to measures in the name of CSR that do not address the origins that give rise to such problems.
Ahenkora et al. (2013)	Ghana	Societal Value Antecedent of CSR and Business Strategy	Revealed that there are nine key promoting and hindering factors of CSR for businesses in SSA.
Benon-be-isan Nyuur et al. (2012)	Ghana	CSR in Sub-Saharan Africa: hindering and supporting factors	Organizations owe a moral obligation to society
Anku-Tsedde and Deffor (2014)	Ghana	CSR in Ghana: An Overview of Aspects of the Regulatory Regime	The mining legacy that GSR inherited was marred by a history of mistrust between communities and mining companies, as well as between communities and local and central authorities
Puplampu and Dashwood (2011)	Ghana	Organizational Antecedents of a Mining Firm's Efforts	MNGs are generally involved in CSR activities across all four of the BiE index factors.
Gifford and Kestler (2010)	Ghana	Building local legitimacy into CSR.	Mtn has strong commitment to social responsibility programmes
Lichtenstein et al. (2013)	Ghana	CSR architecture and project alignments	Ethical values of both individual managers and their firms are the major factors determining managers' attitudes toward CSR, whilst a majority of respondents assert that CSR and ethical behavior is good for corporate reputation.

Author (s)	Country	Issued explored	Key findings
Ofori (2010)	Ghana	Executive and Management Attitudes on CSR and Ethics in Ghana	Although there is no legal framework for CSR in Ghana, companies are involved in various CSR activities like support for education, sponsorship of events and cash donations.
Bonney (2011)	Ghana	CSR and development in Africa	Results highlight three broad classifications of CSR project typology: social; infrastructure; and environmental. Ghanaian firms are found more aligned to social/intangible CSR projects than tangible ones.
Ofori (2010)	Ghana	1. The views of top management and executives on CSR. 2. Executive and Management Attitudes on CSR and Ethics in Ghana: Some Initial Exploratory Insights	Managers and executives believe that it is important for their firms to be socially responsible and to be seen to be behaving ethically.
Amponsah-Tawia and Dartey-Baah (2014)	Ghana	1. CSR related documents in Ghana 2. CSR and the mining industry of Ghana	CSR in Ghana has started with large scale multi-national companies especially those operating in the extractive industry leading the path.
Ansah (2013)	Ghana	1. CSR in developing countries 2. CSR in Ghana	A lot of human rights violations are still going on in mining industry of Ghana although we have many laws and regulations meant to bring about respect for and protection of human rights
Dabanja (2012)	Ghana	1. Rationale behind the CSR policies of the selected companies 2. CSR policies and their outcome	CSR, particularly the alternative-livelihood component, has certainly made some impact on reducing poverty in the 16 primary stakeholder communities.
Yankson (2010)	Ghana	1. Principles for compensation 2. Characteristic risk theory	There were some imbalances in the practice of CSR among the selected companies, some saw it as a right thing to do while others saw it as a way of making profits for themselves.
Ofori and Hinson (2007)	Ghana	1. CSR as an image of corporate image building 2. Ghana club 100	Internationally-connected Ghanaian firms seem to have a better grasp of the various dimensions of CSR and how these could be used to business and strategic advantage
Nzibah (2009)	Ghana	1. Effects of dumping in Ghana. 2. Recommendations of how to curb the effects of dumping in Ghana.	The main regulatory bodies in Ghana are responsible for the harmful business practices of MNCs and Western countries.

Author (s)	Country	Issued explored	Key findings
Eshun et al. (2011)	Ghana	Estimating the CSR cost of mining in Ghana	Contribution to the estimation of the actual cost of social responsibility of mining by considering cost components.
Hinson (2011)	Ghana	Reasons why most socially responsible banks may report little on their website whereas non award winners report more on their CSR activities on their website.	Banks with greater number of branches will disclose more social responsibility.
Mahmoud and Hinson (2012)	Ghana	Examination of how Market orientation, innovation and corporate social responsibility jointly impact business performance.	Innovation and CSR are two key ingredients for transforming market orientation into a business strategy.
Amponsah-Tawiah and Dartey-Baah (2016)	Ghana	Definitions of CSR across various sectors in Ghana	Banking sector is into donating to the underprivileged, offering scholarships to the needy but brilliant students and refurbishing school buildings and financial literacy programmes.
Marfo (2013)	Ghana	Citizen participation and community representation in natural resource management	CSR initiatives can benefit immensely from an agent-oriented configuration that sees social responsibility from a bottom-up or grassroots perspective.
Garvin et al. (2007)	Ghana	Community-company relations in gold mining in Ghana	Representation process should be structured on a four-phase process: pre-negotiation consultation, decision-making consultation, negotiation consultation and post-negotiation consultation
Hinson et al. (2010)	Ghana	CSR activity on bank websites in Ghana	Economic impacts of mining in the community's view showed that agricultural and cost of living impacts were negative and trade and commerce, employment, personal income and infrastructure impacts were positive. In the company's view, their economic impact on the community remains positive.
Armah et al. (2011)	Ghana	Legal framework for corporate environmental behaviour and perceptions of residents in mining communities in Ghana	Even award winning banks in Ghana have some of the poorest CSR communication content on their corporate website.
Raj and Uddin (2011)	Ghana	Bidder motivation and long-term performance of uk mergers	Scavengers are often found at recycling sites demarcating portions of dumped waste which are carried to strategic points to have certain valuable components removed from them

Author (s)	Country	Issued explored	Key findings
Hinson et al (2009)	Ghana	CSR activity reportage on bank websites in Ghana	Provides strong support that a hubris management, identified as being successful in the period before the instigation of the bid, is damaging to shareholder wealth.
Ndzibah (2008)	Ghana	CSR in Ghana in relation to dumping of electronic waste, inferior products and second hand goods by Multinational Corporations(MNC)	Where corporate environmental governance codes exist, enforcement mechanisms are not very well laid out, a situation which reflects weak regulatory institutions in the mining sector.
Hinson and Kuada (2012)	Ghana	CSR Practices of Foreign and Local Companies in Ghana	Even award winning banks in Ghana have some of the poorest CSR communication content on their corporate website.
Amponsah-Tawiah et al. (2015)	Ghana	Turning potential collision into cooperation in Ghana's oil industry	Transparency and accountability are also needed to promote cooperation rather than collision among stakeholders in Ghana's oil industry.
Ansah (2013)	Ghana	CSR in Ghana: A Comparative Analysis and Business Imperative	It was observed that CSR policies of the selected companies were into areas like health, education as well as community development.
Bolzani and Marabello (2015)	Ghana	Migrants' engagement in CSR. The case of a Ghanaian migrants' transnational social enterprise.	The case of <i>Ghanacoop</i> seems to suggest that immigrant-led transnational businesses have the potential to bring a convergence of CSR practices.
Ofori et al. (2013)	Ghana	CSR and financial performance; fact or fiction? A look at Ghanaian banks.	The financial performance of banks in Ghana does not depend significantly on their CSR practices but on their control variables.
Asase et al. (2009)	Ghana	Comparison of municipal solid waste management systems in Canada and Ghana; A case study of the cities of London, Ontario, and Kumasi.	A good system analysis and strategies in place for waste management in Kumasi could provide efficiency in the utilization of resources.
Ofori and Hinson (2007)	Ghana	CSR perspectives of leading firms in Ghana	Internationally connected - connected firms seem to have a better grasp of the various dimensions of CSR and how these could be used to business and strategic advantage.
Ohene- Asare and Asmild (2012)	Ghana	Banking efficiency analysis under CSR.	The financial performance of banks in Ghana does not depend significantly on their CSR practices but on their control variables.
Dartey-Baah et al. (2015)	Ghana	CSR in Ghana's National Development.	The contribution of Corporate Social responsibility to the development of Ghana.

Author (s)	Country	Issued explored	Key findings
Robin and Owusu (2012)	Ghana	Linkages in Ghana's gold mining: Challenging the enclave thesis.	After a period of strong investment and growth, gold mining can no longer be viewed as an enclave activity.
Wan (2014)	Ghana	Environmental justices and injustices of large-scale gold mining in Ghana: A study of three communities near Obuasi	Communities found in mining areas suffer many environmental and social injustices due to setbacks like understaffed enforcers of the law and structural barriers.
Sarfo et al. (2016)	Ghana	Stakeholders Participation and Sustainability of CSR Programmes in Ghana: A Study of AngloGold Ashanti Mine in Obuasi	CSR promises to be an effective entry tool to sustainable development linked with the operations of corporations.
Brew et al. (2015)	Ghana	CSR Activities of Mining Companies: The Views of the Local Communities in Ghana	Mining companies must develop clear guidelines on their CSR activities and ensure that the critical needs of the community members are met.
Andrews (2015)	Ghana	Challenges of CSR in domestic settings: An exploration of mining regulation vis-à-vis CSR in Ghana	CSR activities are more focused on meeting global standards rather than focusing on the needs of the people affected by the company's operations.
Ofori (2010)	Ghana	Executive and Management Attitudes on CSR and Ethics in Ghana: Some Initial Exploratory Insights	CSR needs to be clarified in Ghana and all efforts be made to bring the full import of the concept to all stakeholders particularly the government, corporations, and the general community.
Anlesinya et al. (2014)	Ghana	The Effect of CSR on Financial Performance of MTN Ghana Limited	It was found that, only CSR towards community accounted for the highest variance in corporate financial performance.
Alomenu et al. (2015)	Ghana	How CSR Activities of Ghanaian Banks Influence Corporate Clients' patronage	CSR activities affect clients' choice of banks.
Amoah and Boateng (2014)	Ghana	Addressing illegal logging in Ghana	Compensation payment to farmers appears to be the most significant factor influencing the forest community members to support chainsaw operators.
Amo-Mensah and Tench (2015)	Ghana	Evaluation of Ghana Club 100 CSR Communication	Although there is general awareness of CSR communication in the GC100, the extent of CSR communication is low since information on corporate websites appeared limited.
Abugre (2014)	Ghana	Managerial role in organizational CSR: empirical lessons from Ghana	Development in mining areas could be more imperative if legal documents existed on CSR.

Author (s)	Country	Issued explored	Key findings
Issifu (2016)	Ghana	CSR in Peace building, Conflict Prevention and Development: The Role of the Mining Sector in Ghana	Difficulties of effective CSR implementation mainly stem from leadership weak spots in the form of mismanagement and corruption, lack of leadership commitment and unwillingness to allocate monies due for CSR activities.
Simpson et al. (2016)	Ghana	To examine the nature and extent of IAs' involvement in CSR assurance and to ascertain the capacity-building requirements to legitimize their role as credible assurance providers	The IAF is seen as an independent unit that can be relied on to provide assurance on CSR reports
Arko (2013)	Ghana	CSR in the large scale gold mining industry in Ghana	CSR is a developing concept in the mining sector
Amponsah-Tawiah et al. (2014)	Ghana	To explore psychosocial and physical hazards in large scale mining industries in Ghana and their impact on the quality of life and general well-being of employees working in these mines	The introduction and increased use of safety management systems (particularly in developed countries) have done much to address the physical hazards in hazardous industries such as mining, where physical injuries are more readily recordable and verifiable.
Ofori et al. (2014)	Ghana	CSR and financial performance: Fact or fiction? A look at Ghanaian banks	CSR activities enhance the reputation of Banks and the overall legitimacy of their operations.
Katsner et al. (2014)	Ghana	Examination of the differences in perception of corporate image of Ghanaian Banks.	While on the average the employees carried a favourable corporate image about the banks, the customers carried an unfavourable corporate image about the banks. There is a negative relationship between the two respondents
Hinson et al. (2011)	Ghana	CSR reportage on bank websites in Ghana	Even award winning banks in Ghana have some of the poorest CSR communication content on their corporate website.
Adeneye and Ahmed (2015)	Ghana	Examination of the impact of corporate social responsibility on company performance	Findings showed significant positive relationship between corporate social responsibility, market to book value and return on capital employed.
Marfo et al. (2015)	Ghana	It was realized that there is a positive relationship between CSR and financial related performances	This study analyses the relationship between CSR and company's profitability (CP) in Ghana.
Dartey-Baah et al. (2016)	Ghana	These conclusions result from a review of CSR activities in Ghana and Nigeria, showing that CSR has not yet gained ground in most African countries because of natural resources and political stability.	When organizations strategically engage in CSR, they stand to benefit and so does the nation and other stakeholders.

Author (s)	Country	Issued explored	Key findings
Anku-Tsede and Deffor (2014)	Ghana	Corporate Responsibility in Ghana: An Overview of Aspects of the Regulatory Regime	The findings revealed that local banks performed better (100%) than foreign banks (76.9%) on disclosure of donations and social project information.
Poku et al. (2014)	Ghana	The Management of CSR for Competitive Advantage: A Case Study of Bosomtwe Rural Bank	CSR enhances corporate reputation. However, CSR is not solely philosophical.
Quartey and Puplampu (2012)	Ghana	Employee Health and Safety Practices: An Exploratory and Comparative Study of the Shipping and Manufacturing Industries in Ghana	The employees in all the industries have positive attitudes toward employee health and safety practices than their management.
Adu - Boahen et al. (2014)	Ghana	Assessment of Management Attitudes on CSR in Ghana: A Case of Some Selected Companies in the Tema Metropolis	Manager's attitudes towards CSR activities are influenced by their respective company's ethical values, followed by company's reputation, and then rising domestic standards.
Boateng (2016)	Ghana	An analysis of CSR communication on the websites of banks operating in Ghana.	There are theoretical framework governing Corporate Social Responsibilities and there are consequences for their violation.
Oppong (2014)	Ghana	CSR and Corporate Performance: A Study of the Top 100 Performing Firms in Ghana	The inactivity of the few institutional investors and absence of strong lobbyists in Ghana make financial performance of such companies unaffected by their standing on CSR
Dashwood and Puplampu(2010)	Ghana	CSR and Canadian Mining Companies in the Developing World: The Role of Organizational Leadership and Learning	Research demonstrates that when assessing a company's commitment to CSR principles, it is important to unpack the firm and analyse its internal dynamics.
Ntiamoah et al. (2014)	Ghana	CSR Awareness, Firm Commitment and Organizational Performance	Firms are indeed committed to practicing CSR and there is a significant relationship between CSR and Organizational performance
Anlesinya et al. (2014)	Ghana	The Effect of CSR on Financial Performance of MTN Ghana Limited	Only CSR towards community accounts for the highest variance in corporate financial performance.
Owusu-Ansah et al. (2015)	Ghana	CSR of Mining Companies in Ghana: The case of Newmont Ghana Gold Limited at Ahafo	Companies which operate in Africa, have performed negatively with regards to CSR, excluding Newmont Company which is a multi-national corporation which is performing creditably in CSR in Ghana.

Author (s)	Country	Issued explored	Key findings
Dartey-Baah and Amponsah-Tawiah (2013)	Ghana	CSR in Ghana	The focus on the external environment, however, has led to the neglect of the internal environment (the safety and quality of life of employees).
Anku-Tsede and Deffor (2014)	Ghana	Aspects of the Regulatory Regime	Even though there is currently no CSR policy in Ghana and there appears to be no comprehensive legal framework or legislation to guide corporate responsibility, there seem to be some relevant laws ensuring that corporate organizations engage in responsible business.
Owusu (2013)	Ghana	Comparative analysis and Business Imperative	Vodafone has the idea of reducing carbon emissions to ensure compliance with all environmental requirements
Hinson (2011)	Ghana	Online CSR reportage award and non-award winning banks in Ghana	Agricultural development bank, the bank with the most socially responsible bank of the year awards, has the weakest online CSR reportage in the study with just one CSR report online.
Dartey-Baah and Amponsah-Tawiah (2014)	Ghana	CSR in Ghana	It was revealed that marketing activities are planned and implemented separately which is contrary to Maignan and Ferrel's (2004) view that considers CSR as an integral part of marketing.
Ansah(2013)	Ghana	Analysis of the CSR policies of different companies in Ghana	63% of internationally connected companies say CSR must always be the concern of all companies while only 57% of local companies thought likewise. Although 21% of both groups say they usually address CSR as a moral imperative.
Otoo and Agyapong (2014)	Ghana	CSR: A Key for Building A Strong Brand In Ghana	Many studies have shown that CSR plays a role in consumers' brand and product evaluations, over and above economic and rational considerations such as consumer behaviour attributes.
Oppong (2016)	Ghana	CSR in the Ghanaian context	Collaboration between Ghanaian and Indian banks will help deal with waste management issues in Ghana
Hinson and Kodua (2012)	Ghana	Examining the marketing-CSR nexus	The bank's CSR communication on the corporate website focuses mainly on external disclosures.

Author (s)	Country	Issued explored	Key findings
Ofori and Hinson (2007)	Ghana	CSR perspective of leading firms in Ghana	Foreign banks are better at communicating customer and employee CSR information than local banks.
Saha and Nabareseh (2015)	Ghana	Companies' attitude towards CSR activities	Multinational Corporations are performing creditably towards the CSR performance in employee matters.
Okoe and Boateng (2016)	Ghana	Online communication of CSR activities	Banks in Ghana view corporate social responsibility practices to be a strategic tool. The financial performance of banks in Ghana does not depend significantly on their corporate social responsibility practices but rather on other control variables, such as growth, origin, debt ratio, and size.
Boateng (2016)	Ghana	CSR communication among foreign and local banks	Financial commitments to CSR activities fluctuate from one organization to the next;
Ofori et al (2014)	Ghana	CSR and HRM policies and practices in emerging economies	There is a general lack of understanding regarding the impact of the CSR agenda pursued by different companies
Marfo et al (2015)	Ghana	CSR and companies' profitability (CP)	The research revealed a good understanding on the concept of CSR by Vodafone Ghana, which depicts how well they have been keeping up with the CSR activities of the organization.
Mzembe et al (2016)	Ghana	CSR in Malawi: Antecedents, Issues, Practices and Future Directions	Finding shows the concept of corporate social responsibility has become a common practice in today's business environment.
Mahmoud and Hinson (2012)	Ghana	Market orientation, innovation and CSR practices in Ghana's telecommunication sector	The various components and links on companies' homepages included 'About us' (which usually have sub sections such as company profile/overviews, mission and vision statements, company values and objectives, CSR).
Hinson (2011)	Ghana	Online CSR reportage award and non-award winning banks in Ghana	The finding shows Stakeholder Participation in Developing Corporate Social Responsibility Programmes by AngloGold Ashanti-Obuasi
Boafo and Kokuma (2015)	Ghana	The Impact of CSR on Organisational Performance	The first conclusion pertains to the instrumental orientation of the CSR decisions of foreign firms in Ghana—they appear to be willing to engage mostly in what is legally required of them

Author (s)	Country	Issued explored	Key findings
Opoku Appiah et al (2016)	Ghana	Online CSR communication	While the financial investment associated with CSR programme execution can be daunting especially at a time when operational costs in the industry are on the rise, results of this study indicate that it is a worthwhile venture
Kuada and Hinson (2012)	Ghana	CSR Practices of Foreign and Local Companies in Ghana.	There should be a law on CSR in Ghana and a course on CSR to train experts in that area.
Amo-Mensah and Tench (2015)	Ghana	Evaluation of Ghana Club 100 CSR Communication	Although firms wish to undertake CSR for ethical reasons, CSR provides more leverage when it is used as a cover up for managerial opportunistic behaviours
Sarfo et al. (2016)	Ghana	Stakeholders Participation and Sustainability of CSR Programmes in Ghana	Firms with better CSR performance are better positioned to obtain financing in the capital markets, which positively affects their ability to undertake major strategic investment decisions and eventually yield positive stock returns
Ofori and Hinson (2007)	Ghana	CSR perspectives of leading firms in Ghana	Although local companies are familiar with the concept and do, indeed, practice some amount of CSR, they subscribe less to the contemporary notion of CSR; they are less strategic, less moral and ethical in their approach to CSR.
Alomenu et al. (2015)	Ghana	Do CSR activities of Banks influence Corporate Client Patronage?	CSR activities affect clients' choice of banks.
Amidu et al. (2016)	Ghana	Do firms manage earnings and avoid tax for CSR	The study employs system methods of moments (GMM) and logistic regression to establish whether firms in Ghana manage earnings and avoid tax to finance Corporate social responsibility.
Kwaning et al. (2014)	Ghana	The Effects of CSR Expenditure on the Financial Performance of Financial Institutions	Corporations are critical actors in the political, economic, social and cultural development of all countries.
Amo-Mensah and Tench (2015)	Ghana	Evaluation of Club 100 CSR communication	This exploratory study aims to provide an understanding of the CSR communication landscape in the Ghanaian context.

The Relationship between Critical Thinking and Dialogue in the Threshold of Public Administration in Africa: Its Ethical Implications

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Abstract Traditionally, public administration has been primarily concerned with issues and challenges related to the faithful application of governmental policies, along with integrity, honesty and efficiency at the foundation of the process. This lends credence to the ethical question: how can governmental policies and implementation process be done correctly, wisely and in the public interest. This study examines the concept of critical thinking and dialogue which is grounded in the theory and practice of public administration, where actors function as moral agents of change as they facilitate service delivery, value laden engagements (moral discourse and action) among policy makers and other stakeholders. Drawing upon far-reaching existing literature on public administration and relying on content analysis, this paper examines the phenomenon taking a cue from Kurt Lewin's "cognitive field" theory and call for a new paradigm toward responsibilities and moral decision-making. The study sought to understand how stakeholders using the tools of critical thinking and dialogue should engage one another in terms of choices, decisions and moral conversations leading to service delivery and dividend of good governance. With an insight provided into understanding the nexus between critical thinking and dialogue in public administration in Africa, a criterion on what should constitute an appropriate model of interaction for effective performance and service delivery is thus supplied.

Key words Public administration, Critical thinking, Dialogue, Moral agency, Public sector, Service delivery

1 Introduction

Public administration trajectory in Africa in the 21st century indicates that the potential of recasting public administration in terms of ethics, expectations and roles is profound and fundamental. This is because scholarship on ethics of public administration is explicit about the fact that to be ethical is to face hard choices, decisions and actions (Adamolekun, 2016). This is in view of the fact that public servants, by fact of their office and choice must be firm in their convictions that the decisions they make are right, necessary, and involve critical thinking, even when the personal price is quite high. Within the rubric of public administration therefore, the notion of critical thinking and dialogue is based upon the 'notion that public management is an undertaking which requires a significant structural and cultural shifts, the spirit of which will maximize social and economic value to citizens (Hope 2005).

However, it takes considerable courage and strength of will to do what one thinks is right, regardless of the personal consequences. But that is the essence of critical thinking and ethical decision making through dialogue because the concerns are always directed toward the consequences for others, not for oneself. Throughout Africa in particular and other developing countries in general, there is a perception that standards in public life are in decline because standards in public management is appalling (Essien, 2015). This raises questions about the costs of miscarriage in service delivery and accountability through misconduct on the part of those who have been entrusted with guarding public interest and resources. These costs have resulted into losses in trust and confidence in public institutions as well as losses in precious resources which were meant to support the economic and social development of nations and peoples affected (Otobo, 2002). Nonetheless, there is a move worldwide to restore some measure of trust and integrity into public institutions and its officials through the process of moral agency and moral agents in contemporary public administration. This is to engender purposeful wellbeing, safeguard nascent democracy and promote better governance.

Consequently, the public service, as an institution, is under pressure to transform itself to respond to these undercurrents. It presupposes that public servants are asked to take on new and sometimes conflicting roles. In this regard, there is a need for a cost-effective structure and an encouraging culture to enforce standards and guide behaviours. This however, finds leverage in and through the process of critical thinking and dialogue as the vehicle for creating moral agency in public administration. Yet in spite of importance, or perhaps because of, wide-ranging debate, scholarly efforts to date have not demonstrated adequate recognition of the expediency of critical thinking and dialogue in public administration, perhaps, because there is often some level of misunderstanding over it meaning or, how it can be deployed, and perhaps why it has become difficult to engage in critical thinking and constructive dialogue in public administration (Paul, 2005). The purpose of this study therefore is to explore how critical thinking and dialogue are key to the practice of public administration in contemporary time.

2 The concept of critical thinking

Literature on dialogue and critical thinking whether public or private, collective or individual is replete with a wide array of theoretical approaches, definitions and expectations geared toward solving problems. However, the complexity and growing interdependence of modern life places a significant emphasis on human rationality and critical thinking, to be able to deal with issues like competence, integrity, objectivity, transparency, honesty, and respect for others while attempting to deliver service especially those services that are likely to generate controversies and disagreements (Paul and Elder 2006). According to some scholars, such as Willingham (2007), McMahon (2005) and Paul (2005), for the citizens to live, work and function efficiently, they need to use critical thinking abilities to assess, make decisions and judgments about what service or information need to be obtain, and in which they are required to accept and use. Citizens also need to use abilities of critical thinking and dialogue in public administration to secure economic development, growth and social wellbeing taking into account human wants and the need to protect the environment, guarantee integrity of persons and attain sustenance of the ecological environments which human beings are dependent upon for their survival (Brown and Keeley, 2000).

One might be tempted to argue that trying to understand the needs, competency and skills for public administrators underscore the contention that public managers need cognitive, linguistic and psychosocial development in order to effectively carry out their duties (Denhardt, 2003). Cognitive development in this perspective relates to the knowledge about policies and programs of public administration, as well as the moral and political context of the field of public service. Similarly, linguistic development relates to the interpersonal or behavioural skills involved in managing choices, decisions and actions in public service for result. This however involve such issues like, motivation, delegation, negotiation, or engaging in relationships of power and authority; while psychological development on the other hand relates to intrapersonal skills or actions requiring maturity in approach, self-confidence, self-esteem, and self accountability (Denhardt, 2003).

Fascinatingly, there are some established knowledge on the field of using critical thinking and dialogue in public service management (Case, 2005). There is also knowledge in scholarship about the need for reflection and critical thinking in the science of public administration (Powell, Lovallo, and Fox, 2011). This explains why there is a multidimensional examination of the notion of critical thinking in scholarship. In it, critical thinking dates back to the time of Socrates where he described the theory as “ethical power guiding to virtue” and “logical way of thinking which guides our attitudes”. Today, the concept of critical thinking” has been defined many ways by many different scholars. However, it is universally accepted that critical thinking is the process of purposeful thinking that encompasses interpreting and understanding, analyzing, drawing inferences, evaluating, explaining, and self-regulating and pertaining to concepts, issues, questions, and problems (Facione, 2000; Paul, 2005). The ability to think critically influences one’s worldview and approach to life and learning.

Public servants’ ability to use critical thinking to advance professionalism presupposes a mastery and illustration of the skills on public service and personal lives. From a professional perspective, enhanced critical thinking skills can lead to greater productivity and greater career advancement

(Brown and Keeley, 2000). On the personal level, critical thinking allows a greater ability to assess the speed and volume of information for use in making better decisions quickly; and improved written and oral communication, research, conflict management, problem solving, teamwork, self-management skills, and life-long learning, all of which will enhance one's professional career. In addition to professional benefits of enhanced critical thinking skills, critical thinkers tend to be more inquisitive, well-informed, alert, confident in their self-reasoning ability, open-minded, flexible, empathic, honest, prudent in rendering judgment, and willing to change and admit when they are wrong (Facione, 2000).

Having been viewed as describing facts correctly, critical thinking has diverse definitions in its literature. In this regard, Thayer-Bacon (2000), conceptualized critical thinking in three ways (a) as "an attitude based on foreseeing and solving problems", (b) as "having the capacity of deduction and reasoning", and (c) as "being able to put all these methods into practice in daily life" (Thayer-Bacon 2000). In this characterization, attitudes of the individuals relating to thinking action have been underlined. In addition, even though one possesses the skill and knowledge concerning critical thinking, one may not be able to perform critical thinking if his or her attitudes are not supported by critical thinking. This explains why, Case (2005), tried to describe critical thinking as "the skill to analyze facts, generate and organize ideas, defend opinions, make comparisons, draw inferences, evaluate arguments and solve problems" (McMahon, 2005). Maintaining a similar standpoint, Paul and Elder (2005), depict critical thinking as "reasonable reflective thinking which focus on deciding what to believe or do" (Paul and Elder, 2005). Paul (2005) on his part, defines critical thinking as "one must think about what he has been thinking about in order to improve his or her thinking". In the definition, critical thinking does not only focus on "the way of thinking", but also "what factors matter in order to improve oneself" and furthermore, it is advised that "the individual has to improve his or her way of thinking through standards which are used while thinking" (Paul, 2005).

According to Brown and Keeley (2000) "critical thinking involves the individual's ability to do some or all of the following: identify central issues and assumptions in an argument, recognize important relationships, make correct inferences from data, deduce conclusions from information or data provided, interpret whether conclusions are warranted on the basis of the data given, and evaluate evidence or authority" (Brown and Keeley, 2000). In light of these approaches, critical thinking can be defined as "an ability of making effective decisions, solving problems, observing our own thoughts and a process which is based on research, intuition, logic and experience and universal values". Thus, critical thinking emerges as "a complex and comprehensive process that require a higher order of cognitive skills".

3 Theoretical framework

The theoretical framework that underpins this study is the "cognitive field" theory which centres on the idea that all psycho-logical activity of a person occurs in the complex web of society-environment relationships involving learning (McCourt, 2005). The theory states that learning process involves constant organization and restructuring of social elements into a meaningful whole culminating from many interacting influences in the environment of the learner. Therefore, all learning process in the society is tailored toward solving problem. The concept which first made its appearance in psychology was developed by a German, Kurt Lewin in the early 1940s. The theory emphasizes the problem of how people gain an understanding of themselves and their environment and how using their cognitions, they act in relation to their environments (Pollitt and Bouckaert, 2004). The cognitive theory is otherwise known as cognitive field theory of learning. This is so because it describes how a person gains understanding of himself and his world. With cognitive-field theory, learning is a relativistic process by which a learner develops new insights or changes old ones. To think of learning as development of insight and applying such thinking to public administration would be most advantageous.

Public service managers or public administrators need psychological structures of critical thinking and dialogue as a new paradigm upon which to build the thinking about governmental policies and service, along with integrity, honesty, efficiency and dialogue (Powell, Lovallo and Fox, 2011). Critical thinking manifests a person's insights which collectively constitute the cognitive structure of his life

space. Public administration can be likened to a cognitive structure which depicts the way a person perceives the psychological aspects of his personal, physical, and social world (Powell, Lovallo and Fox, 2011). Such a world however, includes a person and all of his facts, concepts, beliefs, expectations, and outcome. Consequently, the cognitive structures of contemporary public administration demand effectively the paradigm of critical thinking and dialogue in the development of policies, actions, language, and guidelines in government businesses (Powell, Lovallo and Fox, 2011). This is strongly supported by the standpoint that considers the moral agency dimension of critical thinking and dialogue as well as the ethical duties towards stakeholders of the society. In this regard therefore, it is imperative that an appreciation of the cognitive theory analysis is the most appropriate analytic paradigm for locating the relationship between Critical Thinking and Dialogue in the threshold of Public Administration in Africa amidst numerous societal challenges. At the centre of the adopted theory is an attempt at chronological scrutiny of the problems and challenges of public administration in Africa with the aim of revealing not only the patterns and regularities of the old public service, but also the impact and interrelationship it has had in the configurations of society. Using this framework therefore, this study will demonstrate that the problems of Public administration in many societies in Africa could be addressed if critical thinking and dialogue model is adopted. This study therefore is analyzed based on the cognitive-field theory principles.

4 Public administration and service delivery in Africa

Public service exists everywhere in order to facilitate the common good and building of a better society. But to serve the public, benefit the greater good and contribute to a better society for all is not a mere responsibility, an option or a spare time commitment (Rosenbloom, Kravchuk and Clerkin 2009). This is where the problem lies and the mark is often missed, because the ways and manner public administration is managed and service delivered in many African countries in particular and in other developing countries in general leaves more sour taste in the mouth to be desired. Rather than view public administration as a spare time commitment or with the “government thing” mentality (not my own), it should be seen as a persistent, invasive lifestyle decision important to public integrity and public interest (Hood, 2007). That is why, to facilitate adherence to the common good paradigm with variables such as welfare, prosperity, growth and development as well as the safety of civil society, a government needs to reorganize itself in such a manner that it could utilize its available resources optimally, distribute products and services justly and equitably in order to accomplish certain strategic objectives. To pursue these strategic objectives effectively as a collective entity, it is vital that governmental institutions managed by public administrators apply critical thinking skills in their service delivery (Henry, 2007).

Improving public service delivery in any given society is one of the biggest challenges worldwide. Public services are key determinant of quality of life, not measured in per capita income. They are also an important plank of poverty reduction strategy. It is a particular challenge in Nigeria, given the low quality of service provisions and the pressing needs of the poor (Hanekom, 1986). This explains why access to public services is a right enshrined in the UN declaration for Human Rights sheltered in Article 21(2), which states that, everyone has the right to equal access to public service. In this context, accountability of public officials has been explored as a means of strengthening incentives of public service providers for improved service delivery (Heidenheimer, 1970). This also lends credence to why around the globe; there are renewed drives in government to mull over how to give effect to this particular human right. But the question is how accountable are public officials for the delivery of public services in a country like Nigeria? This paper attempts to answer this question by providing evidence from Nigeria on the issue of accountability and good governance for the delivery of basic services to citizen. This is done on the heels of renewed thinking involving public servants and government businesses regarding service delivery. Many governments in Africa in particular and other developing societies are facing mountain of never-ending criticism for being overly bureaucratic, slow to respond to the people’s problems, inefficient, and unimaginative. That is why, in many African countries, agitations have led to devolution of powers, governance and administration (Kanyane, 2010)

Today, there is the shift in focus to smaller and more flexible program delivery arrangements as

well as to decentralised authority such that government operations become more client-oriented and innovative in delivering public service to the people (Essien, 2015). In this regard, accountability in service delivery is conceived of as processes through which communities and households can hold public service providers responsible for the adequacy and effectiveness of the services they offer (Achimugu, Stephen, and Aliyu, 2013). According to World Bank study of sub-Sahara Africa (SSA), “The problem of Africa’s Development is a crisis of governance; the study affirms that because of the countervailing power that has been lacking, state officials (public servants) in many countries especially in Africa have chosen to serve their own interests without fear of being called to give an account of stewardship (Lawal and Owolabi, 2012). Similarly, in the views of Mallam Nuhu Ribadu, the former Chairman of Nigeria’s Economic and Financial Crime Commission (EFCC), over \$400 billion that had been looted from the Commonwealth of Nigeria by the leaders. This is “six times the total value of resources committed to rebuilding Western Europe after the Second World War (Aderonmu, 2011).

This can be exemplified by the amount of money looted from the country’s treasury from its leaders and public officers (see Table 1). Accountability is a fundamental but under-developed concept in Nigerian public administration. Since independence, Nigeria has formulated various legal instruments and established a number of watchdog institutions such as Economic and Financial Crime Commission (EFCC), Independent Corrupt Practices and Other Related Offences Commission (ICPC), Code of Conduct Bureau etc., all meant for regulating and monitoring the ethical behaviour of its public officials in order to achieve accountability. But suffice it to say that the recurring decimal in the exposition of Nigeria’s development dilemma is the recognition of corruption as the most imposing albatross. Almost all facets of the Nigerian economy are haunted by the spectre of corruption (Aderonmu, 2011) (see Table 2).

Table 1 Looted money from past public officials in Nigeria discovered in foreign banks 1985-1998

NAMES OF DEPOSITORS	LONDON	SWISS	USA	GERMANY
Gen. Ibrahim Babangida	£6.256b	\$7.41b	\$2.00b	DM 9.00b
Gen. Abubakar	£1.31b	\$2.33b	\$8.00m	DM 1b
Rear Admiral Mike Akhigbe	£1.24b	\$2.42b	\$671m	DM 900m
Gen. Jerry Useni	£3.046b	\$2.01b	\$1.01b	DM 700m
Alhaji Ismaila Gwarzo	£1.03b	\$2.00b	\$1.30b	DM 345m
Alhaji Umaru Dikko	£4.5b	\$1.4b	\$700m	DM 500m
Paul Oguwma	£300m	\$1.42b	\$200m	DM 3.01m
Gen. Sani Abacha	£5.01b	\$4.09b	\$800m	DM 535m
Mohammed Abacha	£300m	\$1.2b	\$139m	DM 471m
Abdukadir Abacha	£700m	\$1.21b	\$900m	DM 300m
Alhaji Wada Nas	£600m	\$1.32b	—	DM 371m
Tom Ikimi	£400m	\$1.39b	\$133m	DM 371m
Dan Etete	£1.12b	\$1.03b	\$400m	DM 1.72m
Don Etiebet	£2.5b	\$1.06b	\$700m	DM 361m
Major Al – Mustapha	£600m	\$1.001b	—	DM 210m
Anthony Ani	£2.9b	\$1.09b	\$360m	DM 1.66b
Bashir Dalhatu	£2.3b	\$1.001b	\$161m	DM 1.43b
General Washishi	£700m	\$1.301b	—	—
Alhaji Hassan Adamu	£300m	\$200m	\$700m	—
T.Y Danjuma	£1.36b	\$1.02b	\$300m	DM 190m
General Ishaya Bamaïyi	£120m	\$800m	—	—

Sources: London Times

Table 2 Portrait of corruption with public servants in Nigeria 1999-2007

1	Ayo Fayose (former Governor of Ekiti State)	Arraigned on 51 Counts	N1.2 billion	Case pending, granted bail
2	Adenike, Grange (former Minister of Health)	Arraigned on 56 Counts	N300 million	Discharged and Acquitted
3	Joshua Dariye (former Governor Plateau state)	Arraigned on 23 Counts	N700 million	Case pending, Granted bail since 2007
4	Saminu Turaki (former Governor Jigawa state)	Arraigned on 32 Counts	N36 billion	Case pending, Granted bail since 2007
5	Oji Uzor Kalu (former Governor Abia state)	Arraigned on 107 state counts	N5 billion	Case pending, Granted bail since 2008
6	James Ibori (former Governor Delta state)	Arraigned on 170 Counts	N9.2 billion	Case pending, Granted bail since 2008
7	Iyabo Obasanjo (former Senator)	Arraigned on 56 state counts	N10 million	Case pending, Granted bail since 2008
8	Lucky Igbinedion (former Governor of Edo state)	Arraigned on 191 state counts	N4.3 billion	Case determined, ordered to pay \$25 million as fine
9	Gabriel Aduku (former Minister of Health)	Arraigned on 56 state counts	N300 million	Discharged and Acquitted
10	Jolly Nyame (former Governor of Taraba state)	Arraigned on 41 state counts	N1.3 billion	Case pending, Granted bail since 2008
11	Chimaroke Nnamani (former Governor of Enugu state)	Arraigned on 105 state counts	N5.3 billion	Case pending, Granted bail since 2007
12	Michael Botmang (former Governor of Plateau state)	Arraigned on 31 state counts	N1.5 billion	Case pending, Granted bail since 2008
13	Roland Iyayi (former MD of FAAN)	Arraigned on 11 state counts	N5.6 billion	Case pending, Granted bail since 2008
14	Prof. Babalola Borishade (former Minister of Aviation)	Arraigned on 11 state counts	N5.6 billion	Case pending, Granted bail since 2008
15	Boni Haruna (former Governor of Adamawa state)	Arraigned on 28 state counts	N254 million	Case pending, Granted bail by court since 2008
16	Femi Fanikayode (former Governor of Adamawa state)	Arraigned on 47 state counts	N250 million	Case pending, Granted bail since 2008
17	Bode George (PDP Chieftain)	Arraigned on 68 state counts	N100 billion	Jailed in October 2009
18	Rasheed Ladoja (former Governor of Oyo state)	Arraigned on 33 state counts	N6 billion	Case pending, Granted bail since 2008
19	Senator Nichola Ugbane; Hon. Elumelu and others	Arraigned on 158 state counts	N5.2 billion	Case pending, Granted bail since 2009
20	Hamman Bello Hammed (Ex CG Customs)	Arraigned on 46 state counts	N2.5 billion	Case pending, Granted bail since 2009

21	Adamu Abdullahi (former Governor of Nasarawa state)	Arraigned on 149 count charge	N15 billion	Case pending, Suspect on court bail
22	Attahiru Bafarawa (former Governor of Sokoto state)	Arraigned on 47 count charge	N15 billion	Case pending, Granted bail by court
23	Hassan Lawal (former Minister of Works)	Arraigned on 37 count charge	N75 billion	Case pending, Granted bail by court
24	Kenny Martins (Police Equipment Fund)	28 count charge	N7,740 billion	Case pending, Granted bail since 2008
25	Esai Dangabar, Atiku Abubakar Kigo, Ahmed Inuwa Wada, John Yakubu Yusufu, Mrs. Veronica Ulonma Onyegbula and Sani Habila Zira	16 count charge	N32.8 billion	Case pending, Granted bail by court

Source: Economic and Financial Crime Commission (EFCC) cited in Mohammed 2013:130-131

For poor and marginalized communities and households, public accountability can be achieved through giving them both voice and suffrage; for policymakers, accountability can be demanded through the social compact in which governments assist, finance and regulate providers of health care, nutrition and environmental health services (Kamto, 2000). In Nigeria, the level of accountability among public officials in the management of public affairs has consistently declined since independence. The rate of annual economic growth of the country has generally declined over the period. At the same time, the efficient and effective delivery of public service to the ordinary citizen has continuously deteriorated. A combination of these two factors has resulted in widespread unemployment and poverty in the country. A recurring decimal in the exposition of Nigeria's development dilemma is the recognition of corruption as the most imposing albatross. Almost all facets of the Nigerian economy are haunted by the spectre of corruption (Kamto, 2000). Corruption is the single most potent impediment to Africa's development with Nigeria holding the ace.

Due to widespread corruption, abuse of office and the general deterioration of other ethical standards in the country, one is likely to assume that there is no control mechanism that could be used to enforce accountability in Nigeria's public service. Yet this is not the case. Nigeria has many legal and quasi-legal instruments and other watchdog institution specifically formulated and designed for controlling public service ethics (Essien, 2015). Despite this fact, public accountability constantly deteriorates as we have seen. Generally, it is acknowledged that virtually all the unethical practices such as bribery and corruption, patronage, reposition, embezzlement, influence peddling, the use of one's position for self-enrichment, bestowing of favours on relatives and friends, moonlighting, late coming to work, abuse of public property, and the leakage and/or misuse of government information that constitute the lack of accountability in public administration and governance which currently characterise the country's public service (Klitgaard, 2008).

The challenges of public service delivery in Nigeria are no doubt surmountable, but for a meaningful, impact-felt public service delivery to be successfully carried out in Nigeria, it must put into consideration the behavioural pattern, the social context, as well as cultural milieu of the people whom the service is meant for, together with the vehicle of the delivery of services (Essien, 2015). Perhaps for good governance and public sector transformation to be achieved, public administration and public sector entities need to have a critical thinking mindset which would be *sine qua non* toward applying strategies to achieve results and outcomes (Ayeni, 2002).

Nevertheless, the Nigerian public administration system has experienced a significant transformation to secure its position of importance in the general discourse on governance. This effort has occurred amidst streams of political developments that has brought the system into sharp focus and relevance. This however, has been very challenging to the public service as well as providing a platform for new policy direction and scholarship. For instance, growing literature on the collapse of probity and good governance in Nigeria has revealed that public service is severely scored down on its failure to provide the required institutional grounding for good governance (Aderonmu, 2011).

5 Critical thinking and decision processes in Nigerian Public Service

Although everyone makes decisions on a daily and regular basis, the decisions we make when distorted by self-interest, emotional attachments, misleading memories, or not shrouded with critical thinking can mar the smooth functioning of a particular organisation and/or society (Finkelstein, Whitehead and Campbell 2009). A very good example is the scenario in the Nigerian public service where bad policy and inconsistency in decisions making are among the major challenges in the Nigerian nation which have created many unresolved problems among leaders and their followers in our public service and entire society (Ogbeidi, 2012). Such problems include corruption, indiscipline, insensitivity to moral values, and skewed sense of leadership.

The inability of the leaders to develop good policy standards, knowledge, and skill that incorporate critical thinking, ethical reflection, support and optimal decision design for their society is troubling and has serious implicative effect on corruption on public service delivery, mismanagement resulting to collapsed infrastructure and the misapplication and misappropriation of the nation's resources. This has resulted in the present dislocation in the economy and its socio-economic implications to development and growth. Indeed, it is a paradox that Nigeria, the world's eighth largest exporter of crude oil, a country endowed with many resources, still has more than 70 percent of its population living below the poverty line as a result of corruption and economic mismanagement. Pathetically, the logic of the Nigerian political leadership class has been that of self-service as some of the leaders are mired in the pursuit of selfish and personal goals at the expense of broader national interests (Ogbeidi, 2012).

Consequently, emphasis has been on personal aggrandisement and self-glorification with the result that corruption has become a euphemism for explaining political leadership in Nigeria in relation to the management of national wealth. In fact, it is obvious that creative policy development and decision making among governmental leaders and management are of vital importance to the growth, development, and success of any society. Given that decision making lies at the heart of our personal and professional lives, every decisions we make, whether small, domestic, and innocuous affecting people's lives, livelihoods, and well-being must be seen to have been taken after critical thinking and ethical reflection (Finkelstein, Whitehead and Campbell, 2009). Indeed, without mincing words, the unpardonable failure of the public servants in managing the affairs and wealth of the country had inevitably brought severe misery to many Nigerians. Thus, the cycle of poverty keeps rising with all its attendant consequences. Perhaps the most regrettable and tragic effect of decision processes without critical thinking on Nigeria has been the failure of the country to attain its economic potentials despite its substantial natural and human resources (Ogbeidi, 2012).

6 Ethics, values and public service administration

Scholarship is replete with the fact that since Hammurabi, Moses, and Hippocrates, we have been operating the theory that it is easier to do the right thing when we know what the right thing is (Abel, 2009). Therefore, codifying standards of conduct has become a popular way to clarify minimum expectations about acceptable behavior. Thus, the expectation and common theme for any ethical decision making process in public service administration is dedication, trust, fairness, acting in good faith, and transparency. Realistically, ethics are the standards by which behavior is evaluated. Yet the reality is that the essential configuration of standards of behavior such as honesty, respect for others, and trustworthiness are almost universally valued, hence, those who violate these ethical standards are viewed and evaluated negatively. Public service any way in the world is a public trust enterprise (Abonyi and Van Slyke, 2010). Citizens expect public servants to serve the public interest with fairness and to manage public resources properly on a daily basis. Fair and reliable public services inspire public trust and builds reliability. Public service ethics are therefore a prerequisite to, and underpin, public trust, as well as constitute a keystone of good governance (Bourgon, 2007).

This lends credence to the fact that the concern about ethics, values, and standards of behaviour in public life and contemporary public administration today is not new. The emphasis that we have nowadays on public service ethics that took its root in Western societies since the 1960s and has been supplemented by other ethical concepts such as critical thinking, values, and dialogue. It is apparent

that public expectations and formal standards these days demand that managers undertake sophisticated ethical reasoning and apply rigorous ethical standards to decisions and behaviour (Cooper and Yoder, 2002). It is indicative that public managers' morale, identity, and capacity for decision making and innovation are entangled in ethics, and rightly so, because public service is the society's instrument for managing complexity and interdependency of the society (Gilman, 2005). As a critical item in the public service agenda, values and ethics have a close but distinctive relationship in public administration and policy making. That is why ethics is gaining prominence in the discourse about public administration today. Apparently, there is a perception that standards in public life are in the decline nowadays. This raises questions about values and the costs of misconduct on the part of those who have been entrusted with guarding public interest and the resources of the people. As a component element of public service and an ethical benchmark in public administration values constitute an essential component of every organisation as well as organisational culture (Guy and Balfour, 2007).

In the civil service for instance, the most frequently identified values and code of ethics are impartiality, legality, integrity, transparency, efficiency, equality, responsibility, and justice. However, these core public service values are the common standards by which we evaluate the behavior of public servants, and are informed by democratic principles, social norms, and professional ethics. In the light of this, public organizations are now challenged to find ways to institutionalize these ethical values, and hold public servants accountable for behaving in accordance with the standards (Bozeman, 2007). Ethics and values are instrumental in determining, guiding and informing behaviour. For instance, in public administration, there is adherence to high-level public service values which can generate substantial public trust and confidence.

Conversely, weak application of values or the promotion of inappropriate values can lead to reductions in the essential elements of good governance, as well as to ethical and decision-making dilemmas. This is a testament to the fact that even though there are a number of dynamics and challenging traditional values in the public service today, the paucity of moral agency can be expensive and unspeakable to the people in any given society, now and/or in the future (Kernaghan, 2003). These costs in earnest could translate to losses in trust and confidence in public institutions and losses in precious resources which were meant to support the economic and social development of nations and peoples. However, there is a move worldwide to restore a measure of trust and integrity in public institutions and officials, and also to safeguard democratic system and promote better governance. Nonetheless, it could be safely argued that the perception of a fall in public standards is linked to the shifting role of the state, which is undergoing tremendous reforms in different facets of life and society (Collins and Peerbotte, 2012). This range from globalization, technological advances, wide spread democratization and fiscal crises. All this are so challenging such that societies have started to deal very robustly with all forms of external forces, be smart in serving its citizenry, devolve power, and divest itself of obsolete activities. Consequently, the public service, as an institution, is under pressure to transform itself to respond to these changes. As public servants are asked to take on new and sometimes conflicting roles, there is a need for a cost-effective structure and an encouraging culture to enforce standards and guide behaviour (Lewis, 2007).

7 The impact of critical thinking on performance in public administration

Critical Thinking has been one of the tools used in our daily life's to solve some problems because it involves logical reasoning, interpreting, analysing and evaluating information to enable one take reliable and valid decisions. Considering its impact on contemporary public administration, critical thinking when properly gauged can espouse its characteristics of relevancy, validity, openness, logicity, truthfulness and fairness (Osborne, 2010). Critical thinking is central to the art, practice, and processes of public administration. This is because the world in which public administrators function is in constant instability. It is obvious that political, economic, technological, and societal forces combine to produce an operational environment which is characterised by a high degree of ambiguity and considerable uncertainty. In this regard, public administrators need all their creative powers to respond to the problems and shape the opportunities present in the public domain.

Consequently, public servants in public administration require opportunities in the public service to practice and sharpen the cognitive skills that relates to tolerance of ambiguity in the management of affairs in the context of uncertainty, as well as the use of creativity in thinking through established institutions and processes that generate predictable problems in performance (Koppell, 2011). The central thread of both critical thinking and dialogue is the need to question our natural and often taken-for-granted attitudes such as our prejudice, bias, ethnicity and clannish thought, religious affiliation and bigotry, thought pattern, and habits and lifestyles (Sapru, 2008). Viewed from the ankle point of what Socrates once said, “The unexamined life is not worth living” and that each individual must constantly and vigilantly examine all aspects of life using the powers of reason that we have available to us. It is therefore, important for public administrators to become critical thinkers and to work out their relationship with members of the public for common good and public interest (Sapru, 2008).

It is also pertinent that public administrators should understand their role in a diverse and complex society like ours, and to understand the need for organizational strategies to pursue their functions in more critical, responsive, and ethical ways. This study is of the view that as a means of assessing and changing the traditional ways of doing public administration and delivering service, the contemporary public administrators must engage critical thinking and dialogue in their public service. This will pave the way for a rigorous critique of habitual practices and behaviour, questioning and decomplexifying his or her thinking and experience (Jun, 2009). Critical thinking is a process that depends on the idea of a transforming self, continuously emerging and changing as we interact with others and our environment. Critical thinking viewed from a social dimension goes deeper than just reflecting on an event or a situation; it culminate into a dialogue with the self about some fundamental assumptions, values, and ways of interacting.

In this type of dialogue, questions are raised about some core beliefs and understanding given to particular events and circumstances (Humphreys and O’Donnell, 2006). Critical thinking therefore is an act of reason turned inward, and in a radical way, toward the foundation of consciousness and the presuppositional foundation of social order (Jun, 2009). Through this radical process of critiquing our beliefs and ideologies we become responsive to others in the society and open to the possibilities for new ways of doing things. This model of interpreting critical thinking clearly draws from humanistic perspectives which assume that when an individual engages in an action, he or she is not only critically conscious of the act but also is capable of thinking about, and questioning the “means and ends of such action” (Horton, 2006). This study posits that with critical thinking and dialogue, performance in public administration can be improved and expected needs achieved.

8 Conclusions

This study has been able to examine the relationship between Critical Thinking and Dialogue in public administration in Africa. The analysis demonstrates that despite evident success in promoting sustained development in Africa, the public administration model is not without its challenges. It manifest itself in the employment, training and retaining public administrators with the right skills and attitudes, moral agency and values capable of engaging and handling effectively the changing needs and the rising aspirations of members of the society. This scenario however, presents a disturbing trajectory requiring a changed paradigm. This is sequel to the fact that public concerns about public administration from the dimension of meritocracy, accountability, low public service values, shortcomings in transparency and responsiveness, dealing with uncertainty and complexity in cross-cutting policy issues are all questions of serious public concern (Collins and Peerbotte, 2012). This study emphasized the fact that an individual must engage in critical thinking if he or she is to actively construct choices, decisions, and actions in a self-confirming ways rather than passively reacting to situational conditions or the organizational requirements of duty. It is evident in the study that critical thinking helps a person who is in a position to serve the people rethink the rationalistic presuppositions of public administration and think in a way that meets the challenges of a situation.

The study demonstrates that public administration can be strengthened through critical thinking and questioning of the social, administrative, and personal practices which is key to the dialectical

connection of contradictions and paradoxes that exist in our assumptions, organizational and administrative activities, and policies (Cooper, 2006). Perhaps the most important element in changing individuals and organizations may be an individual's ability to become a critical thinker. Rationally speaking, a critical thinking individual (public servant) expects to recognize the need to consider "competing interests, ideas and positions of struggle" (Denhardt, 2011) when formulating and applying policies and construct dialectical possibilities for meeting social needs by placing his/her responsibility into the larger contexts of society, citizens, and ethical action. In doing so, public administrators may be able to overcome the limits of institutional inadequacies and increase their ability to change those limits by constructing new collaborations, and inclusive forms of reality. The study also observes that conventional views of public administration as a science and administrators as technocrats making rational decisions for the people often ignore the moral angle of public administration because ends and means are oftentimes taken for granted (Christensen, 2011). This does not necessarily mean just following ethical principles and guidelines but becoming aware of how we might avoid "the suppression of alternative conceptions and possibilities" (Christensen and Laegreid, 2007). Critical thinking and dialogue therefore come in between the present predicaments in the society and the exploration of new possibilities in the future of public administration; it also illustrates the apparent contradictions and hidden dimensions of public management, as well as the relationship between self and the social world, the individual and the bureaucracy in contemporary society.

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Encouraging Collaborative Behaviors by Public Officials in Higher Education Institutions: The Case of the University of Cape Coast

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Abstract Globalization, technological advancement and managerialism are gradually replacing the traditional way of managing an organization or Higher Education Institutions. In recent times, much attention has been placed on inter-organizational, inter-jurisdictional and inter-sectoral modes of operation and how these can be used to achieve organizational goals. This notion of managing across organizational boundaries still occupies scholars and professionals, as well as, practitioners of public administration and management. Even though research on managing across organizational boundaries is vast, little studies have examined collaborative behavior by public officials in Higher Education Institutions in the Ghanaian context. The current study examined whether encouraging collaborative behavior by public officials within and across colleges, faculties and departmental boundaries affect organizational performance and solve complex problems. The main objective was to examine whether public officials encourage collaborative behavior and how this has enhanced organizational performance and brought about innovation. The study adopted the qualitative research design and the case study strategy was employed. The study revealed that public officials in some of the Colleges and Schools encouraged collaboration and this has enhanced their capabilities and has affected performance. Again, the study revealed that collaboration has cut down cost, brought about effectiveness and as a result, brought about the greatest impact among these colleges. It is, therefore, recommended that collaborative behavior should be mandatory and a policy developed to guide the activities of the various colleges within the university.

Key words Collaborative Behavior, Managing across Boundaries, Public Officials, Higher Education Institutions

1 Introduction

Globalization, technological advancement and managerialism are gradually replacing the traditional way of managing an Organization or Higher Education Institutions. This is due in part to 'massification' of Higher Education Institutions which has led to the creation of more academic programs and the establishment of schools, colleges and faculties to manage these programs. Similarly, Walders and Wilde (2011) as cited in Abnory (2017) noted that universities are currently faced with many challenges across the globe, such as, national and international competition in the universities which continue to grow, demands from stakeholders are high, and couple with dwindling public funding, meanwhile, the universities need to widen its access to Higher Education, sharpen their institutional profile, they are required to maintain, enhance the quality of teaching and research, and allow their students and researchers to meet international standards without giving up valuable traditions. this situation calls for public officials to encourage collaborative behavior to enhance performance and bring about innovations.

A study by Handover Research (2010) revealed that, where participants voluntarily join and contribute to common cause bring about innovation. The Research also revealed that collaboration is an essential characteristics of organizations including Higher Education Institutions. Therefore, in a globalized world, organizations including Higher Education Institutions interface with others across multiple boundaries at many different levels to access resources, share information, work collaboratively to produce goods and services. Consequently, the paper suggest that due to the current trend and state of Higher Education Institutions with its rising tuition cost and an increasingly complete pool of university applicants worldwide, present a unique opportunity for Higher Education Institutions to establish joint ventures for collaborative degree programs. Furthermore, Bennis and

Biederman (1997) as cited in Dean (2010) observed that the pace of change and the complexity of our problems defy one individual's capacity no matter how motivated or talented the individual. They indicated that the answer lies in building bridges and integrating different perspectives that are capable of creating workable solutions to complex problems. So, our world needs more, not less collaboration, as well as, more synergy and less polarity. In Africa, and for that matter Ghana, the situation is not different. Appiah-Kubi (2005) in a report, indicated that the rising cost of tertiary education with its attendant problems of rising enrolment and inadequate funding reached its elastic limit during the beginning of 2000/2001 academic year and has persisted to date, thus, the University of Cape Coast is not an exception, it has since expanded to add considerably to the original focus on Arts, Social Sciences and the Sciences. (Document on Collegiate system, 2014). These challenges faced by the universities have engaged the attention of public administrators, teaching staff, practitioners and researchers. They have attempted to explain and address these challenges but their approach are limited for the following reasons: first, past empirical research has examined the dynamics of inter and intra-organizational collaboration, importance of collaboration and its impact on organizational outcomes, without much attention to encouraging collaborative behavior by public officials (Winer, and Ray, 1994; Walker, 2004). Few exceptions are Rakes and Rakes (1997), and Pryor and Henley (2017). Second, other researchers focus on the assessment of collaboration, the role of collaboration, the importance and the benefits organizations derive from collaboration and the ways in which it can be fostered effectively, with little theoretical framework explaining the link between encouraging collaborative behavior by public officials and performance (Wilcox, 2009; Warburton, et al., 2008; Gibb, 1961). Third, many approach collaboration from the view point of cost-cutting and focus on rising cost of Higher Education Institutions in the developed countries, neglecting the developing countries. (Larson, 1997; Elfin, 1996; Gusken, 1994; Wilger, 1992). Again, models are sparsely used to explain how encouraging collaboration could affect performance and bring about innovation. Many researchers have explored inter-organizational collaboration, however, fewer studies have examined how encouraging collaborative behavior by public officials in Higher Education Institutions. This paper, therefore, seeks to address the limitations by answering the question: has encouraging collaborative behavior by public officials enhanced organizational performance and brought about innovation?

2 Statement of the study

There is a growing perception that individual colleges, faculties and departments within an institution cannot solve complex problems on their own, institutions are increasingly searching for ways to collaborate. Due to this development and interest, public officials both teaching and non-teaching are requested to encourage collaborative behavior in their respective units to administratively enhance performance, innovation, quality teaching and research. However, there is no systematic assessment to examine whether encouraging collaborative behavior in Higher Education Institutions has enhanced performance and brought about innovation. Even though extensive research have been conducted on collaboration, encouraging collaborative behavior by public officials has received little attention in Higher Education Institution in Ghana and the University of Cape Coast. Interestingly, the available studies on collaborative behavior focused on encouraging faculty collegiality, encouraging constructive behavior in middle school classroom, investigating collaborative behavior on interactive tabletop displays in complex environment, and student collaborative behavior ignoring the case of encouraging collaborative behavior in the public universities in Ghana. To bring this view point into focus and also fill the gap, this study looks at encouraging collaborative behavior by public officials in the University of Cape Coast. Such an investigation will expand the frontiers of knowledge in relation to collaborative behavior within academic investigation, as well as, generate lessons towards successful collaboration.

3 Objectives of the study

The main objective:

To examine whether encouraging collaborative behavior by public officials has enhanced

organizational performance and brought about innovation.

3.1 Specific objectives

1. To examine the roles of the heads in their respective units.
2. To investigate if any mechanism has been put in place to encourage collaboration.
3. To examine what it takes to be successful at collaboration.
4. To ascertain if encouraging collaboration has enhanced performance and brought about innovation.

4 Research questions

1. Could you tell me about your role in your unit?
2. Has your unit put in place any mechanism that encourages collaboration?
3. What does it take to be successful at collaboration?
4. How has encouraging collaboration enhanced your performance and brought about innovation?

5 Review of literature

This section focuses on literature review of the following concepts: collaboration, managing across boundaries, success, barriers, benefits of collaboration, and then upon understanding the detailed content of the existing literature on these variables, a theoretical framework will be presented in the following section with emphasis on the social constructivism theory proposed by Lev Vygotsky (1978) as a guide to be used for the research and conclude with some empirical studies on collaboration.

5.1 Conceptual definitions

The concept of collaboration is not straightforward and understanding of it varies widely. As Eppel (2008) notes, there is not a consistent approach to the way the language of collaboration is used for example terms such as: partnership, alliance, strategic alliance, joint venture, consortium, coalition, and group are often used interchangeably. Collaboration in its simplest definition is working together to achieve a common purpose (Roberts et al, 2008a). Collaboration enhances the quantity, quality, accessibility and cost effectiveness of services, and reduce gaps and overlaps in the provision of services (Majumdar, 2006). Lai (2011) sees collaboration as the “mutual engagement of participants in a coordinated effort to solve a problem together.” Collaborative interactions according to her, are characterized by shared goals, symmetry of structure, and a high degree of negotiation, interactivity, and interdependence. Gray (1985) as cited in Scobie, Hatton and Vargo (2013) define collaboration as the ‘polling of appreciation and tangible resources, such as information, money, labor by two or more stake holders to solve a set of problems which neither can be solved individually. This definition according to them is appropriate because it provides a broad and detailed representation for all forms of collaboration. For the purpose of this study, collaboration is the conscious efforts by stakeholders, based on an intrinsic motivation and trust to facilitate joint creation of ideas and knowledge to enhance performance and bring about innovation.

5.2 Difference between coordination and cooperation

There are differences among collaboration, cooperation and coordination. Ashkenas (2012) as cited in Kelly and Schaefer (2014) see cooperation as when each person on a team develops his or her own plans and shares those plans with the team. They further stated that there may be discussions, but the focus remains on the individual actions and achievement rather than on a collective strategy, therefore, collaboration is when individual goals are subordinated for collective achievement. Joint discussions are focused on the ‘give and take’ about strategies, ideas and the outcome which often leads to new ideas and ways of working. To Montiel-Overall (2005), coordination and cooperation are commonly used in the literature to identify collaborative efforts, however, Pollard (2005) explains that in many people’s mind, collaboration is indistinguishable from cooperation and coordination, which are less elaborate and less ambitious collective undertakings. Fine (2001) as cited in Montiel-Overall (2005) observed that coordination might include shared resources, time, space, and it is often associated with regulating interaction of participants or events for common benefits. For instance, the Public Affairs Directorate within the Institution, may coordinate an activity or activities

for a particular section of the university to avoid clashes of activities. Coordination may improve the flow of activities or reduce duplication of events. On the other hand, cooperation is used to describe relationships with members who come together to share funds, space, collections, time for the benefits of both students and staff. (Fine, 2001; Fitzgibbons, 2000) as cited in Montiel-Overall (2005). This suggests interdependence among members of a team. Bishop (2003) revealed that working or managing across boundaries has become a popular concept and the basic premise is that individual and organizations need to traverse boundaries if they are to achieve their goals. Linden (2003) confirmed that, boundaries within an organization takes on different shapes and forms and much has to do with social and knowledge boundaries.

5.3 Drivers of effective collaboration

Kelly and Schaefer (2014) make the point that there are building blocks required for effective and successful collaboration. They indicated that the nature of work has changed, so management and knowledge of silos that were created in the 20th century are no longer tenable today if institutions and organizations want to succeed. In their view, communication, trust, shared vision and purpose are the building blocks which must be incorporated into organizational culture. (Rakes and Rakes, 2014; Massey et al, 1994). Study also revealed that there are several principal elements behind unproductive communication patterns in the universities where one of the elements is faculty members' autonomy. This is because Higher Education Institutions often encourage faculty members to work alone, a situation which has the potential to increase productivity, as well as, hinder peer interaction.

5.4 Benefits of collaboration

The benefits of collaboration are well researched. Weiss and Hughes, (2005) noted that collaboration allows institutions to leverage employees' talents, to coordinate knowledge, and to respond more quickly to global opportunities. Ready, (2004) observes that stakeholders increasingly demand more integrated and global solutions, those institutions that synchronize their activities and goals of the units can excel in the organization. Adler, (2001) believes that corporate competitiveness depends on expertise which is often distributed across divisions, and collaboration becomes a critical source of competitive advantage. Empirical research suggests that collaboration can produce significant and measurable benefits for organizations. Similarly, Khoja (2009) found that strong intra-organization networks has helped institutional units accrue intellectual capital where organization-wide collaborative practices allowed complex, global cross-functional teams to share knowledge, workloads and succeed in their goals. Muga and Albury (2003) see it as 'new ideas that work, as well as, the creation and implementation of new processes, product, services, and methods of delivery which result in significant improvement in the effectiveness, effectively or quality of outcomes'. Hartley (2005), indicated that, innovation can be reinvented or it can be adapted to a context, location or a time period. Accordingly, using more collaboration approaches would enable the creation, sharing, transfer and adaptation of practices that can spur innovation, thus, Tsai and Ghoshal (1998) found that social capital facilitate product innovation.

5.5 Theoretical framework

This article draws on the social constructive learning theory. Theories are perspectives with which people make sense of their world experiences (Stoner et. al. 1995). Bhattacharjee (2012) identified and explained four benefits of using theory to guide a scientific research: First, theories provide the underlying logic of the occurrence of natural or social phenomenon by explaining what are the key drivers and key outcomes of the target phenomenon and why, and what underlying processes are responsible driving that phenomenon. Second, they aid in sense-making by helping us synthesize prior empirical findings within a theoretical framework and reconcile contradictory findings by discovering contingent factors influencing the relationship between two constructs in different studies. A theory is a systematic grouping of interdependent concepts that are tested for accuracy and appear to be true to reflect or explain reality that give a framework to, or tie together, a significant area of knowledge. Numerous models and theories about collaboration have been propounded by great scholars such as John Dewey, Jerome Bruner, and Lev Vygotsky (1978) while others who have written extensively about collaboration are (Drucker, 1999; John-Steiner, 1992; and Gray, 1989) among others. The main theoretical perspective which will be used to support the study is Lev Vygotsky (1978). A social

constructivist view of education see collaboration as a new way of learning for public officials. Vygotsky (1978) provides the theoretical structure for considering collaboration as social process in which meaning is constructed from discussions among group members. He theorized that man learns through social engagements with others and that knowledge construction is a social cooperative venture, (Moran and John-Steiner, 2003) as cited in Montiel-Overall 92005. The underlying assumption about collaboration is that the meaning and knowledge are co-constructed.

5.6 Empirical studies on collaboration

A review of related literature on the topic reveals that very little is known regarding encouraging collaborative behavior by public officials. Many scholars such as Seldon, Sowa, and Sandford (2006) have studied the use of inter-organizational relationships such as collaboration, partnerships, and alliances between public, private, and nonprofit organizations for the delivery of human services. It examines variations within inter-agency collaborations and their impact on management and program outcomes. The findings show that inter-agency collaboration has a clear impact on management, program, and client outcomes. In the same vein, Austin (2000) examined the collaborations between Nonprofits and Businesses. This article gave useful context on how collaborations can develop from lower level relationships to full partnerships across a number of community business partnerships in the United States. Barnes, Maclean and Cousens (2010) used network analysis to examine the relationships and partnerships between community nonprofit organizations in Canada. Kegler, Rigler and Ravani (2010) also used network analysis to understand the evolution of collaborations during an environmental threat. Hosley, Genheimer and Yang (2003) examined building collaborations in culturally and ethnically diverse communities in the United States. Takahashi and Smutney (2001 and 2002) examined collaborations among small community based organizations providing services to people with HIV in Orange County, California. In a report by Allen and Clarke (2010), open, clear and frequent communications were identified in a number of papers (Mattessich et al, 1992; Hosley et al, 2003; Lasker, Weiss & Miller, 2001; Austin, 2000). This included both formal and informal communication links. (Mattessich et al, 1992). The study revealed that communication allows each member of the collaboration to have enough information, to have an active voice in decision making (Hosley et al, 2003). Warburton (2008) identified the need for communication to be culturally sensitive and empower members of the collaboration team. Communication allows each partner to be clear about what they are contributing (Sheridan et al, 2000), and fosters trust between collaborating organizations (Austin, 2000), as cited in (Allen and Clarke, 2010). In reviewing some of the international published literature, as well as some case studies presented above, some factors were identified which have been demonstrated to promote or are likely to promote successful collaborations in the Ghanaian context. These factors can be grouped into the following: (a) existing relationships, (b) clear, open and frequent communication, (c) shared vision, (d) respect, trust, and commitment, (e) strong leadership, (f) good governance, (g) having the likeminded people, and nurturing a collaborative environment. These factors are consistent with the theme that emerged from the interview.

6 Research design and methodology

This section is to discuss how data was collected. It provides a brief discussion of the study area, research strategy, and methods of data collection, instruments used and data analysis. The section also highlights the ethical issues before data was collected from the respondents (Yin, 2009). The empirical study was approached with interpretative epistemology. (Walsham, 2006). This is because employees of public organizations and institutions have different ideas and varying beliefs system and interpretations. Miles and Huberman (1994) indicated that qualitative research data normally take the form of words rather than numbers and are explanation of processes in identifiable local context. The aim is to understand the idea of encouraging collaborative behavior in their respective colleges and faculties. Qualitative design was used for the phenomenon under study. The researcher primary aim was to understand the experiences from the participant's perspective and information rich cases for in-depth study. (Patton, 1985). The case study approach (Creswell, 2007; Yin, 2003) was used to understand the issue of encouraging collaborative behavior by public officials and the single bounded case study approach between July and September 2017 was employed (Stake 2005). The non-

probability sampling based on purposeful sampling techniques was used to elicit the views of the participants on the study (Patton, 2002). The purposeful sampling was preferred over others because it will enable the researcher sample views from participants who could provide the needed and relevant information than others and also due to time and resources constraints. Ten participants were interviewed because the researcher was interested in an in-depth understanding of the study and elucidate the meaning of the lived experiences of the phenomenon of the group of people and not interested in statistical generalization to a larger population. Semi- structured questionnaires and interview guide were employed. It is widely used in qualitative research, it is open, allowing new ideas to be brought up during the interview and the interview guide helps the researcher to focus on an interview on the topic at hand. Face to face interview, audio recorder was used, documents, Statutes and minutes from meetings were used. (Creswell, 2007; Yin, 2003). Data was collected through semi-structured interviews and this gave the participants the flexibility to speak widely on the issues raised in the study. Creswell (2012) citing Fantana and Frey (2000). Confirmability: I engaged in methods of respondents' validation and member checking (Creswell, 2012). Summary of findings sent to them through email, and respondents were asked to check the accuracy of the verbatim quotes.

6.1 Ethical issues

An approval letter was obtained from the Office of the Dean of Ghana Institute of Management and Public Administration (GIMPA) to Participants and they were informed of the purpose and aims of the study, they were also informed of their right to refuse to participate in the study and to withdraw at any time. Their anonymity was protected and guaranteed by the researcher.

6.2 Limitation

The library search for literature on encouraging collaborative behavior by public officials in higher education in Ghana has revealed very little. Data analysis: the data collected from the sample, was transcribed, coded and analyzed. (Milles and Huberman 1989). The researcher also crossed checked the gathered data with information available in order to increase the reliability and credibility of the phenomenon under study.

7 Discussions of results

The research questions provided a framework for this study. To provide a quick reference, the research questions enquired specifically about:

1. Could you tell me about your role in the unit?
2. Has your unit put in place any mechanism that encourage collaboration?
3. What does it take to be successful at collaboration?
4. How has encouraging collaboration impacted on your performance and brought about innovation?

This chapter presents the themes and concepts that emerged from the interviews Themes such as (a) communication and commitment from all parties, (b) top management support, (c) capacity building, (d) nurturing of the environment, and trust were derived from the study. This section is devoted to the discussions of the findings in relation to the questions set out by this study. With regards to the first question, it could be argued that the findings in relation to their responsibilities in their various units were managerial, advisory, supervisory and leadership roles as stipulated in the University of Cape Coast Statutes (2016). This means that in relation to their respective roles, the University of Cape Coast Statutes is adhered to and all the respondents are performing their roles in accordance to the rules and regulations of the organization to achieve the institutional goals. The review of the Statutes affirm to their assertion that roles and responsibilities of the key officers of the university are spelt out in it. This also support part of the definition of collaboration by Fine (2001) as cited in Montiel-Overall (2005) which states that coordination might include shared resources, time, space, and it is often associated with regulating interaction of participants or events for a common benefits or goal.

With regards to research question 2, respondents were of the view that mechanism were in place to encourage collaboration in their respective schools, departments and colleges. One of the interviewees stated that, 'Periodically, letters are sent to all the colleges, schools and faculties, and

seminars are organized to explain what we do, this is because Heads, Deans and Provost are being appointed beginning of each academic year. These mechanism are put in place to let them understand what we do in our units'

Another respondent indicated that, 'Creating an environment for collaboration is necessary because you can't do everything, I sometimes bring them over a drink and that's why the senior common room was created to nurture the environment for collaboration. It is an informal and relax atmosphere'

This is in line with the social constructivist theory. Vygotsky (1978) provides the theoretical structure for considering collaboration as social process in which meaning is constructed from discussions among group members. He theorized that man learns through social engagements with others and that knowledge construction is a social cooperative venture. On the contrary, three of the respondents stated that there is the need to make sure that the systems in the university are efficient and effective, and they pointed out that 'Sometimes you send memos, letters or appointments letters and they get lost in transit'

In respect to question 3, all the respondent attest to the fact that to be successful at collaboration, there is the need for effective and efficient communication system in place. This is because without communication, the other schools, faculties and colleges will not know what others are doing in their respective disciplines. One of the interviewees lamented:

'Communication is very very important. If you don't communicate the other party would not understand what you are doing' there are instances letters sent to departments get lost in transit, you will call for a feedback on that letter and you are told by the Dean or head of department I have not received any letter'

Another participant also reiterated that:

'To be successful at collaboration, there is the need for top management support for effective and efficient collaboration'

'Sometimes, when it comes to international issues, you see some departments by pass the Centre to top management to sign memoranda without recourse to us. It is the duty of top management to let them know the right communication channels. The right channels should be emphasized'

Another interviewee emphasized that:

'To be successful, faculty and the college or school must accept the fact that there are best practices elsewhere that can be learnt to improve the system'

This confirmed the report findings of Allen and Clarke's (2010). (Mattessich et al, 1992; Hosley et al, 2003; Lasker, Weiss & Miller, 2001; Austin, 2000). To them, communication should be culturally -sensitive because it empowers members of the collaboration team. Consequently, communication allows each partner to be clear about what they are contributing and fosters trust between collaborating organizations. The implication is that, if the channel of communication and the other systems are emphasized by top management, then there will be effective and successful collaboration in the University. Also, to be successful, both faculty and administrative staff need to be committed, opened to learn from and teach others. Commitment is key to successful collaboration in Higher Education Institutions. This is captured in one of the respondents' response:

'To be successful there must be commitment and openness to learn from and teach others'

In respect to question 4, all the participants agreed that the level of collaboration in the University is not encouraging, despite the fact that through collaboration and networks, the performance of some faculty has enhanced. Another participant stated that,

'I am not sure if for the past 3 or 4 years faculty has published papers independently, it is either two or three, we do collaborative research which has enhanced the status of our staff, many have been promoted'

All the respondents reiterated that, most of the colleges, faculties and departments were lagging behind and that there is the need for capacity building, top management support among others. These words were captured from one of them:

'If you are the provost, a dean or a head of your unit, does not mean you have the skills to encourage collaboration, it is a skill one must acquire'

This presupposes that collaboration must be encouraged by public officials and learned in organizations. This implies that, conscious efforts should be made to incorporate collaborative skills into the orientation programs usually organized for the newly appointed senior members and refreshers courses for the old teaching and non-teaching staff of the University. In respect to the follow up question, all the participants stated categorically that it has really helped them personally by enhancing their writing skills, broadened their understanding of certain concepts in their area of specialization, as well as, their ability to interpret data.

This is captured from one of them

‘For me, collaboration has enhanced my writing skills and interpretation of data, all these I knew but through collaborations I have built positively on them. The benefits of such collaborations has also help me learn the way various people from other colleges, faculties and institutions do things and the organizational culture that underlie them’.

Another respondents had this to say

‘Collaboration has changed the pedagogical strategies I use in the classroom moving from solely theory based to practice oriented’

The above observations indicate that apart from encouraging collaboration, the participants have acquired the skills, knowledge and personal experiences which has gone a long to improve collaboration in the University, and has enhanced performance and brought about innovation.

8 Summary, conclusion and recommendation

From the study, it is clear that indeed globalization, technological advancement and managerialism is gradually replacing the traditional way of managing an organization or Higher Education Institutions. This is because, the findings revealed that collaboration in the University of Cape Coast is gradually taking shape. Conversely, there is more room for improvement and a very good and unique opportunity for Higher Education Institutions to established joint ventures for collaborative degree programs, research and collaborative teaching in certain academic disciplines. The paper set out to examine whether encouraging collaborative behavior by public officials within and across colleges, faculties and departments affect performance and solve complex problems as well as bring about innovation. The qualitative research design and the case study strategy was used to elicit views from 10 respondents. The findings revealed that not all the colleges, schools and faculties encourage collaborative behavior. The faculty who encourages collaborative behavior in research and teaching have enhanced their performance, brought about innovation and their departmental profile. The study also revealed that some elements lead to unsuccessful collaboration in the university: for instance, lack of commitment by all staff, the inability of Deans and Head of Departments to bring likeminded people together, lack of top management support, lack of efficient and effective communication and openness to facilitate collaboration in the university. However, nurturing collaborative environment, working in cells and groups has help to build collaborative research in some colleges and departments. It was realized that some faculties and colleges work in cells and research groups on a proposal especially, if the lecturer is knowledgeable in that area, they come together to write it. This is consistent with previous and recent research on the drivers and barriers to encouraging collaborative behavior in Higher Education Institutions. Finally, the paper highlights the importance of the elements and the degree to which the drivers of collaborative behavior practices support collaboration in some of the units in the University of Cape Coast.

Based on the outcome of the study, the following recommendations are made:

1. Collaboration should be mandatory and a policy should be developed to guide collaborative behavior in the University, where all the colleges, schools and faculties will adopt and practice. The quality assurance section of the University would have to monitor the compliance of the policy if implemented.

2. It was noted that top management support is inadequate, therefore, it should endeavor to ensure that the right channels of communication are followed. For instance, if a college provost or a departmental head ignore a rule or any official authority, to sign a memoranda, it is the duty of top management to advise accordingly and appropriately.

3. Capacity building is essential characteristics of collaboration, since it is a skill which leads to attitudinal change. The study gathered that people might not know how to collaborate therefore, university management should mandate the Training and Development section of the University in that respect.

Future research in this area should concentrate on the use of quantitative research design to explore the topic. Researchers are encouraged to examine the inter work unit of collaboration in private and public universities in Ghana.

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Survey of Citizens' Satisfaction of Public E-Service Delivery in the City of Accra, Ghana

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Abstract Since the early 1990s till now, public administrations and the ways of conducting government business in the world has changed due to the advent of information and communication Technologies. The delivery of Public e-services enabled by e-government initiatives and innovations have fostered growth and competitiveness in the public sectors to the private sector and among countries. Countries, developed and developing including Ghana have adopted the electronic approach of service delivery in order to maximize the benefits that are associated to the use of it. Governance has become more participatory and citizen centered. However, the satisfaction or dissatisfaction of the e-service delivery plays an important role in the success of the e-government adoption and implementation. In view of this, we have extended the American customer satisfaction Index (ACSI) model to ascertain the factors that affect the satisfaction of e-service delivery in the city of Accra, Ghana and to know the relationships that exist among these factors. In trying to find out the factors that affects satisfaction in the city, the service quality constructs in the American Customer Service Index (ACSI) model has been changed based on our proposal and through existing literature, by adopting Functional Service Quality and Technical service quality which are very important service quality dimensions proposed by other scholars. The perceived usefulness construct is also added to establish a model of Citizens' satisfaction for this research. The loyalty construct or variable of the American Customer Satisfaction Index (ACSI) model has been replaced by Citizens' Trust. This is called customer trust in the American customer satisfaction index model when dealing with the public sector. The survey was conducted in the city of Accra specifically at the Drivers and Vehicles Licensing Authority (DVLA) and the Registrar Generals Departments with 242 respondents. The results of the research show that the citizens' are satisfied with the Public e-service delivery in the city of Accra Ghana, and that the satisfaction of the service delivery produces citizens' trust. There is also a great impact of Functional Service Quality, Perceived Technical Service Quality, Perceived Expectation, and Perceived Usefulness on Citizens' Satisfaction in the City. The research has proposed some suggestions to government and city managers in adopting measures that will help in the provision of Public e-services in the city and other cities in the country and beyond. The findings of this work will also add to the field of knowledge in e-service delivery as well as serve as a guide to service delivery model in developing countries.

Key words Citizens' satisfaction, American Customer Satisfaction Index (ACSI) model, Citizens' trust

1 Introduction

The advent of Information and Communication Technologies has brought about different ways people, companies and governments interacts, do business and make decisions in almost all the countries of the world. Since early 1990s, the introduction of E-government has affected the delivery of public services to citizens as well as firms and intra-government dealings in agencies, departments and ministries in Ghana. Though all the 193 countries under the United Nations (UN) have started implementing the e-government^[34], countries in the African region including Ghana still lags behind according to the 2016 United Nations E-government Development Index (EGDI) report. "Africa lag globally with a low average at 0.2882, a figure that falls far below the leading European EGDI value of 0.7241"^[29]. Internet users have increased from 19.6% of the population in 2014 to 29.6% as of June,

2016, according to Internet World Stats, 2016, and the face book users increasing from 2,900,000 to 3,500,000 respectively according to face book. Through the massive investment of the Government in E-government infrastructure and implementation, most of the Ministries, Departments and Agencies (MDAs) as well as Metropolitans, Municipalities and District Assemblies (MMDAs) have got at least a website and some amount of public services delivered electronically. This has become an effective way for the government to engage with citizens and provide modernized, transformed and improved public services. The success of e-government depends heavily on the e-service delivery and making the services citizen centered.

It is the fundamental duty of the government to provide quality services to the citizens of the country.

The formal or public sector accounts for more than half of the job offerings in the country. Traditional approach makes it difficult for the citizens to be well served because of the challenges associated with it which includes, high cost, inefficiency, ineffectiveness and corrupt practices of public servants in the processes, just to mention a few. E-service delivery will help address these problems and make the government smarter by providing services Seven days a week, twenty-four hours a day (24/7). Despite the efforts to provide such services, citizens still depend on the traditional approach of demanding services from government because of their feelings and disappointments from the websites which Kottler terms as satisfaction. Kottler indicated that, "satisfaction is a person's feelings of pleasure or disappointment resulting from comparing a products perceived performance or outcome in relation to his or her expectation ^[24] .

It is against this background that, this research seeks to survey the public e- services delivered in the city of Accra, Ghana to ascertain the main factors that affects citizen's satisfaction with the use of a model modified from the American Customer Satisfaction Index (ACSI) model.

This research work proposes four (4) antecedents to Citizens public e-service Satisfaction as: Functional Service Quality; Technical Service Quality; Perceived Usefulness; and citizens Expectations to citizens satisfaction and the resultant variables to be Voice or Citizens Complaints and the Trust of citizens, to measure the Satisfaction of Public e-services delivery in the city of Accra, Ghana specifically in the Registrar General Department(RGD) and the Drivers and Vehicle Licensing Authority (DVLA).

The rest of the paper The research shall provide the framework for satisfaction of public e-service delivery to citizens and provide valuable suggestions to government as well as other public authorities for the future service delivery. This will also help policy makers understand the factors that affects the satisfaction of public e-service delivery in the city as the experience of the capital city and the two departments will be a model for the entire country. It will further add to the world of knowledge and serve as a model in measuring satisfaction of public e-service delivery in the country and beyond.

2. Literature review

Citizens Satisfaction of the services provided on the websites plays an important role in getting citizens trust of the system. The improvements of government websites accounted for the highest satisfaction index since 2012 in the United States of America with the highest ACSI government satisfaction score. "Citizen Satisfaction with the U.S. federal government rebounds in 2016, increasing from 6.4% to 68.0% on a 0 to100 scale. The highest ACSI government satisfaction score since 2012". Customer or citizen's Satisfaction is very crucial in the service industries in both public and private endeavors. Customer satisfaction has taken a national and international significance with the development of national satisfaction barometers and indices in Sweden^[10], the US^[11], and Norway,^[11] etc.^[6]

Customer satisfaction has become a vital concern for companies and organizations in their efforts to improve products and service quality and maintain customer loyalty in a highly competitive marketplace. In the last decade, a number of national indicators have reflected that consumer satisfaction across a wide range of organizations has risen for example, USA ACSI^[10]; Europe-ECSI and Denmark^[14] ^[34]. A standardized satisfaction measure provides the means for accurate regulatory objectives that capture both consumer interest and overcome the vagueness issue. Regulators can adapt this standard measure for national benchmarking, competitive country assessment, longitudinal studies of regulation implications, etc.

2.1 E-government

E-government is a generic term for web-based services from agencies of local, state and federal governments. In E-government, the government uses information technology and particularly the Internet to support government operations, engage citizens and provide government services. The interaction may be in the form of obtaining information, fillings, or making payments and a host of other activities via the World Wide Web^[28]. In their part the United Nations defined e-government as the use of ICT and its application by the government for the provision of information and public services to the people^[34]. They further indicated that it is the use and application of information technologies in public administration to streamline and integrate work flows and processes, to effectively manage data and information, enhance public service delivery, as well as expand communication channels for engagement and empowerment of people.

The World Bank (www.worldbank.org) definition: E-government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions^[26].

Definition of the Working Group on E-government in the Developing World(www.pacificcouncil.org): E-government is the use of information and communication technologies(ICTs) to promote more efficient and effective government, facilitate more accessible government services, allow greater public access to information, and make government more accountable to citizens^[4]. E-government might involve delivering services via the Internet, telephone, community centers (self-service or facilitated by others), wireless devices or other communication systems.

Fang Zhi-yuan , Ph.D. National institute of Development Administration (NIDA) Thailand defined e-government as a way for governments to use the most innovative information and communication technologies, particularly web-based Internet applications, to provide citizens and businesses with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in democratic institutions and processes^[8]. This includes interactions between government and business (G2B), government and citizen (G2C), and government to different units and levels of government (G2G). While definitions of e-government by various sources may vary widely, there is a common theme. E-government involves using information technology, and especially the Internet, to improve the delivery of government services to citizens, businesses, and other government agencies. E-government enables citizens to interact and receive services from the federal, state or local governments twenty four hours a day, seven days a week (24/7)^[34]. Through innovation and e-government, public administrations around the world can be more efficient, provide better services and respond to demands for transparency and accountability^[34]. This brings about the public sector bridging the gap that exist between it and private sector by adopting the New Public Administration approach of which e-service delivery is an important approach. Molla and Licker indicated that satisfaction becomes an important issue whiles corporations introduces service on-line^[34]. Greater attention is paid to services delivery in every e-government implementation processes.

2.2 E-service / Public e-service

E-service stand for electronic service and consequently it's the services delivered electronically^[22]. In order to encourage a more succinct, yet multi-relational, understanding and discussion, Lindgren and Jansson 2013, proposes a three-dimensional conceptualization of public e-services. Basically, a public e-service can be viewed with each of its dimensions in focus, meaning that it can be viewed as being (1) a service, (2) electronic, and (3) public (in contrast to being private). Each dimension can be put in the foreground separately or in combination with (another dimension(s) (e.g., public e-, e-service, public service, and so on), but all dimensions should, we argue, always be acknowledged to some extent^[22]. This means electronic services delivered in the public sector, which is done electronically to citizens. The citizen's reactions towards the service is therefore important. It is worth nothing that the Information systems are an aid to the public e-services but not the content or the service itself.

Electronic service shortened as e Service which refers to any service that is provided by any electronic means e.g. Internet/website, mobile devices or kiosk. According to Goldkuhl and Persson

2006a, eService means that an external user (a citizen) interacts through a user interface of a public IT system based on web technology^[13]. Rowley (2006) defined e-Service as: Deeds, efforts or performances whose delivery is mediated by information technology (including the Web, information kiosks and mobile devices)^[5]. Such eService includes the service element of e-tailing, customer support and service, delivery. Both of the above definitions reflect three main components- the service provider, the channels of service delivery (i.e., technology) and the service receiver. Rowleys definition seems more explicit as it includes mobile devices. As regards public eService, public agencies are the service providers and citizens as well as businesses are the service receivers. The channel of service delivery is the third requirement of eService. The Internet is the main channel of eService delivery while other classic channels (e.g. Telephone, call center, public kiosk, mobile phone, television) are also considered.

As complete implementation of an e Service takes time, the traditional methods of service delivery (e.g. Over-the-counter service, postal mail service) for the same service cannot be neglected during the transition period. In fact, citizens or businesses usually choose a channel of service delivery based on suitability of using the services and their expertise levels^[5].

According to WASEDA-IAC 10th International e-government ranking 2014, jointly surveyed Waseda university and international academy of CIO(IAC) Tokyo May 2014 on-line service or e-services is the integration of business processes, policies, procedures, tools, technologies and human efforts to facilitate both assisted and unassisted customer services in using the Internet and other networks^[30]. Government provides services at different levels: for various governments (government to government), private enterprise initiators (government to business) and for citizenry access (government to citizens). Government-to-citizen service involves all the communication or transactions between government, at various levels, and citizens. Now governments are developing the next stage of e-government by establishing the e-service infrastructure and organizational capacity for constituents to transact official business online. One can say that with this all the government activities are supposed to be accessible by the citizens of Ghana as a matter of fact the people of Accra. The dictates of democracy demand that information must be accessible.

The Accra metropolitan assemblies as well as the agencies and departments that are found in the city should deliver services to the people effectively, efficiently and to their satisfaction. There should also be transparency and accountability in the delivering of public services in the city. Transparency and accountability reduces corrupt practices in the public sector. In view of this, we can say that the implementation of e-services will bring down the rate of corruption in the city. There has been allegations and counter allegation of corruption in successive government since independence as the president Barack Obama (President of the United States of America) once said that Africa needs strong institutions but not strong men. The implementation of e-services becomes one of the institutions that can help reduce corrupt practices in the country. As Citizens will not have to give envelopes to public servants in order to get some basic services done.

2.3 E-service in Ghana

The government provides public services in Ghana through the government of Ghana web portal(<http://www.eservices.gov.gh>) and other websites in the country. Most of the services offered in the MMDAs and the MDAs including the Ghana police service, Registrar General Department, Vehicle Licensing Authority, the Accountant General Department, and other public institutions, etc. Through the one stop portal most of the services can be accessed. Some of the services includes; application for Birth certificates, registration of businesses, marriage registrations, application for driver's license, request for pay slips on-line, and many more. The Judiciary, cabinet of government, and the local government departments are also on-line. This makes work efficient, effective and costless. E-service delivery in the country is becoming citizen centered. The following is the pictorial view of how the Online Services Portal of the Government of Ghana in Figure 1.

Ghana has one of the most vibrant mobile markets in Africa. The first cellular mobile network was launched in sub-Saharan Africa in 1992. There are currently six competing operators, including the regional heavyweights MTN, Vodafone, Bharti Airtel (formerly Zain) and Millicom (Tigo). The entry of Nigeria's Globacom as the fifth player in 2012 delivered further competition to the mix. This has increased the subscriber growth in the country. While the voice market is saturated, there is enormous potential in mobile broadband services, both in terms of subscriber additions and in mobile data ARPU. Mobile broadband already accounts for the vast majority of Internet connections in the country.



Figure 1 The Online Services Portal of the Government of Ghana

Telecommunications in Ghana include radio, television, fixed and mobile telephones, and the Internet. Telecommunications is the main economic sector of Ghana according to the statistics of the World Bank due to the Ghana liberal policy around Information and communications technology (ICT). Among the main sectors of investments, 65% is for ICT, 8% for communications and 27% is divided for public administration.

Ghana has achieved some increases in the e-participation though there has been some decline in the global e-government rankings of the UN e-government rankings of 2016 as compares to the 2014 survey reports. Ghana is ranked 120 position (2016 EGDI: 0.4182) with the E-Government Development index and 98 in the E-Participation (2016 EPART: 0.4576), The Figure 2 indicates the strides and falls.

E-participation can be defined as the willingness, on the part of government, to use ICT to provide high quality information (explicit knowledge) and effective communication tools for the specific purpose of empowering people to participate in consultations and decision-making, both in their capacity as consumers of public services and as citizens^[7] the placement of Ghana according to the Global UN survey report of 2016 is seen in the Figure 3.

2.4 The American Customer Satisfaction Index (ACSI)

Satisfaction is the consumer's fulfillment response. It is a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfillment, including levels of under- or over-fulfillment^[27]. This definition is remarkable because the main focus is on a consumer rather than a customer. The consumers use products or service, whereas a customer pays for them but may not be the consumer (the direct user). Granted, this is a fine distinction that gets lost in daily rhetoric, but it makes a difference in a researchers modeling of satisfaction. Satisfaction with a product/service is a construct that requires experience and use of a product or service according to Oliver. Individuals who pay for a product/services but who do not use them should not be expected to have the type of (dis) satisfaction that a product/service user (the consumer) will have. So we need to realize that the concept of customer or citizen satisfaction is about consumer satisfaction (that is, user satisfaction), rather than about buyer's (which may include non-users)^[3]. Customer satisfaction provides a leading indicator of consumer purchase intentions and loyalty-Marketing Metrics.^[32]

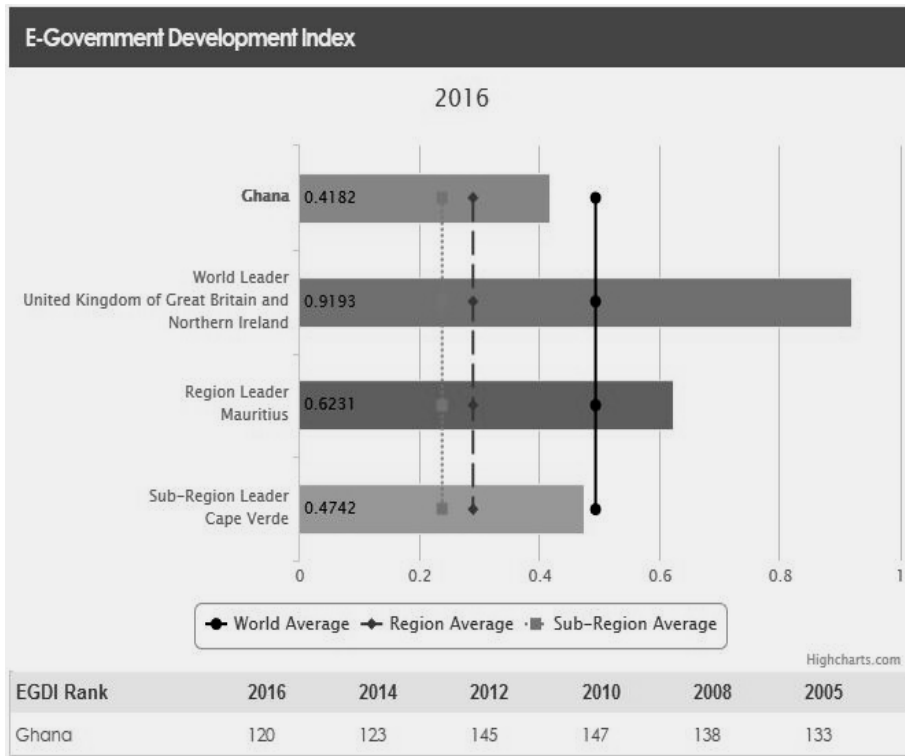


Figure 2 UN e-government development index 2016

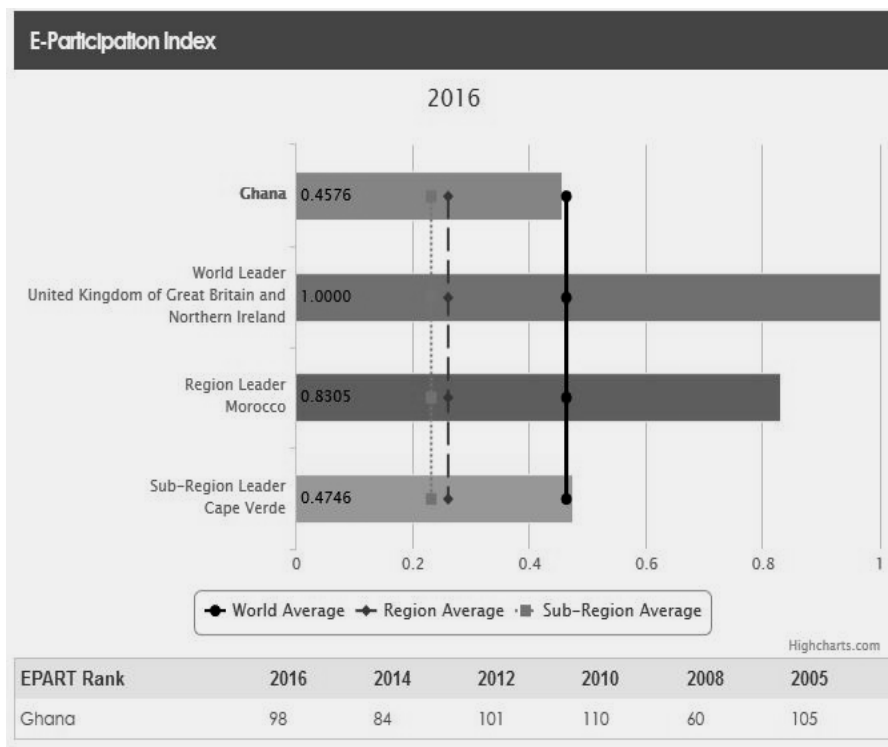


Figure 3 UN e-government development index 2016

The American Customer Satisfaction Index (ACSI) is an independent national measure of customer satisfaction with the quality of products and services available to household consumers in the United States^[16]. Each year, 70,000 customers are surveyed about the products and services they use the most. The data serve as inputs to an econometric model that benchmarks customer satisfaction with more than 300 companies, 43 industries and 10 economic sectors, as well as over 100 services, programs, and websites of federal government agencies^[35]. The ACSI is time-tested, scientific model provides key insights across the entire customer experience. ACSI results are strongly related to a number of essential indicators of micro and macroeconomic performance. At the micro level, companies with high levels of customer satisfaction tend to have higher earnings and stock returns relative to competitors. At the macro level, customer satisfaction has been shown to be predictive of both consumer spending and GDP growth.^[35]

The first national customer satisfaction index was the Swedish Customer Satisfaction Barometer, or SCSB^[10]. Developed in 1989, the SCSB includes 31 major Swedish industries. In Germany, the Deutsche Kunden barometer, or DK, was introduced in 1992 and as of 1994 also includes 31 industries^[31].

The American Customer Satisfaction Index was first introduced in the fall of 1994, with information on 40 industries and seven major sectors of the U.S. economy^[18]. Recently, New Zealand and Taiwan also have started indices for customer satisfaction. The European Union also has recommended that it be done in its member countries. The American Customer Satisfaction Index (ACSI) Model represent a type of customer-based measurement system for evaluating and enhancing the performance of firms, industries, economic sectors, and national economies. On an annual basis, the ACSI system estimates a firm level customer satisfaction index for each company in the sample and weights these firm-level indices to calculate industry, sector, and national indices. The American Customer Satisfaction Index measures the quality of goods and services as experienced by the customers that consume them. An individual firms ACSI represents its served markets its customer's overall evaluation of total purchase and consumption experience, both actual and anticipated^{[1][9][17]}. Analogously, an industry ACSI represents an industry's customer's overall evaluation of its market offering, a sector ACSI is an overall evaluation of that sector, and the national ACSI gauges the nation's total consumption experience. Hence, ACSI represents a cumulative evaluation of a firm's market offering, rather than a person's evaluation of a specific transaction. Although transaction-specific satisfaction measures may provide specific diagnostic information about a particular product or service encounter, overall customer satisfaction is a more fundamental indicator of the firms past, current, and future performance^[12]. The concept behind ACSI, namely, a measure of overall customer satisfaction that is uniform and comparable, requires a methodology with two fundamental properties. First, the methodology must recognize that ACSI and the other constructs in the model represent different types of customer evaluations that cannot be measured directly. Accordingly, ACSI uses a multiple indicator approach to measure overall customer satisfaction as a latent variable. The result is a latent variable score or index that is general enough to be comparable across firms, industries, sectors, and nations. Second, as an overall measure of customer satisfaction, ACSI must be measured in a way that not only accounts for consumption experience, but also is forward-looking^[33]. To this end, ACSI is embedded in the system of cause and effect relationships shown in Figure 4, which makes it the centerpiece in a chain of relationships running from the antecedents of overall customer satisfaction-expectations, perceived quality, and value-to the consequences of overall customer satisfaction-voice and loyalty. According to the model, there exists a positive association between perceived customer expectations (PE) and perceived quality (PQ), perceived value (PV) and satisfaction. As shown in Figure 4, customer satisfaction has three antecedents: Perceived quality, perceived value, and perceived expectations. The first determinant of customer satisfaction is perceived quality, which is the served markets evaluation of recent consumption experience. Perceived quality is expected to have a direct and positive effect on overall customer satisfaction. For perceived quality, we expect a positive association between increased perceived value and customer satisfaction. The second determinant of customer satisfaction is perceived value. Adding perceived value incorporates price information into the model and increases the comparability of the results across firms, industries. The third determinant of customer satisfaction is perceived expectations. Perceived expectations represent both the served

markets prior consumption experience with the firms offering, including non-experiential information available through sources like advertising and word-of-mouth-and a forecast of the ability of the supplier to deliver quality in the future. Satisfaction is considered as the latent variable in the model. The Satisfaction of customers has a positive effect with customer loyalty and negative effect on customer complaints. As seen in Figure 4.

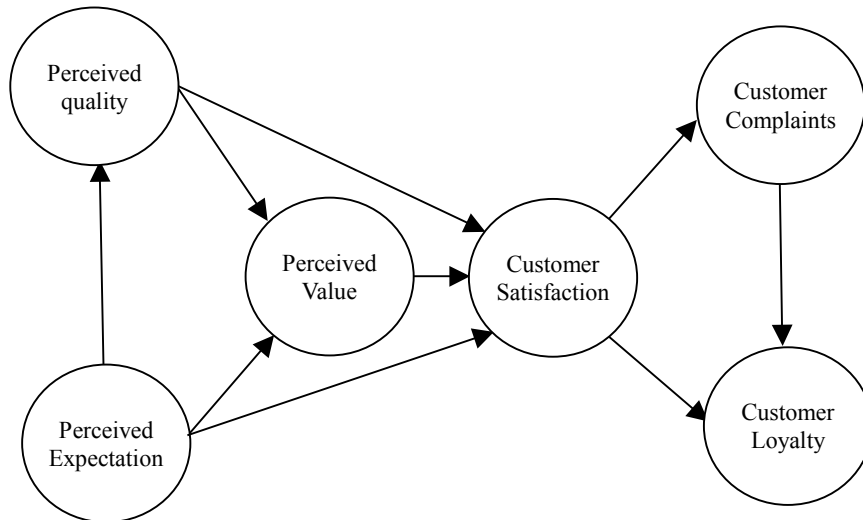


Figure 4 American Customer Satisfaction Index (ACSI) model 1999

3 Research methodology

3.1 Research model

The proposed model in this research, have components that addresses the limitations of the American Customer Satisfaction Index (ACSI) Model. Specifically, technical quality, functional quality as well as perceive usefulness has been incorporated into the model. This is motivated by the fact that, Technical service quality and functional service quality are the two dimensions of service quality which should be given much attention when measuring satisfaction of Public e-service delivery. Perceive usefulness according to the literature has a relationship with citizen's satisfaction, hence the need to be included in the model. Many scholars have writing about the relationship between the perceived usefulness and customer satisfaction including Feng-Cheng Tung, 2010. He confirmed that, perceived usefulness which is the degree to which a persons' believe that using a particular system enhances his or her job, has a positive effect on satisfaction of public e-service delivery^[23]. Therefore, we decided to incorporate it in our research work to confirm the previous work done in the past and to also know the relationship is in the Ghanaian situation.

In confirming the works of Gronroos et al, Gi-Du Kang and Jefferrey James^[19] as well as the many giants of service quality research who has proposed and others confirming the relationships between Technical service quality and the functional service quality as the service quality dimensions that produces a better results service quality measurements, we replaced the perceived quality constructs with this two quality constructs.

Gronroos' model revealed the relationship between this two service quality constructs and the customer satisfaction. He further indicated that the incorporating the two constructs better produces good result than concentrating only on the functional service quality which had been used by the American scholars^[15]. In 2014, Kumar et al also conducted a research which revealed the relationship between the functional service quality, technical and customer satisfaction, though the relationship between the two (Functional and Technical service quality) was not very strong^[20]. There's the need to incorporate this two dimensions of service quality in our research work in order to confirm the relationships amongst these constructs and citizens' satisfaction in the city of Accra, Ghana.

The American Customer Satisfaction Index (ACSI) model replaces the customer loyalty constructs with Citizens' Trust when measuring satisfaction of public service delivery or when dealing with the government sectors^[10]. The city management is done by the central government through the Metropolitan Assembly, we therefore have proposed the use of citizens' trust instead of customer loyalty in building our model to measure the satisfaction of public e-service delivery.

The antecedent constructs are Perceived Technical quality, Perceived Functional Quality, Perceived Expectation and Perceived Usefulness. These variables are proposed to have a positive effect on Citizens Satisfaction and the resultant constructs being Citizens complaints and Citizens' Trust of the e-service delivery in the city as seen in the Figure 5.

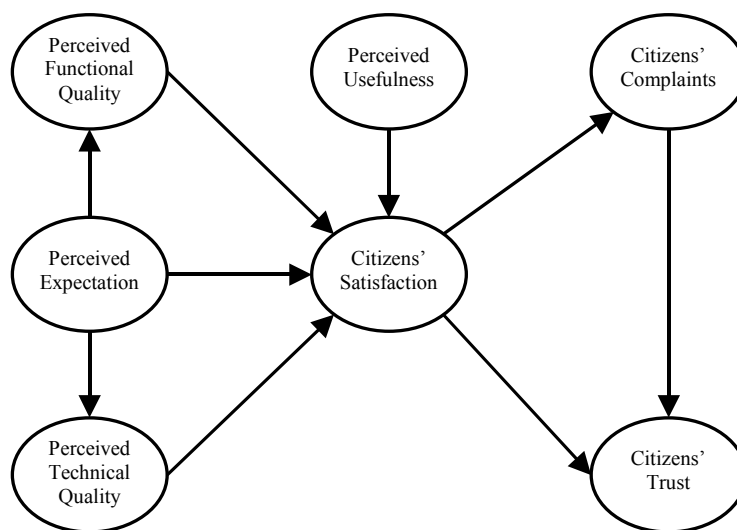


Figure 5 Modified Model of E-Service Satisfaction

From the above model, the research work proposes four (4) antecedents to Citizens public e-service Satisfaction as: Perceived Usefulness; Functional Service Quality; Technical Service Quality, and citizens Expectations to citizen's satisfaction and the resultant variables to be Voice or Citizens Complaints and the Loyalty of citizens, to measure the Satisfaction of Public e-services delivery in the city of Accra, Ghana.

Based on the model for the survey of citizen's satisfaction of public e-services delivery and the above arguments and previous discussions, the following hypothesis are proposed:

- H1: Functional service quality positively affects citizen's satisfaction of public e-services.
- H2: Technical service quality positively affects citizen's satisfaction of public e- services.
- H3: Perceived usefulness positively affects Citizens satisfaction of public e- services.
- H4: Perceived expectations positively affects citizen's satisfaction of public e- services.
- H5: Perceived expectation has a positive relationship among Functional Service quality and Technical Service Quality.
- H6: Citizens satisfaction positively affects citizens Trust of public e-services and negatively affects Citizens Complaints of Public e-service delivery.
- H7: Citizens complaints negatively affects citizens Trust.

3.2 Data analysis

3.2.1 Survey respondents

The total number of respondents who participated in the survey were 300 people, out of whom twenty five (25) had not use the on-line portal of the two departments (DVLA and RGD) for the pasts (six (6) months to two (2) years), ten (10) had not return the questionnaires twenty three (23) did not complete the finish the survey. This made the valid respondents number reduced to two hundred and forty five (242) for use in the data analysis procedures.

The gender breakdown of the respondents comprises 185 males and 57 females; most of whom

came from Accra and even those who were not from Accra had lived there for at least 2 years, that is 76.45% and the lowest percentage of 23.55% respectively came from Kumasi, Tamale, Bole, Tema, Bibiani, Cape Coast and Wa. The age distribution of the respondents according to the design of the questionnaire are ranged Under 18 years, 19-24 years, 25-34 years and 35-56 or older, which yielded in percentage terms as .83%, 26.86%, 49.56%, 22.73% respectively, making the ages 25 to 34 the largest age group and under 18 years the smallest. The largest level of education group was college, (34%) followed by post graduate group (26.45%), the bachelor's degree group (20.66%) the lowest group was the High school (18.18%). At least each all the respondents had a kind of formal education. The tabular presentation of the survey respondents is seen in Table 1.

Table 1 Survey respondents characteristics

		Frequency	Percentage	
		Gender	Male	185
		Female	57	23.55
		Total	242	100
Respondents demographic variables	Age	18 and below	2	0.83
		19-24	65	26.86
		25-34	120	49.59
		35-56 and above	55	22.73
		Total	242	100
Level of education			Frequency	Percentage
		Less than high school	4	1.65
		High school	40	16.53
		Bachelor degree	50	20.66
		College graduate	84	34.71
		Post graduate	64	26.45
		Total	242	100

3.2.2 Reliability analysis

In the analysis of the questionnaire data, the Cronbach's Alpha coefficient was used to measure the reliability of the questionnaire. The larger the coefficient, the higher the relevance of the variable or the constructs and the scale, the stronger the confidence. In the study of social sciences, the Cronbach's alpha coefficient is greater than or equal to 0.7, and the Cronbach's alpha coefficient is between 0.7 and 0.35, indicating that the reliability of the questionnaire is acceptable, and when Cronbach's alpha is lower than 0.35 Then the credibility of the questionnaire is lower. The reliability of the questionnaire used for formal surveys is shown in Table 2. The Cronbach's alpha of each constructs or variable is higher than 0.7, indicating that the questionnaire has a high measurement reliability.

Table 2 Reliability analysis

Cronbach's alpha values for the constructs		
Constructs and variables	Cronbach's alpha coefficient	Type
Functional service quality	0.821	High
Technical service quality	0.742	High
Perceived expectation	0.834	High
Perceived usefulness	0.765	High
Citizens satisfaction	0.629	High
Citizens' complaints	0.735	High
Citizens trust	0.798	High

3.2.3 Convergence validity

The convergence validity refers to the consistency between the different items of the same variables or constructs, where CITC and Cronbach's Alpha are the two related indicators, the CITC value should be greater than 0.5 or the value of the Cronbach's Alpha value after the item is deleted

should be greater than 0.7 The Cronbach's Alpha value when the item is not deleted is high, indicating that the item should be removed from the questionnaire. The validity and reliability of each variable were analyzed. The results are shown in Table 3.

Table 3 Evaluation criteria for variability of constructs and variables

Reliability and Validity Analysis				
Evaluation Criteria for Variability of Constructs and Variables				
Constructs and variables	Coefficient	Items	CITC value	Cronbach's alpha if item deleted
Functional service quality	0.821	FSQ1	0.607	0.789
		FSQ2	0.69	0.769
		FSQ3	0.536	0.803
		FSQ4	0.598	0.79
		FSQ5	0.524	0.806
		FSQ6	0.568	0.797
Technical service quality	0.742	TSQ1	0.52	0.697
		TSQ2	0.405	0.723
		TSQ3	0.517	0.697
		TSQ4	0.51	0.699
		TSQ5	0.384	0.73
		TSQ6	0.447	0.714
		TSQ7	0.427	0.72
Perceived expectation	0.834	PE1	0.734	0.732
		PE2	0.612	0.848
		PE3	0.747	0.721
Perceived usefulness	0.765	PU1	0.581	0.703
		PU2	0.693	0.574
		PU3	0.524	0.764
Citizens satisfaction	0.629	CS1	0.561	0.334
		CS2	0.333	0.661
		CS3	0.441	0.527
Citizens' complaints	0.735	CC1	0.554	0.654
		CC2	0.667	0.517
		CC3	0.464	0.759
Citizens trust	0.798	CT1	0.584	0.788
		CT2	0.646	0.721
		CT3	0.705	0.665

As can be seen from the Table 3, the CITC values for most variables are greater than 0.5 and Cronbach's alpha are greater than 0.7. In general, the scale of the various variables are measured with a high degree of credibility. This figure shows that the reliability of the questionnaire is high and suitable except for the ones that showed a Cronbach's alpha of less than 0.7. In view of this, those questions will be committed in the factor analysis to achieve the Cronbach's alpha of 0.7.

3.2.4 Correlation analysis

The variance correlation analysis method of SPSS 20.0 was used to analyze the variables involved in this study. The correlation coefficient matrix is shown in Table below and the correlation coefficient table and significance level related to the hypothesis are shown in next table.

** Represents significant at 0.01 level (bilateral test) Representative at 0.05 level significant (bilateral test)

Table 4 Shows the results of the combined factor analysis of all the constructs

Combined factor analysis of the constructs									
Title	Factor Load Value							Variance contribution rate	Cumulative variance contribution rate
	1	2	3	4	5	6	7		
FSQ2	0.81							52.86%	52.86%
FSQ1	0.745								
FSQ4	0.738								
FSQ6	0.709								
FSQ3	0.682								
FSQ5	0.669								
TSQ3		0.694						39.67%	39.67%
TSQ1		0.683							
TSQ4		0.677							
TSQ6		0.625							
TSQ7		0.595							
TSQ2		0.574							
TSQ5		0.543							
PE3			0.896					75.25%	75.25%
PE1			0.892						
PE2			0.812						
PU1				0.819				68.24%	68.24%
PU2				0.883					
PU3				0.773					
CS1					0.85			57.44%	57.44%
CS2					0.647				
CS3					0.763				
CC1						0.815		65.72%	65.72%
CC2						0.878			
CC3						0.732			
CT1							0.804	71.60%	71.60%
CT2							0.851		
CT3							0.881		

Correlation between the Relevant Constructs and the Significance Level

From Table 5, we can see that there is a significant correlation between the constructs involved, with H1, H2, H3, H4, H5, H6, and H7 are positively correlated.

Table 5 Correlation Coefficient Matrix

Correlation Coefficient Matrix							
	Functional service quality	Technical service quality	Perceived expectation	Perceived usefulness	Citizens satisfaction	Citizens' complaints	Citizens trust
Functional service quality	1						
Technical service quality	0.565**	1					
Perceived expectation	0.223**	0.492**	1				
Perceived usefulness	0.364**	0.475**	0.529**	1			
Citizens satisfaction	0.309**	0.271**	.152**	0.470**	1		
Citizens' complaints	-0.004	-0.064	0.078**	0.047**	-0.015	1	
Citizens trust	0.206**	0.367**	.356**	.478**	0.334**	-0.034	1

H8, and H9 constructs are negatively correlated though not significant. So these assumptions have been verified. The following model presents the tested hypothesis and the corresponding correlation coefficients.(see Figure 6)

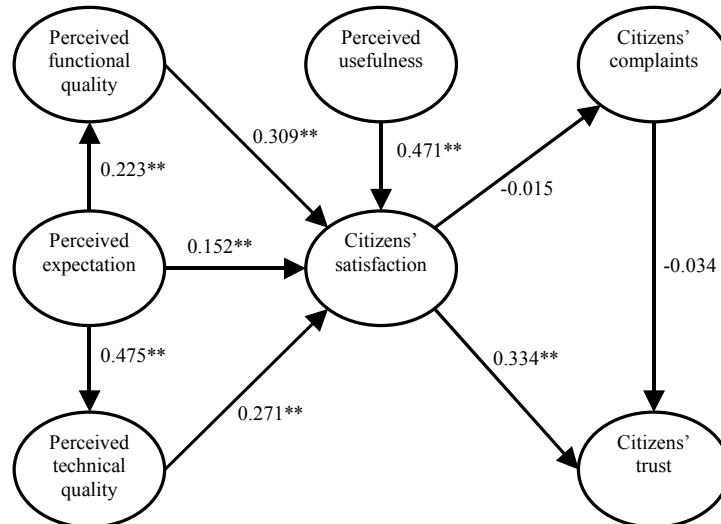


Figure 6 Citizens' satisfaction of public e-service delivery model

3.3 Discussion

The survey explores the citizens' satisfaction of the public e-service delivery in the city of Accra Ghana, with the use of an extended American Customer Satisfaction Index (ACSI) model. The Functional Service Quality, Technical Service Quality and the Perceived Usefulness constructs were added to establish a model for the purpose of this survey.

The valid respondents according to the data analysis were Two Hundred and Forty Two (242) all from the City of Accra. The city of Accra being the seat of Government and the capital city of Ghana is characterized with high urban rural migration, where people from other neighboring countries, other parts of the country and other cities converge for business activities and survival opportunities. The following are discussions of findings based on the hypothesis by the proposed model. The main findings are discussed according to the constructs in the research model, research implications are also considered.

3.3.1 Main findings-determinants of satisfaction

This survey analyzed the antecedents and the consequences of citizens' satisfaction of public e-service delivery in the city of Accra, Ghana with the focus on two departments in the country; the DVLA and Registrar General's Departments (RGD). The questionnaire was designed based on the constructs of the research model and the hypothesis of the research in order to survey the citizens' satisfaction of the public e-service delivery in the city and the trust of Government in the provision of electronic services (G2C) in the country to citizens. All the antecedents or determinants of satisfaction have a positive relationship according to the data analysis. The relationships amongst all the constructs to citizens' trust have also given a positive relationship. The levels of interdependence and correlation amongst the determinants of satisfaction in the city according to the main findings of the survey shall be discussed in relation to the constructs.

The results of the regression analysis indicated a strong correlation amongst the antecedent constructs to citizens' satisfaction and the resultant constructs. We hypothesized that all the antecedents of Citizens' satisfaction, that is: Functional service Quality; Technical Service Quality; Perceived Usefulness and Expectations have a positive correlation with Citizens' Satisfaction. These variables have positive impact on citizens' satisfaction. The correlation between Perceived Usefulness and citizens' trust have the highest correlation with citizens' satisfaction.

Citizens' complaints has negative correlation with citizen's satisfaction and citizens' trust with

insignificant values.

Functional service quality is a construct that relates to the manner in which the service is delivered to the citizens. It is considered as the processes or speed of the performance of the service providers. This functional quality dimension is measured by service provider accessibility or the degree of customer service surrounding the deliverable according to marketing literature. The citizens rated it very satisfactory to them in their use of the public e-service platforms in the city. In order to determine the relationship amongst the constructs especially for the functional quality, technical quality and satisfaction, correlation analysis was carried out. The correlation coefficients scores of the functional quality was high. The scores of 0.565, 0.364, 0.309, 0.223 and 0.206 to technical service quality, perceived usefulness, citizens' satisfaction, perceived expectation and citizens' trust respectively, shows positive and significant correlation and favorable relationship amongst them. This findings shows a very high relationships amongst technical service quality, perceived usefulness and citizens' satisfaction. The citizens rated the functional quality very high and the relationship between it and satisfaction had a positive correlation. This implies that the way services are provided meets the demands as well the information is accurate to the citizens. The positive correlation between functional service quality and citizens' satisfaction indicates that Hypothesis 1 was supported.

The relationship between functional and technical service quality have yielded a very high correlation unlike in the situation of the studies of V. Kumar et al. The relationship between functional service quality and citizens' trust has also provided a positive correlation which implies that the high rated trust by citizens is influenced by the functional service quality. It's therefore important to consider functional service quality in the public e-service delivery in the city.

The findings of the analysis as mentioned earlier on has showed a positive and highly rated satisfaction of the technical service construct as a determinant of satisfaction in the city of Accra. The hypothesis 2 which indicates that "Technical service quality positively affects citizen's satisfaction of public e-services" was supported.

The findings of this construct yielded a high rated correlation coefficient with Satisfaction of 0.470 and 0.478 with citizens' trust according to the data analysis. The correlation has proven to be more significant to satisfaction than even the findings of Feng-Cheng Tung, et al, 2010 who got a 0.17 correlation coefficient between perceived usefulness and customer satisfaction. This makes hypothesis 3 supported and the construct significant in future satisfaction research. Perceived Expectation

The proposition about the perceived expectation construct has been supported according to the data analysis from the survey. Perceived expectations represent both the served-market's or citizens prior consumption experience with the firm's offering, including non-experiential information available through sources like advertising, word-of-mouth and a forecast of the ability of the supplier or the service providers to deliver quality in the future. The correlation analysis shows a positive and significant coefficient with citizens' satisfaction in the city. Though the coefficient is not the highest, but it's positive. This makes the hypothesis 4 supported. The perceived expectations also produced a positive impact on satisfaction. It means that the citizens' expectations from the use of public e-service delivery are met in the city specifically at the DVLA and the Registrar General Departments RGD.

The overall satisfaction of the service delivery is satisfactory and this has increase the trust of citizens' in the use of public e-service platforms or approaches to access services from the government.

The results indicated that there is positive correlation amongst all the variables except citizens' satisfaction and citizens' complaints and citizen's trust and citizens' complaints respectively. However, there was a negative relationship as was predicted by our hypothesis. This means that the hypothesis 6 and 7 were supported. According to the American Customer Satisfaction Index Model, there should be a relationship. The reasons for the insignificant relationship are as follows.

The socio cultural setting is different from the United States. Whiles people easily send complaints and comments about their experience of the service delivered to them in other environments and countries it's not much experienced in the city of Accra due to the fact that people are now gradually getting to know more about the use of the e-service platforms. Another most important reason was that, the number of respondents that were considered for the survey were not many. The few respondents has resulted in low statistical purifications and analytical outcomes. The

level of education, especially IT education in the country is not as compared to other environments or countries. Furthermore, people prefer not to complain to the service providing departments because of the previous response they had from those departments.

Citizens' satisfaction had a highly rated correlation with citizens' trust in the city, giving a good signal that the level of satisfaction of the public e-service delivery has increased trust for the government service provision departments to the citizens. The trust in government e-service delivery can increase the usage of citizens in the country as a matter of fact, increase e-participation in the country. These are due to the fact that the antecedent construct to the latent construct or variables must be considered in the formulation of e-services to the citizens.

3.3.2 Managerial implications

The research a lot of implications for practicing managers and directors in the country and beyond. The model as a tool has the ability to be utilized in all the regions cities and departments to measure citizens' satisfaction of public e-service delivery in the country. The city of Accra is the seat of government of Ghana (GOG). The government should consider the factors discussed very important in the delivery of electronic services in the country in order to make the much advances in the e-government implementation success. Satisfaction of service delivery plays very important role in the service industry. The determinant of satisfaction which are: Functional Service Quality, Technical Service Quality; Perceived Expectations and Perceived Usefulness should be taking into consideration in the measurements of citizens' satisfaction in order to better serve the citizens of the country better.

The management as a matter of fact, the directors of the two departments under consideration should pay attention to the findings of this research in the delivery of e-services in the city and beyond.

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Institution Quality, Multilateral Financial Institutions Support and the Success of PPP Projects: An Empirical Study Based on African Countries*

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Abstract Public-Private Partnership (PPP) is an important way to solve the capital shortage of infrastructure construction. However, the history of PPP in African countries is not long and it is still in the stage of exploration. The PPP investment in infrastructure projects is at a high risk. To this end, it is necessary to study the existing PPP projects in African countries and explore the factors that contribute to the success of the project. This study use data from 552 PPP infrastructure projects between 2002 and 2016 in African countries to research the impact of PPP project risk structures from Institution Quality and Multilateral Financial Institution Support. We find out that Institution Quality and Multilateral Financial Institution Support influence the success of PPP by directly influencing private sectors' risk sharing. And further, Multilateral Financial Institution Support is positive factors to private sectors during choosing risk structure. And Institution Quality of the investment destination has mixed impact on the degree of private sectors' risk sharing in PPP projects, especially, increased rule of law, higher bureaucratic effectiveness, stronger control over corruption and better support to private sectors' development are more likely to encourage private entities to shoulder more risks within the partnership, however, the democracy level of countries presents the contrary effect.

Key words Public-Private Partnership (PPP), Institution quality, Multilateral financial institution support, African countries

1 Introduction

In recent years, African economy developed rapidly and infrastructure construction has been the main promotion of Africa economy growth. According to a prediction of IMF Global Macroeconomic Report (2009), The average annual rate of economic growth of Africa country will be 6% in 2010-2040, which means that the GDP of African countries will increase to six times. The sustainable economic growth will rapidly expand the demand of infrastructure. Traditionally, most of the infrastructure construction funds come from financial fund. But after the global financial crisis, developed economies have been under pressure of fiscal deficit and government deleverage. And the financial system of developing economies can't meet the fund demand of infrastructure in the future. At the same time, The existing international financial markets and relevant international organizations cannot provide sufficient support for this (Demirag and Khadaroo, 2011).^[1] Considering these, financial innovation is the important way to solve the problem of infrastructure fund shortage, which is more important to financial fund-shortage African countries. From 1970s, some economies have begun to explore the introduction of private capital into infrastructure projects ,among that, Public-Private Partnership (PPP) is considered as the best way to solve the infrastructure fund shortage problem (Head and Georgiou, 2011).^[2] IMF Department of Africa also note that PPP is an important model to solve the problem of Africa infrastructure construction.^[3]

Infrastructure construction is not only the urgent need for Africa to seek economic take-off and structural transformation but also China's advantage and experience. At present, China is in a transition

* Financed by strategy of free trade zone and research on RMB area (scientific research and innovation team of Sichuan colleges and universities; Leader: HUO Wei-dong; Project No.: JBK130504)

period of economic structure where need investment transfer and upgrading, and there is a broad scope for cooperation in infrastructure construction in Africa. However, China doesn't have a long history of PPP projects and it is still in the exploration stage. There will be a great risk of blindly developing the African infrastructure PPP project. Considering this, it is necessary to study the existing PPP projects in African countries and provide experience for the successful cooperation in the next phase of China-Africa infrastructure projects. In addition, to effectively promote 'the Belt and Road' initiative, China has been proposed to establish Asian Infrastructure Investment Bank. Although most literatures have demonstrated the necessity of its establishment, there is little literature to analyze the effect of such multilateral financial institutions on the effectiveness of PPP projects. To do this, this study use data from 552 PPP infrastructure projects between 2002 and 2016 in African countries to research the impact of PPP project risk structures from institutional quality and multilateral financial institution support.

2 Literature review and research hypothesis

2.1 Literature review

PPP is a contractual arrangement, which is public-private partnership, risk-sharing and revenue-sharing (Quiggin, 2005; Iossa and Martimort, 2015).^[4] Lopes and Caetano (2015) summarized the characteristics of PPP projects as Tasks Bundling, risk transfer and long-term contract.^[5] Given the long-term trait of the PPP project, Martimort and Straub (2016) believed that the PPP contract design should take moral hazard, limited liability, and non-reversible constraints into account.^[6] Private capital can choose different PPP risk structure based on the economic and institutional environment. At the same time, the government departments can also adopt different incentive mechanisms to give the PPP project some flexibility (Bing et al., 2005; Shen et al., 2006). Considering this, the core of studying PPP is researching the risk structure of PPP project and different risk structure design means different private capital participation degree.

The success of PPP projects reflects the risks of PPP projects (Thomsen, 2005; Corielli et al., 2010). The risk of PPP project can be divided into two aspects: endogenous risk and exogenous risk. The endogenous risk comes from the project, which private capital can control in a certain range by some certain means (Lopes and Caetano, 2015), as the exogenous risk comes from the economic and political environment (de Jong et al., 2010; Sharma, 2012).^[7]

Hammami, Ruhashyankiko and Yehouse (2006) proposed that the successful experiences of PPP projects will significantly affect a new PPP project in one region. They think past successful experiences to some extent is a kind of public signal to show that the local government and private capital have good experience of cooperation, which is very important to a new PPP project. In later studies, Galilea and Medda (2010), Iossa and Martimort (2011) also found that one region that have experienced successful PPP projects will have a better chance of success in developing new PPP projects, and thus a region that have experienced failed PPP projects may face a greater risk of failure when launching new PPP projects.^[8]

Some scholars believe that the characteristics of PPP projects will also affect the effectiveness of PPP projects. Bing et al. (2005) proposed that the number of private investors in PPP projects will affect the effectiveness of PPP projects.^[9] Galilea and Medda (2010) and Percoco (2014) proposed that the risk structure of PPP project is the key factor to influence the effectiveness of PPP projects. Schepper et al. (2015) and Lopes and Caetano (2015) believed that the project cycle and project investment amount are negatively correlated with the success probability of PPP projects. As to exogenous risk of PPP projects, the institutional quality is the key variable affecting the effectiveness of PPP projects. Using the data published by world bank, Galilea and Medda (2010) and Sharma (2012) found that the institutional quality has a significant impact on the success and failure of a PPP project. Also Banerjee et al. (2006) and Panayides et al. (2015) use data published by ICRG to testify that there is a significant negative correlation between the institutional quality in PPP project host country and the success rate of PPP projects.^[10]

The external financing channels of a PPP project will also have an impact on the effectiveness of the project. Estache (2004) found that the participation of non-profit international financial institutions

(such as the World Bank, Asian Development Bank) can enhance the success rate of PPP projects.^[11] Galilea and Meada (2010) found that the success rate of the PPP projects will increase significantly as the PPP financing is supported by Multilateral Financial Institutions. In addition, the economic environment of the host country can also affect the effectiveness of the PPP projects.^[12] Hammami (2006) believed that the macro-economic conditions and opening degree of PPP project host countries have a significant positive correlation with the success rate of the project.

2.2 Research hypothesis

The lack of relevant information often leads to defaults or renegotiation in the construction and operations of a PPP project (Menzes and Ryan, 2015). However, the previous successful experience is a kind of public signal that the PPP project host region has good success experience. And the private sectors will prioritize the cooperation with these experienced governments. If a region has more PPP successful experience, then the success rate of PPP projects with the government will be higher; on the contrary, if a region has failed PPP projects or has no PPP experience, then a PPP project may face a greater risk. Therefore, hypothesis 1:

Hypothesis 1: For African countries, the successful probability of a new PPP project is positively correlated with successful experience of post PPP projects.

PPP is a contractual arrangement of public-private partnerships, risk-sharing and revenue-sharing. Iossa and Martimort (2015) believe that the risk structure of PPP projects reflects the degree of risk that transfer from public sectors to private one. Private sectors will also choose the degree of risk sharing based on the project information and characteristics. Typically, private sectors need to strike a balance between risk-taking and earnings. Corielli (2010) believed that private sectors may have a subjective will to increase the risk sharing level to obtain higher yield level, which would increase the probability of failure of a PPP project.^[13] Therefore, hypothesis 2:

Hypothesis 2: The more risk the private sectors will to take in PPP projects, the more likely the project will fail.

A high institutional quality can reduce the transaction cost and political risk of private sectors in PPP projects. In general, a high institutional quality means the government could control corruption and has a stable political, high rule of law, effective administrative capacity. Therefore, before choosing a PPP project, private sectors would assess whether the government that the project location have enough credible commitment to safeguard the PPP project progress. Galilea and Medda (2010) believed that institutional quality is positively correlated with the risk sharing in PPP projects. However, in terms of the impact of democracy, Hammami et al. (2006) and Panayides et al. (2015) showed that the degree of democracy in the project site was positively correlated with the degree of private sector participation.^[14] But these documents all use the PPP projects in developed countries and the degree of "democracy" was evaluated by a standard with political system in developed countries, which may be not suitable in developing countries on the African continent. More importantly, there has been controversy whether democratic decentralization and government centralization are more helpful to the availability of public goods or services. Jia kang (2015) believes that a certain degree of concentration of government resources and power can increase government mobilization and action in developing countries. And this will reduce the uncertainty risk and transaction cost of the PPP projects, and create more incentive for private sectors to participate PPP projects. Therefore, hypothesis 3 and hypothesis 4:

Hypothesis 3: The ability of a government to control corruption, stable political, high rule of law and effective administrative capacity is positively correlated with the willingness of private sectors to participate in a PPP project.

Hypothesis 4: The degree of government democracy in PPP projects site is negatively correlated with the degree of participation of private capital.

Private sector usually fails to form effective supervision and restraint to public sectors, which often leads to fail in a PPP project. In the design of PPP project risk sharing mechanism, the support of multilateral financial institutions can help private sectors effectively control the risk of participating in a PPP projects. This is because multilateral financial institutions often bring together funds from different private sectors and on the behalf of a government to negotiate with public sectors in a PPP

project. The multilateral financial institutions have a strong influence to urge the public sectors to carry out the project successfully. Therefore, hypothesis 5:

Hypothesis 5: In PPP projects, the support of multilateral financial institutions can enhance the risk sharing of private sectors.

3 Data and research methods

3.1 PPP project data

The Private Participation in Infrastructure (PPI) database is found by World Bank as the most influential project, which includes information on the participation of social capital in 139 countries around the world in infrastructure construction. In this paper, we selected all the data from 53 countries of the African continent from 2002 to 2016 in the PPI project database, as shown in Table 1 below.

Table 1 Sample of countries by income

Country	Income Level	Country	Income Level	Country	Income Level	Country	Income Level
Algeria	UM	Côte d'Ivoire	LM	Madagascar	L	Sierra Leone	L
Angola	UM	Djibouti	LM	Malawi	L	Somalia	L
Benin	L	Egypt, Arab Rep.	LM	Mali	L	South Africa	UM
Botswana	UM	Eritrea	L	Mauritania	L	South Sudan	LM
Burkina Faso	L	Ethiopia	L	Mauritius	UM	Sudan	LM
Burundi	L	Gabon	UM	Morocco	LM	Swaziland	LM
Cameroon	LM	Gambia, The	L	Mozambique	L	São Tomé	LM
Cape Verde	LM	Ghana	LM	Namibia	UM	Principe	LM
Central African Rep.	L	Guinea	L	Niger	L	Tanzania	L
Chad	L	Guinea-Bissau	L	Nigeria	LM	Togo	L
Comoros	L	Kenya	L	Rwanda	L	Tunisia	UM
Congo, Dem. Rep.	L	Lesotho	LM	Senegal	LM	Uganda	L
Congo, Rep.	LM	Liberia	L	Seychelles	UM	Zambia	LM
Zimbabwe	L	---	--	---	--	---	--

Source: *Private Participation in Infrastructure Dataset*.

Note: UM is short for Upper Middle; LM is short for Lower Middle; L is short for Low.

Specifically, the database mainly contains the following information in the PPP projects: (1) Financial Closure Year; (2) Project Status; (3) Type of PPI / Subtype of PPI; (4) Sponsors; (5) Multilateral support; (6) Investment and Period. According to the data of African PPP projects provided by PPI database, the status of PPP project in the research sample is shown in Table 2 below.

Table 2 Project status of samples

	Active	Concluded	Cancelled	Distressed	Total
Low income countries	173	18	13	8	212
Lower Middle income countries	162	13	7	8	190
Upper Middle income countries	138	9	2	1	150
Total	473	40	22	17	552

Source: *Private Participation in Infrastructure Dataset*.

The PPI database divides the PPP project type into four categories and 12 subclasses according to the project risk exposure level by the private sectors and we constructs the regression dependent variable in Table 3 below. The project type of this study sample can be described in Table 4.

Table 3 Project type and assignment results

Project Type	Management contract and lease		Brownfield Projects			Greenfield Projects					Divestiture	
Type level	1		2			3					4	
Project Subtype	Management contract	Lease contract	ROT	RLT	BROT	BLT	BOT	BOO	Merchant	Rental	Partial	Full
SubType level	1	2	3	4	5	6	7	8	9	10	11	12

Table 4 Statistical description of PPP project risk structure in samples

Project Subtype	Low income countries	Lower Middle income countries	Upper Middle income countries	Total
Management contract	10	12	10	32
Lease contract	3	6	0	9
ROT	11	13	4	28
RLT	5	20	0	25
BROT	4	13	6	23
BLT	0	0	1	1
BOT	18	32	16	66
BOO	36	32	79	147
Merchant	92	47	21	160
Rental	15	2	7	24
Partial	14	14	6	34
Full	1	2	0	3
Total	209	193	150	552

Source: *Private Participation in Infrastructure Dataset*.

In addition, this article set the *Dummysponsor* based on whether there are multiple private sectors participate in the project. When the PPP project contains multiple private sectors, the value is 1, or else is 0. As to Multilateral Financial Institution Support, this article sets the dummy variable *MultiLender*. When the PPP project is funded by a multilateral financial institution, the value is 1; otherwise, it is 0.

3.2 Institution Quality data

The quantification of institutional quality is often subjective and difficult to measure. This paper mainly uses the World Bank WGI database, which is comprehensive in researchers and mainly includes six specific indicators to measure institutional quality: *Control of Corruption*, *Voice and Accountability*, *Political Stability No Violence*, *Rule of Law*, *Government Effectiveness*, *Regulatory Quality*. And we set 6 variables respectively which can be seen in Table 5.

Table 5 Institution quality variables

variables	indicators	value range	meaning
<i>Corruption</i>	Control of Corruption	[-2.5, 2.5]	To reflect the government ability to prevent, monitor and control its corruption problems. The larger the number, the stronger the government ability to control corruption.
<i>Voice</i>	Voice and Accountability	[-2.5, 2.5]	To reflect the degree of democracy in one country. The larger the number, the greater the public's influence on society.
<i>Stability</i>	Political Stability No Violence	[-2.5, 2.5]	To reflect one government is disturbed or overthrown by unconstitutional or violent means. The larger the number, the higher the degree of political stability.
<i>Law</i>	Rule of Law	[-2.5, 2.5]	To reflect the compliance degree of the law, and also reflect the government and public protection of the contract and the protection of property rights. The greater the number, the higher the rule of law.
<i>Effectiveness</i>	Government Effectiveness	[-2.5, 2.5]	To reflect the quality of a country's public service. The larger the number, the higher the effectiveness of the public sector.
<i>Regulation</i>	Regulatory Quality	[-2.5, 2.5]	To reflect the government ability to formulate and implement policies conducive to the development of the private sector. The greater the number, the stronger the government's positive role in promoting private sector development.

Source: *Worldwide Governance Indicators Dataset*.

3.3 Control variables

Considering the possible impact of the national income level on the implementation of PPP projects, this paper divides the research sample countries into *Upper Middle Income*, *Lower Middle Income* and *Low Income* under the PPI database. In the first regression equation of the post-study method, this article assigns the countries of these three income levels to 1, 2 and 3 respectively. In the second regression equations, by using the low income group as the base, the dummy variable $i_Lower_Middle_Income$ and $i_Upper_Middle_Income$ is introduced into the model.

The GDP growth rate for the start year of the project will affect the infrastructure demands and the participating enthusiasm of the private sector. Therefore, this paper introduces the GDP growth rate into the regression model.

The openness of the host country will also affect the procedure and result of PPP project. Therefore, we construct the capital open index $Open_Index$ and we have

$$Open_index_t = \frac{FDI_t}{GDP_t}$$

Specifically, in order to eliminate the influence of economy in different degrees of openness on the project, this paper selects the lag phase of the capital opening index L_Open as the regression independent variable of the model. In addition, in order to eliminate the influence of time trend, this paper introduces the time control variable i_Year in the regression model, and the time control variable i_Year is 1 in 2002, and so on, it should be 15 in 2016.

3.4 Research method

Based on the research questions, this paper constructs two regression models. The first regression model mainly discusses the influencing factors of PPP project success. The second regression model focuses on the influencing factors of PPP project risk structure. We adopt the Probit model in the first regression, which as follow:

$$P(Y = 1 | X) = \frac{e^{X'\beta}}{1 + e^{X'\beta}} \quad (e \text{ is the natural logarithm})$$

In this equation, X represents the dependent variable and β represents the regression coefficient.

It should note that, in order to quantify the influencing factors of the project success more accurately, this paper only chooses three types of items in the research sample: *Concluded*, *Canceled* and *Distressed*. According to the above definition, *Concluded* is regarded as a success, at this time, the regression dependent variable $Status$ is 1. *Cancelled* or *Distressed* are regarded as a failure, at this time, the regression dependent variable $Status$ is 0.

Table 6 Statistical description of variables in Model 1

Variables	Observations	Mean	S.D	Min	Max
<i>Status</i>	79	0.242	0.335	0.000	1.000
<i>SuccessPPI</i>	79	1.612	1.881	0.000	7.000
<i>NoSuccessPPI</i>	79	2.012	2.115	0.000	5.000
<i>DummySponsor</i>	79	0.312	0.437	0.000	1.000
<i>Investment</i>	79	104.666	397.082	0.000	2990.883
<i>Type_level</i>	79	1.926	0.894	1.000	4.000
<i>SubType_level</i>	79	5.320	3.978	1.000	12.000
<i>Voice</i>	79	-0.109	0.302	-1.972	0.402
<i>Corruption</i>	79	-0.692	0.298	-1.084	0.320
<i>Stability</i>	79	-0.908	0.569	-2.263	0.414
<i>L_Open</i>	79	11.131	11.755	1.228	84.198
<i>Income</i>	79	1.658	0.732	1.000	3.000

And the Model 2 focuses on the impact of the risk structure on the success or failure of the PPP project, focusing on what factors will affect the risk structure of the PPP project contract and what

factors will affect social capital in participate in the risk degree of the PPP project. Therefore, this paper selects the project status of Operating as the research object, and constructs the second regression model as follows:

$$RiskSharing = \alpha + \sum_{i=1}^m \eta_i \cdot QI_i + \gamma \cdot Multilender + \sum_{j=1}^n \sigma_j \cdot Prop_j + \sum_{l=1}^q \theta_l \cdot Control_l + \xi$$

indicates the degree of risk of social capital in the PPP project. According to the above definition, we use variables *Type_Level* and *Subtype_Level* to measure the degree of risk of social capital in the PPP project (see Table 3 for specific assignments). The larger the variables are, the higher the risk of social capital in the project is. *QI_i* represents the variables of institutional quality, including three variables: *Voice*, *Corruption* and *Stability*. *Multilender* represents the virtual variables of multilateral financial support. *Prop_j* represents the PPP project's own attribute variables, such as multi-party social capital participation variables *Dummysponsor*, investment amount variables *Investment* and project cycle variables *Period*. *Control* represents the control variables in the model. As mentioned above, regression Model 2 mainly includes income factor dummy variables *i_Lower_Middle_Income* and *i_Upper_Middle_Income*, GDP growth rate variables *L_GDP_Growth*, open degree variables *L_Open*, and time control variables *i_Year*.

Table 7 Statistical description of variables in Model 2

Variables	Observations	Mean	S.D	Min	Max
<i>Type_level</i>	513	1.426	0.513	1.000	4.000
<i>SubType_level</i>	513	5.088	1.818	1.000	12.000
<i>Voice</i>	513	-0.524	0.767	-1.875	0.463
<i>Corruption</i>	513	-0.689	0.254	-1.465	0.547
<i>Stability</i>	513	-0.973	0.407	-2.440	1.209
<i>MultiLender</i>	513	0.021	0.167	0.000	1.000
<i>DummySponsor</i>	513	0.226	0.462	0.000	1.000
<i>Investment</i>	513	649.559	1108.240	0.000	4093.656
<i>Period</i>	513	25.470	12.483	1.000	99.000
<i>L_Open</i>	513	15.198	13.013	0.762	109.427
<i>i_Year</i>	513	4.304	3.182	1.000	12.000
<i>i_Lower_Middle_Income</i>	513	0.402	0.383	0.000	1.000
<i>i_Upper_Middle_Income</i>	513	0.447	0.394	0.000	1.000
<i>ln_L_GDP_Growth</i>	513	2.984	1.480	-1.500	5.500

4 Results

The results of Model 1 show as follow. Column 1 of Table 8 analyzes the successful experience of previous PPP projects in the project location, PPP contract risk structure and system quality has impact on the result of PPP project. We also adopt control variables such as intrinsic characteristics of the project and income levels. Regression result shows that The PPP contract risk structure and project success have statistically negative correlations at 5% significant levels. It means that the higher the risk share of social capital in the PPP project, the project more likely to fail, but the system, quality and other variables do not have statistically significant impact the project. Considering the openness, income level and other control variables, there may be a correlation between the system variables and the quality of the system, Column 2 removed control variables and there also appears to be statistically negative correlations at 1% levels. The successful experience of previous PPP projects has a statistically positive impact on the future success of the project. On the contrary, the past failure experience will make negative influence on the success at 1% leve. Remarkably, the impact of system quality on project success is not statistically significant in column 2 regression. Indeed, Column 3 included the system quality variable and the regression result was consistent with the column 1 and the

column 2. It means the successful experience of PPP project location has a positive impact on the future success at 5% level, correspondingly the experience of failure has negative effect on the future results at 1% level, and investment projects in the 10% level of significance statistically negative correlation.

To measure the impact of system quality on the result of PPP projects, Column 4 includes an interaction of system quality variables and PPP risk structure variables. We see that PPP risk structure still has statistically significant influence on project success at 5% significant level, but the system quality variables and related cross items are still not significant. And indeed column 5 add the amount of investment as a control variable. We also found that the system quality variables and their related cross items are still not significant. It means that the impact of system quality on the effectiveness of PPP has not been reflected in the sample of this study.

Table 8 Results of Model 1

	(1)	(2)	(3)	(4)	(5)
<i>SuccessPPI</i>	0.03061 (0.0304)	0.00562** (0.00218)	0.00424** (0.00172)	0.000305 (0.00164)	0.00914** (0.00406)
<i>NoSuccessPPI</i>	-0.7378 (0.553)	-0.1824*** (0.0579)	-0.1108*** (0.0411)	-0.0775** (0.0341)	-0.3111** (0.1251)
<i>DummySponsor</i>	-0.865 (0.759)	-0.789 (0.507)	-0.767 (0.538)		
<i>Investment</i>	-12.49 (8.825)	-3.298** (1.442)	-3.058*** (0.758)		-4.699* (2.426)
<i>SubType_level</i>	-0.467** (0.204)	-0.211*** (0.0573)	-0.147* (0.797)	-0.306** (0.118)	-0.218** (0.113)
<i>Voice</i>	-7.438 (5.358)	-0.708 (0.509)		-0.663 (0.623)	-1.359 (0.923)
<i>Corruption</i>	7.089 (4.561)	0.616 (0.711)		0.735 (1.041)	0.845 (1.447)
<i>Stability</i>	5.656 (4.109)	0.224 (0.673)		-0.0716 (0.664)	1.141 (0.817)
<i>Voice* SubType_level</i>				0.0491 (0.0889)	-0.252 (0.195)
<i>Corruption* SubType_level</i>				-0.211 (0.274)	-0.0410 (0.253)
<i>Stability* SubType_level</i>				0.0678 (0.152)	0.152 (0.153)
<i>L_Open</i>	-0.198 (0.158)		-0.0203 (0.0159)		
<i>i_Income</i>	-5.725 (4.796)		-0.522 (0.445)		
<i>Constant</i>	20.22 (14.63)	2.290 (0.609)	2.819 (1.665)	1.262 (0.772)	1.039 (1.527)
<i>Observations</i>	79	79	79	79	79
<i>Psedo R_squared</i>	0.746	0.598	0.638	0.495	0.597

Note: Standard errors in brackets; * p<0.10, ** p<0.05, *** p<0.01.

Model 2 further analyzes the risk sharing mechanism of PPP project. In the full sample regression analysis, 513 successful and finished projects were selected, which are described into Concluded and Active. In addition, this article also carry on the regression in industry level, and we draw it in Table 9.

Table 9 Results of Model 2

	Full Sample	Energy Industry	Transport Industry	Water and sewerage treatment
<i>Voice</i>	-0.586 ^{***} (0.146)	-0.0227 (0.161)	-0.489 (0.201)	-0.182 (0.310)
<i>Corruption</i>	0.867 ^{**} (0.397)	-0.0479 (0.403)	0.570 (0.663)	-0.182 (1.173)
<i>Stability</i>	-0.168 (0.183)	0.204 (0.177)	-0.308 (0.291)	-0.173 (0.428)
<i>MultiLender</i>	0.520 ^{**} (0.246)	0.407 ^{**} (0.186)	0.0814 (0.399)	0.420 (0.573)
<i>DummySponsor</i>	0.126 (0.107)	0.221 ^{**} (0.162)	0.194 [*] (0.111)	0.119 (0.141)
<i>Investment</i>	0.0362 ^{***} (0.0112)	0.00107 (0.0153)	0.0392 ^{***} (0.0129)	-0.0127 (0.162)
<i>Period</i>	0.0318 ^{***} (0.00488)	0.00361 (0.00576)	0.0243 ^{***} (0.00722)	0.0601 ^{***} (0.0161)
<i>L_Open</i>	0.0129 [*] (0.00711)	0.0136 ^{***} (0.00490)	0.0145 (0.0161)	-0.0155 (0.0178)
<i>i_Year</i>	-0.0103 (0.0166)	-0.0307 ^{**} (0.0102)	-0.0211 (0.0153)	-0.0762 ^{**} (0.0303)
<i>i_Lower_Middle_Income</i>	-1.365 ^{***} (0.305)	-1.011 ^{***} (0.203)	2.070 ^{**} (0.854)	1.054 [*] (0.692)
<i>i_Upper_Middle_Income</i>	-1.849 ^{***} (0.494)	-0.778 [*] (0.499)	1.751 (1.175)	0.840 (0.899)
<i>ln_L_GDP_Growth</i>	-0.582 ^{***} (0.163)	-0.609 ^{***} (0.148)	0.589 (0.154)	0.296 (0.366)
<i>Constant</i>	5.203 ^{***} (1.226)	6.344 ^{***} (1.205)	2.491 (2.101)	-1.344 (1.668)
<i>Observations</i>	513	212	188	101
<i>R-squared</i>	0.147	0.191	0.301	0.299

Note: Standard errors in brackets; * p<0.10, ** p<0.05, *** p<0.01.

The results from the full sample regression, the degree of democracy has a negative impact on the social capital participation at 1% level, which means that the higher the degree of democracy of the country, social capital is more not willing to take high risks in the PPP project. In the system of quality variables, the government's ability to control corruption and the multilateral financial institutions to participate in social capital participation has a positive impact on statistics at 5% level, which means the incorruptibility and the diversification have a positive influence on the social capital making strategy. In addition, the amount of investment and the investment cycle of the project will also have a positive impact on the risk sharing of social capital at 1% level. In the full sample regression, financial openness, income level, GDP growth rate and other control variables have a significant impact on the degree of social capital participation.

Besides, multilateral financial institutions and investors' participations are more significant in the energy industry, but there are no significant evidence the traffic and sewage treatment industry. While the project cycle has a positive and significant influence the level of participation of social capital in traffic and sewage treatment industry, contrast to the weak influence in energy industry. We may attribute it to different project emphases of these industry.

For the robustness, we has replaced some variables in the regression of model 1 and model 2, and the regression result is consistent with the original conclusion. In addition, in terms of institutional quality variables, this article selected the national risk index issued by the international country risk

Guide (ICRG) such as *Corruption, Democratic Accountability* and *Government Stability* to replace the WGI data, and the regression results are consistent with the original regression results.

5 Conclusions

The successful experience of PPP projects will enhance the success probability of PPP projects in a country. Conversely, the failure experience or no experience will negatively affect the success of the project. Considering this, participate in PPP projects in countries or regions where there is no successful experience would probably bring a loss to those first movers. As developing countries, most African countries generally lack a mature experience of launching PPP projects with private capital. Considering this, it is necessary to accelerate the accumulation of experience of the PPP project in Africa to reduce the risk and transaction cost of private capital investing in infrastructure construction in Africa, in the background of the rapid development of infrastructure construction. Considering this, it is necessary to accelerate the accumulation of experience of the PPP project in Africa to reduce the risk and transaction cost of private capital investing in infrastructure construction in Africa, in the background of the rapid development of infrastructure construction.

By the way of influencing system quality the participation of private capital in PPP projects, the system quality will further influences the success or failure of PPP projects. The quality of the system in PPP project host area becomes particularly important when private capital, especially cross-border international capital invest in PPP projects. Private capital will choose to cooperate with countries with higher system quality. Similarly, countries with higher system quality will encourage private capital investment. However, according to the current authoritative international standard of the quantitative system of system quality, the higher the “democracy” index, the higher the system quality will be, which is debatable in developing countries with different political systems. There are also typical “western characteristics” in the international comparison of authoritative quantitative standards. However, the study samples of this paper are African developing countries where these quantitative standard is of no use. In addition, the “democratic institutions” of developing countries were transplanted from developed countries which do not work well in practice. In particular, it may negatively affect the government’s decision and execution, thus increasing the cost of private capital participating in project investment, which is not conducive to the development of PPP projects.

The support and participation of multilateral financial institutions in PPP projects will enhance the risk-sharing degree of private capital selection, which means that multilateral financial institutions play an important role in African infrastructure development. At present, traditional multilateral financial institutions such as the World Bank and the African development bank have failed to meet the huge financing needs of infrastructure construction in Africa. as those commercial financial institutions have difficulty in the supervision and restraint of the government of the project. Therefore, the establishment of new multilateral financial institutions such as the BRICS development bank and the Asian infrastructure investment bank is timely, which is of great significance for Chinese enterprise ‘go global’ to participate in the infrastructure construction in Africa.

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Technology, Digital Brand Value Co-Creation, Women and Solid Waste Management in Africa: A Conceptual Discourse

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Abstract The Golden Age of Digital has endowed both firms and their stakeholders with new capabilities, making consumers very active participants of brand value creation. Value co-creation has, therefore become a new marketing paradigm where the consumer is seen as an operand resource and not an operand resources. The African woman is regarded as a household waste manager and therefore a key player in SWM. The study seeks to find out the extend of application of value co-creation concept in the solid waste management (SWM) sector in Sub-Sahara Africa, and specifically, the use of women as co-creators in SWM, using the digital platform. The study revealed that digital co-creation is not deeply rooted in the waste management sector in Africa as a result of low level of ICT development. Again, the study reveals three key factors-low level of education, little access to technology, and cultural settings-which moderate African women's skills, ability, and willingness to engage in value co-creation in the SWM industry. Suggestions for managerial and governmental consideration have been offered, and the need to test the proposed framework to confirm or otherwise of the impact of the moderators on co-creation have been suggested.

Key words Technology, Co-creation, Women, Waste management, Africa

1 Introduction

The digital platform has now endowed both firms and consumers with new capabilities. This has led to the emergence of new business models such as crowd-based business models (CBBMs) (Tauscher, 2017). According to (Tauscher, 2017), "CBBMs are characterized by the integration of contributors from outside the traditional firm boundaries, the exploitation of technologies such as digital peer-to-peer platforms, and the transfer of value creating activities to a crowd". In spite of the fact that firms' ability to have control over their brands in the presence of easily accessible information through digital media platforms has not been fully established, enterprises can still build "better and stronger brands through social media as long as they stay true to the benefits that consumers desire" (Erdem, Keller, Kuksov, & Pieters, 2016).

Presently, resources necessary for value creation by enterprises do not constitute only tangible stuff, as it used to be five decades ago, but also include "intangible and dynamic functions of human ingenuity and appraisal, and thus they are not static or fixed" (Vargo & Lusch, 2004). This impliedly requires the inclusion of the valuable intangible skills and abilities of relevant stakeholders of the enterprise to create a competitive brand in the digitalized global economy. Thus, as posited by Constantin and Lusch and quoted in (Vargo & Lusch, 2004), consumers and other stakeholding individuals have moved from being operand resources (resources on which an operation or act is performed to produce an effect) to operand resources (resources which are employed to act on operand resources, and other operand recourses). Consumers are now productive resources (Penrose & Penrose, 1995) of the 21st century firm, as well as co-producers and by extension joint "heirs" to the value creation process of the enterprise. They are, therefore, needed in effective branding in the digitalized global economy.

Africa is experiencing rapid urbanization, with urban population growth rates above four percent per annum. It is estimated that more than 40 percent of the population lives in urban settlements. However, poor urban planning has led to emergence of slums with about 62 percent of Africa's urban population living in slums. The resultant effects are poor sanitation, choked drainage, urban flooding,

ponding of stagnant water, and incidence of water-borne diseases (World Bank, 2013). Thus poor urban planning coupled with the high volumes of waste generated on daily basis, have made solid waste management (SWM) increasingly difficult for local/municipal/metropolitan authorities. Indeed, some of the public problems at the local authority level, such as water supply and sewage, could be linked to poor environmental management (Caldwell, 1963).

In Ghana, the problems besetting SWM, such as improper disposal of household waste, irregular collection of refuse by waste collectors, inadequate waste containers for community dumping, and inadequate education and or engagement of stakeholders on waste management, especially in urban centers, have been adequately highlighted (Oteng-Ababio, 2011; Adom, Takramah, Kwabla, & Kweku, 2016; Amoah & Kosoe, 2014; Akaateba & Yakubu, 2013). There are problems at each phase of waste management, from generation, collection, disposal to recycling of solid waste. These are often the result of inadequate investment to match the increasing volume of waste generation due to urban growth. The same problems basically run through the economies of all Sub-Sahara African countries as shown by works from other African countries (Imam, Mohammed, Wilson, & Cheeseman, 2008; Fredericks, 2008; Ekere, Mugisha, & Drake, 2009; Tadesse et al., 2008)

The United Nations Conference on Environment and Development held in Rio de Janeiro in January 1992, led to the formulation and adoption of laws and policies by various countries, leading to the birthing of public-private partnership (PPP) in waste management (Evans, 2002), which hitherto, was mainly handled by the public sector. The public sector management has always been based on hierarchy and control (Fiorino, 2001) and not much collaboration, and therefore the government not achieving policy goals on waste management. Further, budgetary allocation for regulatory and enforcement activities by local authority managers has declined over the years in the midst of “increasing complexity and scale of environmental challenges” (Lim & Prakash, 2014). This necessitated the need for a paradigm shift in decision making concerning SWM. This also meant the need to design a new form of engagement, especially with households, so there could be effectiveness and efficiency, two reasons for which the PPP was introduced. SWM enterprises then emerged to help bring efficiency. However, these waste management enterprises cannot do without the adoption of information communication technology (ICT) if they want to remain competitive. Adoption of social media for the provision of social goods, for instance, has been proven to be more effective and profitable in the developed economies.

Women have been noted to be actively involved in waste management, particularly in household waste generation and disposal (Tadesse et al., 2008). This study, therefore, seeks to examine ways women could be empowered digitally to be active co-creators with waste management firms in effective waste management. The justification for this is the apparent lack of literature on women as value co-creators through the digital platform. Again, studies on private sector companies involved in SWM on the continent are often limited to the assessment of their performance with regard to their collection and disposal of solid waste; not much on the active involvement of their key stakeholders in the co-production of their services to generate superior customer satisfaction and, therefore, positive brand attitude and brand advocacy. Where customers are involved in co-creation, the engagement tend to be weak or at best, at the contract stage (Oduro-Kwarteng, 2011). In other words, private waste management firms have not been directed, through empirical studies, as to how to embrace value co-creation to brand their services through digital platforms. This study is an attempt to fill these gaps. The following objectives have been set to address the gaps identified:

- To examine the role of women in waste management
- To find out the characteristics of women which could enhance or hinder their ability and willingness to engage in co-creation in Africa.
- To propose a model which considers these characteristics and how they impact the value co-creation process in the waste management sector.

2 Research design: aim and method

This paper is a qualitative study and as such relied on secondary data. As noted by (Hatch & Schultz, 2010), qualitative methods are “useful for obtaining a novel understanding of existing

phenomenon". The study aims at establishing the relationship between gender and value co-creation in the SWM sector in Africa. Specifically, waste management firm-women dyadic co-creation relationship, and the moderating effect of women characteristics on such relationship.

Data collection was mainly based on review of published and unpublished research papers, documents and reports on waste management and value co-creation. Key words were used to retrieve relevant literature, and relevant reports from websites of key institutions such as the United Nations, World Bank, and agencies responsible for environmental management in developing countries were used.

3 Literature review and conceptual framework

To develop a conceptual framework, the key variables were deduced from existing theories. Studies on solid waste management, branding, digital branding, customer satisfaction, brand attitude, brand loyalty, and brand advocacy (word-of-mouth) were considered. There are also a number of theories which have been developed to study the co-creation phenomenon. These include the Service-Dominant logic of marketing (Vargo & Lusch, 2004) which set the stage for the value co-creation discourse, the open innovation theory (Gassmann & Enkel, 2004), and the stakeholder theory (Freeman, 1984).

Waste Situation in Sub-Sahara Africa

Until recently, most local authorities in urban Africa were offering waste management services themselves. However, most countries, like Ghana, have privatized these services as they were struggling to cope with the volumes of waste generated on daily basis. Since the early 1990s, most municipalities in Africa have outsourced waste management services to private companies (Samson, 2003).

In Africa, household waste management had been the responsibility of women (Fredericks, 2008). They are also often employed as street sweepers and trash collectors as these activities are seen as the "best job for women, because it is a job that they are used to doing at home" (Samson, 2003). Indeed, the African woman's responsibility in waste management transcend trash works at home to the street and the city as a whole (Fredericks, 2008).

Among other things, waste management situation in developing countries is characterized by, but not limited to, the following (Evans, 2002):

- Indiscriminate dumping of refuse by households;
- Uncontrolled scavenging;
- Regular burning at dump sites;
- Inadequate management and management of solid waste management (SWM) systems;
- Inadequate budgetary allocation by Central Governments to the responsible line ministries;
- Weak legal and regulatory framework and inadequate capacity of SWM Entities;
- Inappropriate and inadequate vehicular and equipment;
- Low public education and awareness of SWM issues; and
- Unsatisfactory collection services to the public.

These myriad of problems, therefore, require a holistic approach in order to achieve sustainable goals. "While there is little empirical evidence to demonstrate which types of environmental management systems (EMSs) are associated with greater environmental improvements" (Darnall & Kim, 2011), the enterprise-consumer value co-creation approach has been touted by both scholars and management practitioners as the direction to go in an era where the consumer has been empowered through technology. The traditional neoclassical value creation, where the consumer is a passive actor and only receives the end product or service for final consumption is found to be untenable.

The practice of inviting a wide array of actors to participate in nationwide/community ventures is complex. The problem includes identifying and invitation of the range of stakeholders, the nature of inputs required from the stakeholders, the training to be given, the process to be used, and the output required from the participation. Thus, according to (Evans, 2002), to achieve success in value co-creation in SWM, four key core values need to be factored into the design of the participatory process: these are equity, integrity, openness, and accountability.

Since much of the consumer-enterprise interaction in SWM activities had been in the form of physical, face-to-face interaction, which often make the consumers passive recipient, the intent of this study is to evaluate such interaction through digitalized platforms, and more especially through active participation of the consumer, in this case women. This study aims to use the co-creation approach to whip higher public participation in SWM, especially by women since women play important role in household waste generation and management.

According to chapter one of the Gender-Environment Nexus of the Global Gender and Environmental Outlook (GGEO) of the United Nations Environment Programme (UNEP), adoption of gender-specific approach to study the environment is an appropriate tool vis-a-vis the relation between the environment and gender equality (<http://www.unep.org/ggeo/resources/thematic-areas/chapter1-the-gender-environment-nexus>). Specifically, women are considered key actors who can bring about the needed economic, environmental, and social development in society (<http://www.unwomen.org/en/what-we-do/economic-empowerment/rural-women#sthash.Z2XostcU.dpuf>).

In spite of their significant importance to development, their (women) limited access to education and other social goods tend to limit their active participation in decision making. In the case of Africa and other developing nations, culture even mediate their effective participation in decision making concerning their welfare. Given women's large role in household waste management in Africa for instance, empowering them and actively engaging them as co-creators in the waste sector would lead to sustainable improvement in the well-being of families and communities in Africa.

It has further been established that women's access to information communication technologies (ICT), especially in developing countries, is very low, hampering their effective participation in digitally enabled platforms for decision making. This has been recognized by the United Nations (UN). Among the targets of proposed goal 5 of the United Nations 2030 Agenda for Sustainable Development is the target to "enhance the use of enabling technologies, in particular information communication technologies (ICTs), to promote women's empowerment". It is, therefore, appropriate that women are equipped digitally to be active operant resource in SWM in Africa (<http://www.unwomen.org/en/what-we-do/post-2015/why-goal-5-matters#sthash.4syfvKKS.dpuf>).

Branding

The idea that brands are assets, and therefore have an equity, emerged in the late 1980s. It has since been studied extensively and has changed the perception of marketing and brand management (Aaker, 2014). Brands are seen as providing not only functional benefits, but also emotional, self-expressive, and social benefits (Aaker, 2014; O'Loughlin & Szmigin, 2006). A brand, therefore, should have an evolving relationship and be "relentlessly relevant by earning loyalty at every point in the customer journey, again and again" (Prophet Consulting, <https://www.prophet.com/solutions/brand>). Therefore, for brands to create and maintain relevance, they must do four key things:

- Obsess over their customers by getting to know their customers better than their customers even know themselves;
- Find ways to be distinctively inspired, and inspiring—they find new ways to build deep and enduring emotional connections with consumers;
- Focus on innovation by constantly giving customers new reasons to engage with them;
- Embrace a pragmatic approach by consistently meeting their customers wherever or whenever they are needed in their lives.

Thus, branding success is dependent on both internal (management styles and cultures) and external (consumer characteristics and behaviors, the legislative infrastructure, and existing competition) organizational factors (Xie & Boggs, 2006). The ultimate aim of branding is to make the customer and other stakeholders satisfied, and subsequently to generate positive brand attitude, brand loyalty, and brand advocacy.

Consumer satisfaction

Consumer satisfaction is a fundamental determinant of long-term business success (Cooil, Keiningham, Aksoy, & Hsu, 2007). It is a well-studied topic in marketing research, and consumer satisfaction has a moderating effect on consumers' post purchase behavior and loyalty. (Hudson, Huang, Roth, & Madden, 2016) posits that consumers derive much satisfaction through greater

attachments to brands and firms that better understand and respond to their (consumers) needs. This results in more brand loyalty and profitability. This is confirmed by the study of (Cambra-Fierro, Pérez, & Grott, 2017) which concludes that co-creation has a direct relationship with customer satisfaction, customer loyalty, and word-of-mouth (WOM), and that demographic characteristics have moderating influence on these dependent variables in co-creative frameworks.

Customer loyalty

Customer loyalty is a major strategic business objective of marketing firms (Cooil et al., 2007). However, compared to the past, brand loyalty is sharply declining as consumers increasingly hold polygamous loyalty to brands. This is mainly attributed to the advancement in technology. This is confirmed by studies which have been done between social business transactions and loyalty.

A study by Ed Terpening (2017) of Altimeter, a Prophet company, shows a strong correlation between social business maturity and customer loyalty. That social business maturity translates to both positive customer loyalty and profitability (Cooil et al., 2007) compared to social business laggards. This implies that a longer use of social media (or digital business platforms) in business activities impact positively on firm's operational performance. This is an indication that digital platforms moderate service branding and leads to higher customer loyalty in the digitalized world.

Industries such as insurance, hospitality and banking and finance have been more successful than others at building their culture, infrastructure, strategy and governance around social media for a very long time (this could be due to early adoption of social media use), while the healthcare, communication, transportation and media/publishing businesses have lagged in the use of social business programs (<https://www.prophet.com/thinking/2017/02/social-business-maturity-boosts-customer-loyalty-profits/>). From the literature reviewed so far, this also applies to the waste management sector. On geographical basis, sub-Sahara Africa falls within the early stages of social media use in business programs. It can be inferred that digital application by waste collection firms in Ghana can positively influenced their branding activities.

Brand attitude

According to The Free Dictionary, brand attitude refers to the consensus attitude of potential consumers toward a product. Brand association refers to what the consumers believe the product does, how well it does it, and how likely they are to find it useful (<http://financial-dictionary.thefreedictionary.com/Brand+Attitude>).

Literature supports the fact that there is a direct relationship between consumers' attitude and purchase intentions (Taute, Sierra, Carter, & Maher, 2017). Branding studies affirm that positive attitude towards a brand leads to greater likelihood of searching for the brand, especially on the web (Dotson, Fan, Feit, Oldham, & Yeh, 2017). Again, it is proven that brands which offer good experiences positively influence behavioral intentions, and result in positive attitude towards the brand (Vanwesenbeeck, Walrave, & Ponnet, 2016).

Word-of mouth

Positive word of mouth (WOM) may evoke favorable consumer reactions. Similarly, negative WOM may damage the image of the brand. Social media has helped spread customer reaction faster than before, and this calls for the use of the same technology to effectively manage customer reactions. Rather than deleting unfavorable or negative user post/comments/reviews (as doing so may erode credibility of the brand and diminish positive community member reactions in the process), the reviewers or commenters could be actively engage to explain the rationale behind their posts (Relling, Schnittka, Sattler, & Johnen, 2016).

Digital branding

As Brian Solis (2016) puts it, "we live in a time of digital Darwinism; an era when technology's impact on business and society is constant with varying (but inevitable) degrees of both evolution and revolution"(<https://www.prophet.com/thinking/2016/06/how-to-guide-your-companys-digital-transformation/>).

The Golden Age of Digital has brought about new capabilities to both consumers and firms. Subsequently, the traditional branding paradigm of offline-primary (television, print, etc.) and online-secondary (social media platforms) is gradually been reversed to a new branding paradigm

where online is now primary and offline the secondary (Erdem et al., 2016). The new digital brand, therefore, thrives in ecosystem of platforms other than the firm's own; an ecosystem where touchpoints and channels multiply daily; where interfaces become invisible; and where machines are increasingly responsible for deciding preference (Samantha Papadakis, 2017). (<https://www.prophet.com/thinking/2017/03/brand-transformation-in-digital-age/>). Consumers are able to get fuller and richer information on products, services, brands, and firms (Erdem et al., 2016) and are able to engage with firms digitally. Firms, on other hand, are now capable of tapping into the skills and abilities of consumers, and also to widely highlight their brands worldwide. There is, however, the risk of loss of control and brand incoherence on the part of the firm, and information overload for effective consumer decision making in a co-creation situation.

In this sense, firms need to broaden their skillsets beyond that of marketers and brand managers by embracing new brand stakeholders, and tapping into their competencies. This calls for the adoption of a new business and governance model which allows for flexibility.

Gender and brand value co-creation

Brand value co-creation is becoming an increasingly important theme in marketing, fueled by the Service-Dominant Logic (SDL) theme (Cambra-Fierro et al., 2017). There is an increasing awareness that the producer is not the sole provider of value in this digitalized world. This is more so when technology has endowed consumers and other stakeholders with new capabilities, experiences, and new forms of engagement.

Authors such as (Homburg & Giering, 2001) demonstrate that consumer characteristics influence consumer behavior, and thus have impact on customer interaction with producers, satisfaction and loyalty. Impliedly, demographics such as gender and age have influence on value co-creation and therefore customer satisfaction as shown by the work of (Cambra-Fierro et al., 2017).

However, much of extant literature on demographic impact on consumer behavior had been in the more older industries such as banking, telecommunication, education and manufacturing; its effect in co-creation frameworks is very limited (Cambra-Fierro et al., 2017), and its influence in value co-creation in waste management services is rare. More so, much of such studies had focused on advanced economies, and very little coming from developing countries.

With the exception of few works such as (Cambra-Fierro et al., 2017) (which showed a direct effect of demographics on co-creation), not much attention has been paid to the impact of demographics on co-creation, even though co-creation is receiving much attention in marketing research. The question then is what is the effect of demographics (in this case gender) on brand value co-creation in the waste management sector in Africa?

Service-Dominant Logic and co-creation

Service-Dominant Logic (SDL) is a new paradigm of marketing thinking that opines that the customer is a key endogenous factor of value creation. It posits that the basis of all exchanges is the application of knowledge and skills (operant resources) through deeds, processes, and performances for another entity or the entity itself (Vargo, 2009; Cambra-Fierro et al., 2017).

Service-dominant logic is, therefore, central to co-creation. Co-creation is a joint or collaborative venture leading to the generation of value through an exchange of knowledge and skills (Vargo & Lusch, 2004). The ultimate aim is to create a mutually beneficial results for both the enterprise and its partners/co-creators (Prahalad & Ramaswamy, 2004). The SDL focuses more on service exchange compared to the goods-dominant logic orientation which focused on tangible resources, embedded value, and transactions. In other words, beneficiaries of goods and services determine the value through value-in-use, that success factors to co-creating are the process of learning—by both customers and enterprises, a proper participatory design, and correct relationship management (Cambra-Fierro et al., 2017).

Value co-creation relationships

Three main types of value co-creation relationship have been identified (Storbacka, Brodie, Bohmann, Maglio, & Nenonen, 2016): dyads (between two actors), triads (among three actors), and networks (many actors). However, before the emergence of technological platforms for customer engagement, value creation was basically a unitary function by the firm. The view then was that a

firm's sole purpose was to maximize economic value for shareholders (Argandoña, 2011). The digitalized world has thus moved value creation from a unit actor to a network of actors. This study, however, looks at the enterprise-customer dyadic relationship.

The focus in the now consumer-centric view of value creation is a function of interactions anywhere in the value ecosystem (Prahalad & Prahalad, 2009). According to (Prahalad & Prahalad, 2009), consumer-centric environment requires firms to redefine their interactions with customers as well as enable a system full of interactions in order to leverage the skills and talents of consumers willing to contribute their knowledge. Thus, value systems are now open and co-creative, and consumer experience, rather than product, has become the starting point of value creation.

Earlier works on value co-creation had defined co-creation as interactions between firms and customers in the process of creating value (Vargo & Lusch, 2004; Prahalad & Ramaswamy, 2004; Zwass, 2010). This requires the use of management guidelines based on the DART Model – dialogue, access, risk-return and transparency—to establish best practices (Ramaswamy, 2008). The effectiveness of co-creation, therefore, depends on how much dialogue is created in terms of depth of engagement and interactivity, access to the value creation process and intellectual property of the enterprise by customers and to the skills and knowledge of customers by the enterprise, transparency in terms of information regarding corporate culture and management practices, and the ability to reduce the risk of harming the consumer by the enterprise and the mitigation of the propensity to lose the right to intellectual property by the enterprise (Hatch & Schultz, 2010). This calls for effective dialogue within the dyadic relationship (Dialogue), using digital platforms to expand opportunities for access to managers and employees (Access), using social media as a platform to sharing information about co-creation and to enhance transparency (Transparency), (Hatch & Schultz, 2010) and the need for the enterprise to clearly define the rules of engagement and to effectively moderate the co-creation process to reduce risk (Risk).

Digital brand value co-creation process

Customer participation in the value creation process is not entirely a new concept (Rayna, Striukova, & Darlington, 2015; Hribernik, Ghrairi, Hans, & Thoben, 2011). It has been applied in the supermarkets in the 1930s. Earlier usage had focused on either Do-It-Yourself (DIY) activities or consumers providing inputs for production (Rayna et al., 2015). However, with the emergence of digital co-creation platforms, customer involvement in the design and production processes is gaining currency.

Literature posits that co-creation occurs within an open social and technological networks, involving interactions among actors and resources to create values beneficial to the co-creation participants. With the inception of the open innovation concept, consumers have been used as a source of idea generation to either create a new product or modify an existing one. Presently, however, consumers are deeply involved in the value chain, from idea generation to co-creating the product with the firm, testing the finished product, and providing end user product support; however, co-creation can take place at any phase of the production process (Rayna et al., 2015).

Co-creation can be either autonomous (independent co-creation by consumers through firm provided platform) or sponsored (firm initiated co-creation) (Zwass, 2010).

From consumer to prosumer: levels of consumer involvement

With the advent of Web 2.0 technologies, users' participation in the production process also increased. Web 2.0 outlets such as Facebook, Twitter, and Instagram have facilitated this process. Users have therefore become 'prosumers' since they are no more 'pure' consumers (Rayna et al., 2015).

Consumers now interact with myriad of firms and communities in their quest to obtain goods to satisfy their needs. Therefore, to be able to compete in this revolutionized and evolving market environment, enterprises must fundamentally change their value creation infrastructure, making their operations and information concerning creation transparent and accessible to consumers, and moving from transaction-based interactions to meaningful dialogues (Prahalad & Ramaswamy, 2004), and foster a strong community engaged interactions (Rayna et al., 2015). Consumers should be assisted to understand and assess all the risks and rewards of the choices they make. Consumers may demand

more information about potential risks of goods and services as they become co-creators of value. However, co-creation partners may also have to bear more responsibility for handling those risks.

Thus the co-creation innovation process, as established by extant literature, is made up of five key phases: co-ideation, co-evaluation, co-design, co-test, and co-launch (Russo - Spena & Mele, 2012; Hribernik et al., 2011)

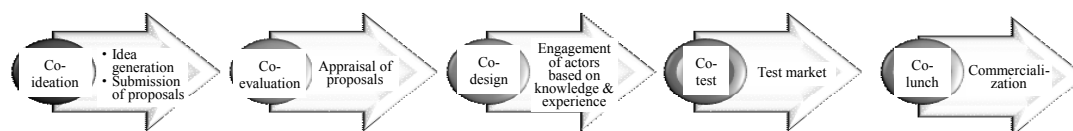


Figure 1 Co-creation innovation process

Co-ideation is the co-generation of ideas. The firm opens up the idea generation phase to external network of actors which include consumers, customers, fans, professionals, partners, and intermediaries who actively participate in the idea generation and shaping (Russo - Spena & Mele, 2012). Participants are connected through a firm based website so they can submit proposals and also learn about each other's ideas.

In the co-evaluation phase, companies seek to involve actors in the appraisal of proposals. The co-evaluation consists of two main activities—commenting and voting (Russo - Spena & Mele, 2012). To encourage participation in the evaluation process, rewards in the form of money, prizes and free products may be offered. The voting helps decide on the most appropriate ideas for implementation.

The co-design stage entails the engagement of actors, who are assigned roles based on their knowledge and experience. The end users, based on their interest and passion, play a large role in the design phase. A case in point is BMW. Using its Co-creation Lab in 2003, it launched its Idea Contest, under the catchphrase “Share your ideas for mobility services in tomorrow’s urban areas”, to stimulate interest in cars and future automotive concepts (Russo - Spena & Mele, 2012).

The co-test is used to test the marketability of a product or service, while co-launch is the joint lunch of the product unto the market for commercialization.

These phases are not necessarily performed sequentially, but interact in an on-going interaction among resources, actions, and a group of actors connected through a dense of network. In the process of co-creating, some firms have used the firm-customer dyadic relation, while others have used multi-stakeholders in the value co-creation process.

Co-creation actors in the SWM

The key actors involve in waste management include, but not limited to, local authorities/ municipalities, private waste management companies, volunteer groups, household members, employees, communities, community leaders (Samson, 2003), non-profit organizations (NGOs), educational institutions, assembly men and women in the case of Ghana.

Tool and methods of co-creation participation

Since the boundaries of the roles of actors in co-creation are blurred (Visser, Stappers, Lugt, & Sanders, 2017), there is the need to devise working tools to facilitate co-creation design and design participation. (Hribernik et al., 2011) identified prominent tools and methods which facilitate co-creation design and participation as shown in the Table 1.

Table 1 Some prominent methods which could be used in co-creation in SWM

Method	Description
Role play	Actors in the design process (users and/or designers) play through a potential use of an imagined service or process.
Storytelling	Use of service is described in simple words as a story, allowing for the communication of ideas and the development of storyboards
Character profiles	By creating fictional character profiles, a team can share knowledge about the users of a product or service.
Rough prototyping	Prototyping product or service components using any available materials in order to better explain ideas to the team.

Method	Description
Experience prototyping	Allows for the active engagement of team members, users and clients with a product or service.
Storyboard	A narrative representation of use cases through a series of drawings of pictures to illustrate the use of a product or service and the users' points of contact with it.
Personas	Personas are fictional user archetypes developed in realistic detail. Task scenarios describe how they interact with the design. Together, they form the basis for specifying how users want to experience the product or service.
User journey	The customer journey map is an oriented graph that describes the journey of a user by representing the different points of contact that characterize his interaction with the service.
Poster	The poster simulates a future advert for the product or service. By elaborating it, the designers imagine how the new offering could be launched and perceived by the consumers.
Interaction table	This describes the step-by-step interaction with the product or service.
Actor hierarchies	Actor hierarchies use graphs to show an overview of the people who will interact with the product or service.
Opinion leaders	Using respected opinion leaders who are familiar with the product or service to serve as brand advocates in the co-creation network.
Crowdsourcing	Crowdsourcing is the use of skills and knowledge from internet users to obtain needed services or ideas, in this case, from stakeholders of the waste management enterprise.
Consumer partnerships	An enterprise giving consumers the opportunity to identify goals and objectives, and to provide the needed support to accomplish these goals.
Serious games	Video games can be applied to stimulate participation and cooperation in the co-creation process.
Ideas competition	Users are asked to propose innovative ideas within a given timeframe. The ideas are then commented and discussed by all participants. Finally, the submissions are evaluated by an expert panel and a winner selected. An example is 'My Miss Ghana', an initiative to invite the general public to the selection of the person that would emerge the winner of the 'Miss Ghana', 2017 pageant through social media platforms. The finders who would find their selected potential Queens in the Top 10 grand finale of the contest stand a chance of winning prizes. (Ghanaweb.com, July 3, 2017).

Adapted from Hribernik, K. A. et. al, (2011). Co-creating the Internet of Things-First Experiences in the Participatory Design of Intelligent Products with Arduino, p. 4.

Digital brand value co-creation platform design

Designing online participatory design for brand value co-creation requires the infusion of social and cultural characteristics of the target co-creators since "culture pervades learning" (McLoughlin & Oliver, 2000). The importance of culture in participatory process design lies in its ability to help actors/learners develop cognitive pillar around which the actor can acquire and assimilate new knowledge and to be able to better relate and integrate new ideas (McLoughlin & Oliver, 2000).

This implies that the co-creative enterprise has to incorporate the local values, styles of learning and cognitive preferences of the target population. Various studies on women show that women have different learning needs, given their socio-cultural make-up, especially in Africa. In this instance, the values and learning styles and abilities of women of developing economies should be a key consideration in any digital engagement platform design. It is undeniable fact that women access to education in Africa is gravely limited as shown by various reports on women's development in Africa by world bodies like the United Nations and the World Bank. This calls for a high level of cultural contextualization (McLoughlin & Oliver, 2000) of digital platforms for value co-creation involving women, especially for local/community level needs. The question then is

How does culture influence online platform design for value co-creation activities?

Table 2 below shows some of the principles, obtained through previous empirical studies, which can be incorporated into the design of digital platforms for women engagement in waste management co-creation activities, taken into consideration of their cognitive/socio-cultural background of women in sub-Sahara Africa.

Table 2 Design principles for culturally inclusive co-creational platform design

Cognitive/Cultural issue	Digital platform design consideration
Awareness of actor/co-creator needs and preferences	Co-creation tasks must support differences in learning style and communication of the actor/stakeholder.
Communication and social interaction	Multiple channels and forums for communication between actors (women) and employees of the organization should be provided.
Authentic task design	Co-creation activities should be built on diversity and provide bridges to the actors' culture and community.
Multiple perspectives and access to resources	Enable actors to create resources and to add culturally relevant sources of information. Emphasize actor input.
Scaffolding and support	The women/actors need scaffolding or support structures to ensure that they develop skills and confidence. Include peer scaffolding in task design.
Flexibility in goals, modes of evaluation and value co-creation outcomes	Ensure flexibility and inclusivity by offering choice, multiple modes of participation and assessment of efforts. Co-creators should be able to choose their own pathways through the content and negotiate tasks for contributions.
Employee roles	Create multiple roles for online employees and supervisors at various stages of the engagement to ensure provision of feedback and support.
Collaboration and co-construction	Create motivating tasks where co-creators can share ideas and work on projects, drawing on cultural resources.
Clear communication of aims, objectives and requirements	Plan for maximum clarity and ease of use, while designing for choice. Avoid assumptions about cultural stereotypes and expectations.
Self direction and integration of skills	Plan activities so that technology use and information access become part of co-creators' repertoire of engagement skills and lifelong learning strategies.

Source: Adapted from (McLoughlin & Oliver, 2000)

4 Discussion: Technology, digital co-creation, women, and waste management in africa

Various studies from developing economies have shown that the female head of the household is usually the one in charge of household waste management. This is a role that has been culturally assigned. In a similar facton, more and more women are taking on various roles in the professional waste management industry. This is a result of various institutional interventions making it possible for more and more African girls to acquire formal education to a higher level.

Literature reviewed, however, indicate that little is known about women as digital co-creators in SWM in Africa. Studies on African women's participation in waste management had mostly been in the form of physical participation in waste collection and/or sweeping in their communities. The probable explanation for the lack of literature on women as digital co-creators is the generally low adoption of digital brand value co-creation in Africa. A plethora of constraints may account for this. Primary among these is the lack of investment into ICT by the various governments on the continent.

According to the dashboard of the global association of mobile operators, GSMA, there are more than 5 billion unique mobile subscribers in the world as at the end of June, 2017. With regard to the internet, there are already 3.2 billion people online, with about 2.4 billion of them through mobile. Thus, the internet is regarded as the most important enabler of social development and economic growth of our time. Mobile technology also presents a big avenue for the marginalized to join the digital economy.

Despite this, it is estimated that 4 billion people remain offline, and therefore unable to participate in online interactions. Most of these population are mostly found in developing countries with low incomes, with African countries being the most affected, with women being disproportionately affected; women are 14 percent less likely to own a mobile phone than men, on average in Africa. The gender gap is even more apparent in the case of the internet. In Africa, for example, women are 50 percent less likely to use the internet than men.

Digital literacy and confidence in the usage of mobile and internet technologies is also found to be

lower among women, older people, and those living in rural communities in Africa (www.gsma.com/mobilefordevelopment/programmes/digital-identity). The issue of technology usage by women in developing countries is compounded by culture. They come up against religious barriers, social hierarchies, and the weight of traditions (Document, 1999). For instance, gender is found to have important influence over attitude towards mobile services in communities with strong patriarchal gender norms. In this sense, women’s access to mobile services tend to be more restricted, and have to fall on male relatives to access mobile services.

In spite of these constraints, literature on technology usage by women points to the fact that technology can help ameliorate women’s access to productive resources relevant to value co-creation. Therefore, access to technology would enable women to engage in online learning to acquire the necessary skills and abilities to be effective co-creators. This is particularly important in Africa where a lot of women are rural dwellers and physical mobility and lack of agency over resources are constraints (<http://blogs.worldbank.org/developmenttalk/gendermatters-digital-divides-digital-dividends>).

As observed by Indhira Santos, a blogger on the World Bank Platform, Gender Matters,

“Digital technologies could also advance women’s voice and agency. The increased access to information that comes with digital technologies can affect gender norms and affect aspirations, as have other media. Social media, in particular, is an additional outlet for women to participate in public discussions and voice their opinions, as was the case of “My Dress, My Choice”, a social media movement against female violence that mobilized thousands of Kenyans, and eventually led to changes in relevant laws”.

5 Proposed conceptual framework: putting together the building blocks

The aim of co-creation is to generate better customer satisfaction in SWM, which in turn will influence brand attitude towards waste management firms, brand loyalty, and word of mouth. These are, however, found to be moderated by the profile/characteristics of the independent variables, and in this study, the profile of women. Key characteristics identified with regard to the topic of this study are cultural settings in Africa (which tend to work against women, especially the rural women), low level of literacy among women (limiting their skills and ability to co-create), and the limited access to technology (which restrain them from engaging in decision making through digital platforms). These factors equally limit their willingness to engage in co-creation. On the other hand, the African SWM firm’s ability to digitally engagement with its customers would be moderated by the organizational culture (which may or may support the co-creation paradigm), its management style, and its ability to acquire the necessary technology.

Figure 2 represents a proposed conceptual framework for the study of gender (women) characteristics’ impact on digital value co-creation in SWM in Sub-Sahara Africa, based on the discourse in this study.

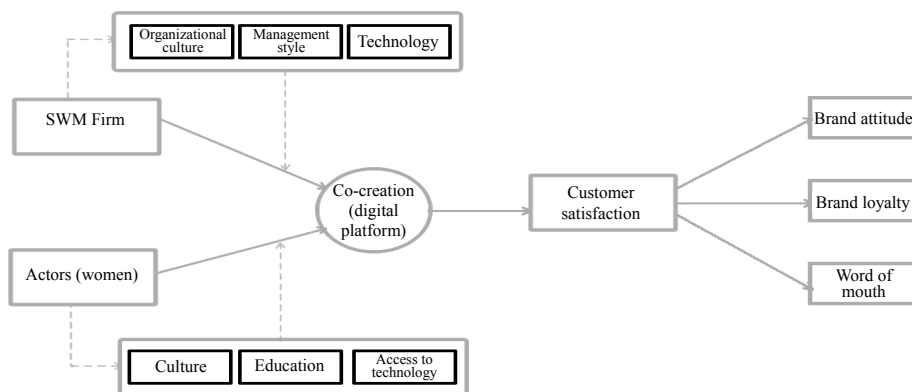


Figure 2 Proposed conceptual framework

6 Suggestions for policy consideration by SWM enterprises and governmental agencies

SWM enterprises:

- There is the need to use dialogue and public engagement as the initial step in creating the awareness of the benefits of using technology to engage with the waste firms for better services. Through these platforms, personal fears and misconceptions borne out of cultural idiosyncrasies would be effectively addressed.

- SWM co-creation planning must be informed by sound participatory processes (Evans, 2002) to engender greater willingness on the part of stakeholders to engage. Digital engagement platforms should be made simple and user friendly to boost the confidence of the majority of African women who have little ability to engage. This calls for innovative technologies such as enterprise specific mobile applications for easy downloads.

- This also calls for the adoption of a new business and governance model which allows for flexibility.

- Design of special educational programs aim at creating the necessary awareness among women on the need to engage in value creation. The education should focus on giving women reasons to engage, such as better value for money, community cleanliness, and better health for their families.

- Assisting women to acquire mobile technology skills would also motivate and increase their willingness to engage level. In some instances, it would be more appropriate to offer free or highly subsidized mobile gadgets to women within the lower income brackets.

- The values and learning styles and abilities of the women should be a key consideration in the design of the digital engagement platform.

- As a start, there would be the need to continue to combine physical interaction with digital interactions. Linked to this is the need to have websites with co-creations interfaces/buttons for easy customer-firm interactions.

- Equally important to effective co-creation engagement is the need to allow women to initiate and to co-create charity campaigns in the area of environment and health.

- Stronger engagement can be fostered by constant update of content on firm website and social media, and the necessity to choose well known social media platforms for customer engagement (Erdoğan & Ergun, 2016).

- The use of brand endorser is encouraged. These endorsers should be women achievers, especially in the waste management and women opinion leaders, who could be used as lead co-creators. Where the endorser has a higher credibility, it would attract women to the enterprise and lead to positive brand attitude (Wang, Kao, & Ngamsiriudom, 2017).

- Digital engagement should be entertaining and fun as well. This, according to (Dunne, Lawlor, & Rowley, 2010) helps reduce boredom on the part of social media users.

Governmental level:

- Waste management is an important economic activity for every government. Therefore, governments must priorities waste management, especially at the community level. This they can do by formulating the right policies which generate community interest in waste matters.

- There is the need to invest in technology for the transformation of the waste management sector. There is an urgent need to apply technology to the waste value chain, from generation to recycling, in order to ensure cleaner environment, reduce environment-related diseases like cholera, and to improve quality of life, especially of women and children.

- Women education should be given priority. Educational curricula must be enriched with ICT training to make women more ICT literate. This will boost their capabilities and confidence to engage in digital co-creation with regard to waste management.

- Non-governmental organizations (NGOs) should be supported by governments to offer sensitization campaign on the need to reform or abolish cultural practices inimical to the well-being of women, and which limit their participation in digital co-creation.

7 Limitations and future direction

One limitation of the study is the non-use of primary data to derive empirical evidence for generalization of the outcome of the study. This is further compounded by the lack of adequate literature on women participation in waste management value co-creation, especially from developing countries. For future consideration, primary data need to be used to confirm or otherwise the findings of this study, especially the level of influence of the moderators. The proposed framework could be employed to test the moderating variables of their potent to influence co-creation in the SWM industry in Africa with regard to demographics.

8 Conclusion

The aim of this study is to find out the role of women in solid waste management in Africa, and how their characteristics influence their interactions with SWM firms in a digital co-creation situation.

This study has contributed to literature primarily by highlighting the factors that can prevent the average African woman from engaging in co-creation venture in the SWM sector. Specifically, the study identifies culture, low ICT literacy rate, and low level of education as the key moderating variables to the effective use of women as brand value co-creators in SWM sector in Africa, and that their engagement is often limited to household and community cleaning. There is the need to digitally empower her, refine the African culture, and to offer her requisite educational training rich in ICT to equip her for greater works, to improve her community's environment and for better health to her family.

Younger women, who are getting more education and thus more digitally inclined, could be targeted as co-creators in the SWM. They could offer assistance to the older generation and help bring them along. They could also assist their mothers and older women who lack the necessary skills and abilities to engage in value co-creation on the digital platform.

Furthermore, although digital brand value co-creation is gaining roots in the world of business, the concept is not much applied in the SWM sector. The academia should champion this course among the business sector in Africa.

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Challenges of E-government Implementation in Public Sector Institutions: The Case of Ghana

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Abstract This paper examines the challenges of e-government implementation in public sector institutions. The objective of this paper is to present an overview of the challenges the Government of Ghana faces in the implementation of e-government initiatives and its usage. This will enhance efficiency and effectiveness in public sector institutions to ensure better service delivery to the general public. The e-government initiatives facilitate effective and efficient service delivery through network infrastructure to connect ministries, agencies, departments and cities. The main aim of government is to initiate ICT in public sector institutions in order to ensure high productivity so as to facilitate smooth coordination of work processes among state institutions to ensure sustainable growth and development. This paper used secondary sources of data via journals, web sources and policy documents by Ghana government couple with some interviews with some key stake holders in Government.

The study shows that there is enormous commitment by Ghana government to successfully implement e-government policy or initiative but for some reasons, Ghana government have been challenged by obstacles towards the successful implementation and these factors includes infrastructural facilities, Political will, Socio-economic conditions, Human resources, Financial resources and Organizational factors.

The study made some recommendations that will help ensure successful implementation and these includes budget allocation through an endorsement by the legislative body and provision of infrastructure, empowering the human resource base through training and binding of political leaders to the course of appreciating e-government.

To ascertain this phenomenon, further research need to be carried out to determine Challenges of e-government implementation in Ghana and to unearth the gaps by using different research methods.

Key words Electronic government, Public sector institutions, Implementation, Challenges

1 Introduction

Ghana is one of the leaders in the development of ICT in sub-Saharan Africa, since its first internet connectivity in 1989 (Ghana e-Health Policy, 2010). The development of ICT has since continued to flourish. For example, the country's ICT infrastructure rate grew from 0.04% in 1995 to about 3% in the year 2000 as opposed to other developing countries that were growing at an average rate of about 1.1% (Opoku, 2003; World Bank, 2002). According to (Achampong, 2012). Successive governments in collaboration with other agencies in the private sector have over the past two decades made several efforts to develop the ICT infrastructure in Ghana in order to maintain this lead With the aid of Pipex International, the Network Computer Systems Limited (NCS) in 1993 registered 'GH.COM' as the first commercial internet service in Ghana.

By the end of 1995, Ghana was known to be one of the few African countries particularly in sub-Saharan Africa but first in West Africa to have full internet connectivity (Quaynor et al., 1997). The National Communications Authority (NCA) which was established in 1997 as the result of a new telecommunications legislation passed in 1996 by the Parliament of Ghana to regulate the budding and potential communication and ICT sector. Of course the standing of Ghana as one of the liberal ICT markets regarding ICT in sub-Saharan Africa could be attributed to the pro-competition policies put in place by the National Communications Authority (Achampong, 2012). This manifests Ghana's 61st ranking in the 2005/2006 World Economic Forum's Global Information Technology Report (World

Economic Forum, 2006). As a result of this, by end of 2002, the National Communication Authority (NCA) had issued license to 52 Internet service providers (ISPs), but only about ten were functioning as at the time (Lundkvist et al., 2004). This feat was made possible by the collaboration of institutions like Network Computer Systems (NCS), Pipex International, and the Ministry of Communication of Ghana, Ghana Telecom, British Telecom and the National Communication Authority (Quaynor et al, 1997).

1.1 What is E-government?

E-government is the use of electronic communications devices, computers and the Internet to provide public services to citizens and other persons in a country or region.

According to Jeong, 2007, the term refers to the digital interactions between citizens and government (C2G), between government and citizens (G2C), between government and employees (G2E), and between government and business (G2B) between governments and other government agencies (G2G). E-government delivery models can be categorized. This interaction consists of citizens[clarification needed] communicating with all levels of government ranging from (city, state/province, national, and international), facilitating citizen involvement in governance using information and communication technology (ICT) (such as computers and websites) and business process re-engineering (BPR). E-government purposes consist of wide range of services which includes sharing information about operations of government and also online payments. This initiative will enable a more efficient and effective communication between citizens and government.

1.2 E-government model

Gartner and others (Baum and Di Maio, 2000) proposed a four-stage model, which are as follows: The Web presence: In this stage, there is provision of post basic information through web sites to public by agencies, Interaction: In this stage, users use web site means such as emails to contact agencies or do self-service such as download of document, Transaction: In this stage, customers and businesses can complete entire transactions such as license application and procurement) online. Transformation which is the fourth stage transforms the current operational processes to provide more efficient, integrated, unified and personalized service.

The main objective of this paper is to present an overview of the challenges Government of Ghana faces in the implementation of e-government initiative and its usage by way of bringing about effectiveness and efficiency in public sector institutions.

1.3 The Use of ICT and Internet Services Connectivity in Ghana

In 2009, subscribers of internet services in Ghana according to 18ITU report were about 997,000 which accounted for a penetration rate of 4.2%. However, as at the mid of 2010, the figure of internet subscribers in Ghana had increased to 1.3m internet users, which converts to a 5.3% internet penetration rate (ITU, 2010). With just about 30,000 Ghanaian internet subscribers in 2000, (0.2% penetration rate), 2008 recorded over 880,000 subscribers of internet services in Ghana. It suffices to intimate that the 2010 penetration rate of 5.3% was among the highest in the sub-Saharan Africa. This was however lower than the African average of 10.9%, an average which has been skewed by the North African countries, the majority of whom had internet penetration of 20-30% (Acheampong, 2012).

In 2008, the Parliament of Ghana recognized the increased use of ICT not only in the public sector but also in commerce. To this end, the Electronic Transaction Act, 2008 Act 772 was passed to facilitate electronic transactions online between government, businesses and the general public.

Despite these remarkable figure, a trip away from urban cities in Ghana will see internet penetration dropping rather sharply as the majority of Ghana's rural dwellers have limited access to the web (Ibid). Internet penetration in rural Ghana lingers around 1% (Ghana eHealth Policy, 2010).

In spite of the massive financial investment in ICT infrastructure, there has also been a move to increase capacity building. For instance, the Ghanaian government together with other organizations like the Abdul-Salam International Centre for Theoretical Physics (IPTC) have trained and continuously train many professionals in ICT and other related areas (Opoku, 2003). This is to ensure the availability of the relevant knowledge and skills, needed to support ICT activities in the country. Even though investments in ICT infrastructure and ICT capacity-building has been huge, Ghana still

lacks the drive and strategies to strap up the full potential of ICT for the socio-economic development of the country (Frempong, 2004).

1.4 Ghana Government's Policies on ICT

The Ghana National ICT for Accelerated Development (ICT4AD) policy

The Ghana National ICT for Accelerated Development (ICT4AD) policy was designed under the sponsorship of the African Information Society Initiative (AISI) of the Economic Commission for Africa (ECA). And through the Ministry of Communication, it was passed by the Ghanaian Parliament in 2003 to be implemented as a policy statement for the realization of the vision to transform Ghana into information reached society. The vision of the ICT4AD policy was to “improve the quality of life of the people of Ghana by significantly enriching their social, economic and cultural well-being through the rapid development and modernization of the economy and society using information and communication technologies as the main engine for accelerated and sustainable economic and social development” (Republic of Ghana, 2003: 21). Sam Somuah, 2009 summarized the focus areas in the diagram below;

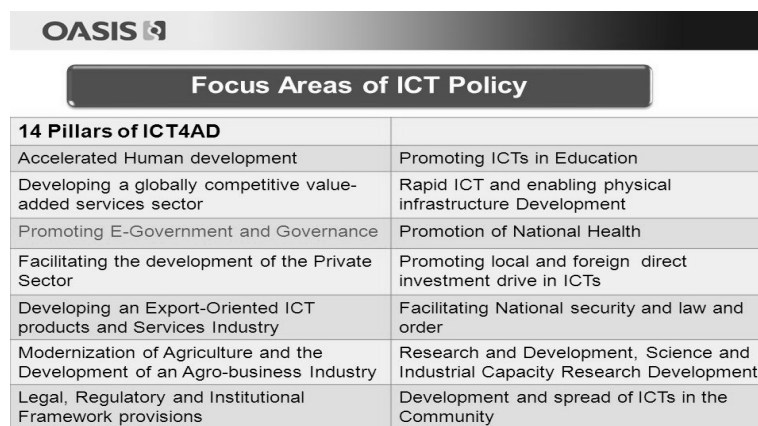


Figure 1 Focus Areas of ICT Policy (Sam Somuah, 2009)

The specific focal point (sub-plans) of the ICT4AD policy according to Abissath (2007): E-Government Sub-plan can be categorized under the following; Accelerated Human Development Sub-plan; E-education Sub-plan; private Sector Development Sub-plan; E-Commerce Development Sub-plan; E-Health Sub-plan; ICT and Physical Infrastructure Development and Rollout Sub-plan; Legal, Regulatory, Institutional Provisions and Standards Sub-plan; Industrial, Scientific Research Drive and Promotion Sub-plan; Foreign Direct Investment (FDI) Drive in ICTs; E-Security Sub-plan; and lastly, ICTs-in-Community Sub-plan.

The e-Ghana project has three components, and these are: (I) creating an overall enabling environment (II) attracting investments in IT-enabled services as well as promoting the development of indigenous businesses and (III) achieving greater efficiency, transparency and accountability in Government agencies and departments.

Some of the Government agencies involved are Birth and Death Registry, Ghana Police Service; Food and Drugs Authority (FDA); Ghana Tourist Agency; National Communications Authority (NCA) (NITA, 2012).

2 Research methodologies

This paper is based on a combination of a comprehensive literature review and interviews with key government stakeholders. An initial stage of the review was to identify the goals and the purpose of the review was to ensure that the purpose of the review is clear to the readers (Okoli and Schabram, 2010). A typical literature review process comprises of different stages such as searching, collecting, prioritizing and reading with a purpose so as to seek out key issues and themes which are then presented and discussed as critically as possible (Wellington et al., 2005). In our case, the following

procedures have been adopted:

2.1 Selection of papers

Survey of the literature related to this paper was retrieved from leading e-government journals, some leading e-government journals reviewed include but are not limited to: Electronic Journal of Electronic Government (EJEG) International Journal of Electronic Government Research Journal of Electronic Government, etc.

2.2 Search procedures

In the selection of the literature that was deemed useful for the study, attention was not placed on a single set of journals or geographical area (Webster and Watson, 2002). Search engines such as Google, Google Scholar and others were used. The web portals of the governments of other African countries and other news papers and articles were explored for their own perspective on the subject under study. We chose keywords: electronic government, e-government implementation, Challenges, ICT.

2.3 Data collection and analysis

After selecting the relevant papers for this study and using the above mentioned search procedure, relevant articles were collected from the papers found. Relevant articles were then systematically analyzed to come up with relevant themes for our study. As we read the abstracts of the selected papers, a database was produced and used to analyze the papers based on their themes and subject of discussion.

These challenges further grouped based on the commonalities among them and this groupings were classified to six groups namely Infrastructural Facilities, Political Will, Socio-economic Conditions, Human Resources, Financial Resources and Organizational Factors.

To validate the findings in the case of Ghana, interviews were then conducted with key stake holders in some of the government agencies involved.

3 Results & discussion

The challenges to the successful implementation of e-government initiatives in Ghana are many and similar to other African countries. Even though the case of Ghana may vary from other African countries, there are some commonalities. The challenges have been categories into six different groups as infrastructural, financial, political, organizational, socio-economic, and human.

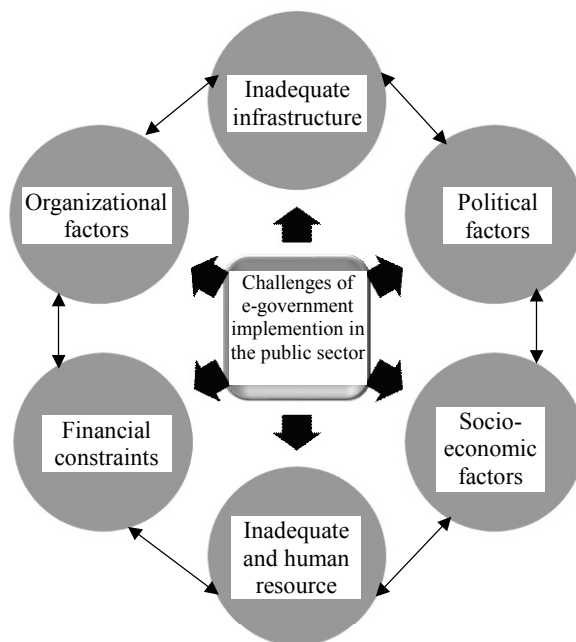


Figure 2 Challenges of E-government in Ghana

It is essential to note that there is a relationship between different aspects of the challenges. They all impact on one another in a varied manner, as shown with different arrows used in the diagram. For example, human skills are needed to manage and run these infrastructures. Finance is needed to purchase the needed infrastructures to enable the successful implementation of e-government initiatives and the cycle continues. These are presented in the diagram below with detail explanation.

Table 1 Factors with their corresponding thematic areas

Factors	Thematic areas
Infrastructural facilities	<ul style="list-style-type: none"> — Power supply — Internet access — Leadership — Privacy
Political will	<ul style="list-style-type: none"> — Leadership — Political situation
Socio-economic conditions	<ul style="list-style-type: none"> — Literacy levels of public officials and citizens users — Cultural conditions
Human resources	<ul style="list-style-type: none"> — Training — Capacity building
Financial resources	<ul style="list-style-type: none"> — Sources of funding — Cost for government e-government services
Organizational factors	<ul style="list-style-type: none"> — Leadership — Change management

The different factors presented in Table 1 above are discussed below:

3.1 Infrastructural facilities

Despite the fact that government of Ghana received a World Bank funding for its ICT infrastructure, there are still a number of gaps that needs to be filled, lack of adequate ICT infrastructure in Ghana is a major challenge to the provision of e-government services and therefore hinder the efforts to modernize government services.

Some of the infrastructure impediments in Ghana’s adoption and implementation of e-government are issues of security, privacy, interoperability, power supply, internet access, and connectivity (Mensa, 2016). Digital divide is also considered as an infrastructure challenge of e-government implementation in developing countries with Ghana inclusive (Mutula, 2002; UN, 2002). Mensah (2016) described digital in terms of the difference in the number of telephones, internet users, or computers per head between the rich and poor countries. All the above together with computer security, privacy and confidentiality of personal data poses a challenge to the implementation of e-government initiatives (Gefen et al., 2002) as most developing countries (Ghana inclusive) for now lack adequate effective laws which protect citizen privacy (Ndou, 2004).

A considerable number of previous research works found Infrastructure as a huge challenge for the success of e-government (Bourn, 2002; Dillon and Pelgrin, 2002; McClure, 2000; National Research Council, 2002) as a major obstacle to the provision of government services and transactions online.

3.2 Political will

The main theme here is Leadership and political situation. Support for e-government initiatives by government leadership is very relevant to the successful implementation of e-government initiatives (Ebrahim and Irani, 2005; McClure, 2001). “Leadership is one of the main driving forces of every new and innovative project or initiative.” Ndou (2004: 16). For the case of Ghana, there has been some level of political commitment among various governments’ regimes in support of e-government. This has been shown through the promulgations and implementation of e-government initiatives in the past. McClure, D.L. (2001) further noted that the support of government leadership to e-government initiatives is very relevant. This is alluded to the fact that the implementation of an e-government

initiative requires complex and large scale changes (Bonham et al., 2001).

However, the unfortunate issue is the fact that some government officials deem e-government as a challenge and threat to their position, power and viability and therefore become resistant to the idea of online transactions (Ebrahim et al., 2003; Sanchez et al., 2003). This lack of support from politicians and high level bureaucrats poses a challenge for e-government and its sustainability, which habitually leads to underdeveloped e-government platforms (Schwester, 2009). In Ghana, most public institutions like Birth and Death Registry, Passport Office, Driver and Vehicle License Authority have put their service online through the eservice portal, some bureaucrats still prefer to have applicants face-face as a result of the illegal money they get in the name of Fast-tracking application processes for them.

There is therefore the need to further put policies that will deter these bureaucrats from engaging in these illegal acts in order to improve e-government services to citizens in Ghana.

3.3 Socio-economic conditions

In adopting e-governance in Ghana, there is the need for policy makers to take into consideration the literacy levels of officials in public sector institutions and their ability to create citizens awareness on the implementation of the e-government. In this regard, in country like Ghana where the adult illiteracy rate as at January 2017 was 23.33% according to UNESCO. It is obvious that initiatives such as this policy implementation will not get the necessary attention and hence most citizens are not embracing such policies due to the fact that they have no in depth understanding of the prospects of the initiative, hence becoming a barrier.

According to Transparency International, countries like Ghana was the second worst decliner in the 2016 Corruption Perceptions Index in the region, the dissatisfaction of citizens with the government's corruption record was reflected in their voting at the polls. The poverty rate of the country is a serious menace to reckon with. Even though efforts have been made to reduce it, it is still a matter of concern and deliberations on how policy makers can address it are still ongoing. This together with the illiteracy and language barrier are significant issues that pose a challenge.

Moreover, ICT and technological based courses or disciplines will be better initiated in cultures with mechanistic view of the world (Ojo, 1996). Most cultures are of the view that the implementation of e-government have the higher possibility of affecting some aspects of their values and norms hence such societies consider the initiative as a threat and thereby they feel reluctant to embrace the initiative. They have the belief that it will restructure or affect the patterns of individual moral behavior and their norms. Most societies also feel reluctant due to the fact that the future will have uncertainties and for this reason will affect the successful implementation of e-governance initiative.

3.4 Human resource

An analysis of awareness for training and capacity building, which are the two dominant themes under the Human resource aspects, reveals that the lack of ICT skills in the public sector is a major challenge for e-government initiatives (Ndou, 2004). Some workers complained that with few of the training programs available for the line-staff, the superior staff whose line of duty is not directly in line with the job takes over because of the allowance involved.

This is the case especially in developing countries (Ghana inclusive) where the lack of qualified staff is chronic and there are inadequate human resources training (UNPAN and ASPA, 2001). Although some governments may have IT staffs, according to Ebrahim and Irani (2005: 604), "most of their training may not equip them to program industry-strength web-enabled applications". Heeks (2002:102) asserts that the factors influencing the success of ICT implementation tend to be "situation-specific" or contingent. Heeks goes further to argue that, with the introduction of technology, there is a danger of lack of fit between the "tool" and the "task", a "design-actuality gap". Furthermore, according to Heeks (2002), there is a 20%-25% failure rate among ICT installation attempts in developing countries, failures attributed to technology planners failing to account for user expectations or, as Andrew and Petkov (2003: 83) put it, overlooking social context. This highlights the challenge posed by human factors to the implementation of e-government initiatives.

3.5 Financial resources

Under this theme, the most relevant factor found here are the sources of funding and cost for e-government services implementation and sustenance respectively. In Ghana, privately owned

network companies are the key providers of internet services at a higher cost. This Internet cost, cost of e-government services amongst other financial difficulties poses a major challenge to the successful implementation of e-government initiatives in Ghana. Ebrahim and Irani (2005) noted that public organizations are mainly funded by the central government, “making it hard to control, and sometimes comes and goes in cycles of ‘east and famine’ that make it difficult to plan sustainable IT initiative such as e-government” (Heeks, 1999). With the current global economic challenges of which Ghana is inclusive, the untimely release of allocated budget for Ministries and Departments significantly affects e-government implementation and maintenance initiatives (Mensah, 2016). This factor is further supported by Norris et al. (2001) as cited (Ebrahim and Irani, 2005) that in a results of an e-government survey that was conducted in 2000 in the USA it was evident that the main barrier to the adoption/implementation of an e-government initiative for most public sector organization was lack of financial resources.

It is therefore clear that for e-government to be successful in Ghana there is the need for a reliable source of funding for such initiatives.

3.6 Organizational aspects

Under this theme, leadership and change management were found to be very relevant to e-government development. Some government Ministries and Departments and some private organization in the e-government processes are not fully and effectively committed to the values and vision of e-government in Ghana. The government and private agencies involved view the e-government initiative as a threat to their operations due to some corrupt practices that would be exposed by e-government applications, the agencies therefore view this as a threat to their viability and power, making them reluctant to promote the true objectives of e-government (Mensah, 2016; Heeks, R. 2002; Kaaya J, 2004).

This issue is therefore one of the key challenges for the successful implementation of e-government initiatives as, according to Heeks (2002), Heeks further noted that e-government initiatives in Africa have met with total or partial failure because of the “people” factor. It is therefore evident that with such lack of organizational vision by the agencies involved in Ghana, it would certainly pose as a challenge to the successful implementation of e-government initiatives.

Sharma and Gupta noted that there is need for organizational skills and effective communication in order to maintain the values, visions and values of all stakeholders in an e-government initiative (Sharma and Gupta, 2003). This means that government agencies as well as private organization engaged in e-government processes need some level of organizational skills and effective communication in order to maintain the values, visions of all stakeholders in an e-government initiative.

4 Conclusion and recommendations

From the above findings, the study makes some recommendations which are relevant for policy making regarding the challenges of implementation of E-government. The study made some recommendations that will help ensure successful implementation and these includes:

— Budget allocation through an endorsement by the legislative body towards the provision of infrastructure, Government (public policy makers) should take the necessary steps towards the expansion and the furnishing of the existing ICT infrastructure including various ICT departments of public institution

— Empowering the human resource base through line-staff training. Government again should intensify the awareness the initiative on its intention to digitalization of the Ghanaian public sector. The awareness creation should also include the expectations and the responsibilities of public servants in their operation of e-government solutions. Further, the awareness creation should aim at also getting the citizenry involved in appreciating the benefits of E-government offers.

— Leaders in governance or political leaders should be bind to the course of appreciating and understanding the benefits associated with e-government initiatives and also perceived to be willing to provide direction and support. This would also involve greater commitment on the part of public servants as well as citizens or users towards the full embracement and acceptance of e-government

projects.

In view of the fact that this research is based on literature review and interviews of certain government stake holders, there could be a possibility that some papers that might have been equally useful have been omitted. This does not however devalue the findings of this paper. The results provide a picture of what the situation actually looks like in Ghana and most African countries at large. However, there still remains room for more in-depth analysis to determine Challenges of e-government implementation in Ghana using different research methods.

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Modelling of Yield Curve for Ghana Bond Market

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Abstract The bond market is an important part of the financial market of Ghana. Even though zero-coupon yield curve is an important tool used in secondary bond markets, there is no observed zero-coupon yield curve in the secondary bond market of Ghana. The purpose of this paper is to model the zero coupon yield curve for Ghana Government bond market. We extract the yields from the daily bond price data available on the secondary bond market, and then use piecewise cubic hermite interpolation to fit the yield curve. The bond price data is obtained from the Central Securities Depository of Ghana. The study seeks to solve the problem of non-availability of observed zero-coupon yield curve in the secondary bond market of Ghana. This work also serves as a fundamental preparation for developing a database of daily yield curves for the Government bonds.

Key words Yield curve, Piecewise cubic hermite, Term structure, Interest rates, Ghana bond market

1 Introduction

The bond market is an important aspect of the financial market of Ghana due to the fact that it is used by the Government to raise funds for infrastructural development; and is also used by the Bank of Ghana to undertake open market operations. All Ghana Government bonds (Government bonds) are traded on the secondary market, after issued by Bank of Ghana in the primary market. Whenever the Bank of Ghana issues Government bonds, yield curves are produced to reflect the term structure of interest rates on the day of issue of the securities. However, when the debt securities are subsequently traded on the secondary market, no zero-coupon yield curve is available to track the movement of interest rates in the secondary bond market.

There are many reasons why zero-coupon yield curve is needed in the secondary bond market of Ghana. Government bond yield curve would serve as a benchmark for pricing corporate bonds and other financial assets, including derivatives. The financial market of Ghana, is still at the developing stage, even though frantic efforts are being made by the government and other stakeholders. For instance, there are no active markets for derivative instruments; the corporate bond market is not active; there is no active market for asset-backed securities. The bond market of Ghana is largely made up of the sovereign securities. Corporate bodies prefer financing their operations with equity and bank loans, rather than issuing bonds. As of June 2017, only seven corporate bonds were listed on the Ghana Fixed Income Market. We think one possible reason why corporate bodies are unenthusiastic to issue bonds is the nonexistence of benchmark yield curve in the bond market of Ghana. Government bond yield curve is supposed to be the benchmark yield curve for the fixed income market of Ghana. Based on the Government bond yield curve, the corporate bonds could be priced. Appropriate credit spread or default risk premium would be added to the Government yield to obtain the required yield for the corporate bonds. In fact, the Government yield curve is needed to price many other financial instruments.

Furthermore, the yield curve is believed to reflect the expectations and assumptions of market participants concerning the macro-economy (Diebold et al., 2006). Every market participant in Ghana, especially the investors, would definitely be interested in knowing the nature and the dynamics of the yield curves, in order to make certain trade decisions. The Bank of Ghana also needs to keep track of the movements in the yield curve to know market sentiments about the macroeconomic environment. In a Bank of Ghana working paper, (Dzigbede and Ofori, 2004), it was recommended that a research should be focused on building a framework to model the yield curve for the Government debt securities. Since then, no other work has been done in relation to developing yield curve for Government debt securities. Our paper therefore seeks to develop a framework for developing the

yield curve for the Government debt securities. This paper produces the zero coupon yields, forward yields, par yields and discount yields in the secondary market. This work provides the background preparation towards the development of a database of daily yield curves for Government bonds.

The remaining of the paper is organised as follows. Section 2 reviews the theoretical literature about yield curve modelling. Section 3 presents an overview of zero coupon yield estimation methods by some central banks. Section 4 discusses the methodology and data used for this work. Section 5 discusses the results. Section 6 provides conclusion and recommendation.

2 Review of theoretical literature

The yield curve is the graphical presentation of the term structure of interest rates. The term structure of interest rates shows the relationship between the yield and the term to maturity of bonds. The bonds must be homogeneous and should differ only with regards to term to maturity. Generally, modelling of yield curve may take one of two forms: the static yield curve modelling and the dynamic yield curve modelling. The static yield curve modelling has to do with the fitting of a suitable curve (model) to reflect the term structure of interest rates on a particular date. The dynamic yield curve modelling deals with the evolution of the yield curve as a dynamic system through time (Bolder, 2015). The former is more fundamental relative to the later. However, the two forms of yield curve modelling are not necessarily independent. Some models can simultaneously touch on both aspects. Example is the Diebold-Li model, also known as the Dynamic Nelson-Siegel model (Diebold and Li, 2006; Diebold et al., 2008). Nevertheless, it is theoretically clearer and practically more expedient to think of the two forms of yield curve modelling disjointedly (Bolder, 2015). The two forms of yield curve modelling require fairly different mathematical techniques. In this paper, our focus is on the static yield curve modelling for Ghana Government bonds.

There are two main methods of static yield curve modelling. These are the parametric method and the spline-based method. Parametric method involves the specification of a single-piece function defined over the entire maturity range. Model parameters are determined through minimization of squared deviation of theoretical prices from observed prices. A popular example of the parametric models is the Nelson-Siegel model (Nelson and Siegel, 1987). This model was later extended and modified by Svensson (1994). This extended form is sometimes referred to as Nelson-Siegel-Svensson model.

A spline is a piecewise polynomial function, consisting of several individual polynomial segments that are joined together at knot points. Instead of using a single functional form over the entire maturity range (as in the case of the parametric methods), the spline based method of yield curve modelling employs the use of piecewise polynomial to fit the yield curve over the maturity range. To ensure continuity and smoothness, the splines join at the knot points and must be differentiable at the knot points. There is a wide range of spline based methods of fitting the yield curve. McCulloch used regression cubic splines to extract the discount functions (McCulloch, 1971, 1975). His method is believed to be good at accurately pricing bonds both out of sample and in-sample (Bliss, 1997). Even though the cubic spline method proposed by McCulloch worked well, it suffered a set-back. The forward rates produced by the method often oscillate (Waggoner, 1997). Practitioners do believe that, although oscillation can't be totally avoided, it should be minimal. To correct or mitigate the oscillation, Fisher et al. (1995) proposed a cubic spline with roughness penalty to extract the forward rates. The roughness penalty stiffens the spline to reduce the oscillation. However, this method also reduces the fit (Waggoner, 1997). As a result of reduction in the fit, this method tends to misprice short term securities (Bliss, 1997). Based on the method by Fisher et al., Waggoner developed a modified cubic spline with variable roughness penalty. He used a small roughness penalty on the short end and a larger roughness penalty on the long end of the term structure. Apart from the cubic spline methods, there are other forms of spline-based approaches to modelling the yield curve. These include the exponential spline by Vasicek and Fong (1982); B-Spline methodology introduced by Shea (1984) and Steeley (1991); smoothing spline used by (Fisher et al., (1995); penalized spline approach by Jarrow et al., (2004); monotone convex spline by Hagan and West (2006); and monotone preserving spline by Johannesburg Stock Exchange, JSE (2012) and du Preez and Maré (2013).

Since there is no model structure behind the spline-based methods, they lack financial and economic interpretation of a model. Spline methods are also not parsimonious. The choice of a knot point location and the number of knot points to use could be a challenge. Instability in fitting the interpolating curves on the extremes of the maturity line, and great sensibility to outliers, might make the curve unstable. However, it is important to note that, no particular approach to yield curve modelling is devoid of problems or challenges. Even though some scholars have identified some problems with the spline-based methods, they are still considered to be reasonable and recommendable. James and Webber for instance think that the cubic spline process presents no conceptual problems (James & Webber, 2000). According to them, the spline methods produce approximation of the market discount function. Choudhry also thinks that although the cubic spline approach can lead to unrealistic shapes for the forward curve (due to its divergence at the long end), it is an accessible method and one that gives reasonable accuracy for the zero coupon yield curve (Choudhry, 2004a).

A big question is: “what is the best approach to yield curve modelling?” As rightly put by Bolder, “there is no single accepted approach to the construction of the yield curve. Instead, there is a wide range of methods varying dramatically in complexity” (Bolder, 2015). No one method of constructing yield curve has been accepted worldwide to be the best. Similarly, no one method of yield curve can fit perfectly well for all situations and markets. A choice of a particular method may depend upon the intended use of the curve. That’s, whether it’s for pricing of securities, valuation of portfolio or for macro-economic analysis. The choice of a particular method may also depend on one’s preference for either complexity or parsimony. Furthermore, the choice could also depend on the liquidity of the market and availability of required market data as input for the model. Considering all these determinants of choice of yield curve methods, market practitioners settle on methods that give trade-off between ease of implementation and accuracy.

A useful yield curve model should also strike a balance between goodness of fit and smoothness. A greater amount of fit is required if the curve is meant for pricing of securities. However, some amount of smoothness is still required because it makes little sense if there exists a large difference between the price of a 3-year bond and that of a 3-year-and-one-week bond. Overfitting can result in this misleading scenario. Also, a greater amount of smoothness is required if the curve is used for economic analysis by the central bank. However, too much smoothness could cause vital information to be lost from the curve. There is the need therefore to adopt a yield curve that strikes a balance between goodness of fit and smoothness. It is also recommended for institutions to adopt more than one yield curve, depending on the tasks the curves are meant for (Bolder & Gusba, 2002).

3 Central banks and zero coupon yield estimation

Due to the importance of the zero coupon yield curve, the Bank for International Settlements (BIS) has recommended that central banks adopt methods for estimating zero coupon yields. After a meeting held in 1996 concerning the estimation of zero coupon yield, many central banks have been reporting their zero coupon yield estimates, as well as the methods of estimation, to the BIS (BIS, 2005). However, to the best of our knowledge, many African central banks, including the Bank of Ghana are yet to meet such requirement or recommendation. Table 1 shows the methods used by some central banks to estimate the zero coupon yield curves.

Table 1 Yield estimation methods by some central banks

Central bank	Method of estimation
Belgium	Nelson-Siegel or Nelson-Siegel- Svensson
Canada	Merrill Lynch Exponential Spline
China	Hermite Interpolation Method
Finland	Nelson-Siegel
France	Nelson-Siegel or Nelson-Siegel-Svensson
Germany	Nelson-Siegel- Svensson
Italy	Nelson-Siegel
Japan	Smoothing Spline Interpolation
Norway	Nelson-Siegel- Svensson

South Africa	Monotone Preserving Interpolation
Spain	Nelson-Siegel or Nelson-Siegel-Svensson
Sweden	Smoothing Splines and Nelson-Siegel-Svensson
Switzerland	Nelson-Siegel-Svensson
United Kingdom	Variable Roughness Penalty
United States	Quasi-Cubic Hermite Spline

(Source: BIS (2005) and Websites of Central Banks)

As shown in the table, most central banks use either a variation of the Nelson-Seigel-Svensson model or a form of spline-based methods. It is also interesting to note that many African central banks are yet to adopt methods of estimating the zero coupon yields. Nevertheless, there are some few researches going on to propose yield curve modelling methods for the various African central banks. For instance, Oshalarin used piecewise cubic spline method to model the Nigerian zero-coupon yield curve for the Central Bank of Nigeria (Oshalarin, 2014). In Kenya, Cannon Asset Managers (CAM) used logarithmic linear interpolation to model the yield curve for the Nairobi Securities Exchange (CAM, 2011). The data were supplied by the Central Bank of Kenya. Muthoni et al. constructed the nominal yield curve for the Nairobi Securities Exchange with a form of monotone preserving method (Muthoni et al., 2015). In South Africa, remarkable advancement is already made in the field of yield curve modelling. The monotone convex and the monotone preserving are popular methods of yield curve modelling in South African bond market. The South African Reserve Bank uses the monotone preserving method for yield estimation (Hagan and West 2006; Johannesburg Stock Exchange 2012; du Preez and Maré, 2013). Our work is the first work to estimate zero coupon yield curve for the Ghana Government bonds.

4 Methodology and data

We do the modelling in two stages with simple methodologies. We first extract the yields from the bond price data; secondly, we do interpolation to obtain relevant yield data points. We extract the yield to maturity from the observed bond prices, then use bootstrapping to extract the implied zero coupon yields. From the zero coupon yields, we obtain the forward yields, the discount yields and the par yields. We then use Piecewise Cubic Hermite functions to do the interpolation. Because the bond market of Ghana is not yet developed, bonds traded on the secondary market are not in large volumes. Significant portions of the maturity spectrum have no bonds maturing on those dates. There are large spaces between the yield data points along the maturity spectrum. So we need a curve fitting and interpolation method that would preserve monotonicity of the curve in-between wide yield data points along the maturity spectrum; and is also continuously differentiable at the data points. Other forms of interpolation could either overshoot the curve segments at the wide spaces between the yield data points; or might not be continuously differentiable at the data points. We think the shape preserving form of curve fitting is most appropriate for Ghana bond market.

The Ghana Government domestic bonds are 91-day bills, 182-day bills, 1-year notes, 2-year notes, 3-year bonds, 5-year bonds, 7-year bonds, 10-year bonds and 15-year bonds. Ghana issued its debut seven-year domestic bond in August 2013. Since then, the seven-year bonds have been the longest maturity domestic Government bonds until November 2016 when the first ten-year domestic bond was issued. In March 2017, the first 15-year domestic bond was issued. The Bank of Ghana issues the bonds on behalf of Government. The 91-day and 182-day bills are issued weekly on every Friday. The Bank of Ghana introduced the weekly treasury bills tender in 1987. The 1-year notes and the 2-year notes are usually issued fortnightly and monthly respectively. The longer-maturity bonds are issued occasionally. Generally, the Government securities are issued for the financing of Government cash shortfalls and to redeem maturing securities. The securities are also issued for the development of the financial market, by providing risk-free benchmark securities as reference for the issue of debt instruments in the money and capital market by corporates and non-government institutions (Bank of Ghana, 2011). After issue in the primary market, the bonds trade on the Ghana Fixed Income Market. The Ghana Fixed Income Market is a section of the Ghana Stock Exchange where fixed income securities are traded. Relevant information about the bonds traded on each day are accessible at the

Ghana Stock Exchange and the Central Securities Depository, Ghana (CSD). Our data are obtained from the website of the CSD (www.csd.com.gh). The CSD provides information such as the bond prices, maturity dates, and coupon rates. We extract the yield to maturity, the zero coupon yield, the par yield, the forward yield, and the discount yield from the bond data. We then use piecewise cubic hermite interpolation to fit the yield curve.

4.1 Extraction of yields

The computations at this section are based on, and adapted from works in the field of yield curve modelling and fixed income securities analytics (Svensson, 1994; Choudhry, 2001, 2004b; Jarrow, 2002; Tuckman, 2002; Bolder and Gusba, 2002; Stander, 2005; Bolder, 2015).

Assume that $\delta(t, T)$ is the price at time t , of a 1 Ghana cedi (Ghanaian currency) cash flow expected at time T , where $t < T$. We say $T - t$ is the term to maturity of the zero coupon bond with price $\delta(t, T)$.

$$\delta(t, T) = 1 * (1 + R(t, T))^{-(T-t)} \quad (1)$$

$\delta(t, T)$ is the present value of 1 Ghana cedi to be received on a future date. It is also known as the discount factor.

$R(t, T)$ is the spot rate. For zero coupon bonds, the spot rates are same as the yield to maturity.

$$\delta(t, T)^{(-1)} = (1 + R(t, T))^{(T-t)} \quad (2)$$

$$R(t, T) = \delta(t, T)^{-\left(\frac{1}{T-t}\right)} - 1 \quad (3)$$

It follows that, given the discount factor of a zero coupon bond, one can easily derive the spot rates. To determine the price $P(t, T)$ at time t , of any amount of cash flow F to be received on a future date T , $\forall t < T$,

$$P(t, T) = F * (1 + R(t, T))^{-(T-t)} \quad (4)$$

$$P(t, T) = F * \delta(t, T) \quad (5)$$

$$\delta(t, T) = \frac{P(t, T)}{F} \quad (6)$$

From the above, given the cash flows and discount factors of zero coupon bonds, we can estimate the prices of the bonds. Similarly, given the cash flows and the prices, we can determine the discount factors, and then the spot rates. To obtain the discount factors to construct the yield curve for zero coupon bonds on a particular date, the relationship could be expressed in matrix form

$$\begin{bmatrix} C_{1,1} & C_{1,2} & \dots & C_{1,n} \\ C_{2,1} & C_{2,2} & \dots & C_{2,n} \\ \vdots & \vdots & \ddots & \vdots \\ C_{m,1} & C_{m,2} & \dots & C_{m,n} \end{bmatrix} \begin{bmatrix} d_1 \\ d_2 \\ \vdots \\ d_n \end{bmatrix} = \begin{bmatrix} P_1 \\ P_2 \\ \vdots \\ P_m \end{bmatrix} \quad (7)$$

$C_{i,j}$ is a matrix of cash flows of zero coupon bonds. Each row represents a particular bond while each column represents a maturity date of a bond. The (i, j) th element of the matrix represents the amount of cash flow bond i pays at time j . Vector d represents the discount factors for the various maturity dates of the bonds. Vector P represents the prices of the bonds. The discount factors can be obtained by rearranging the matrix equation.

Expression (1) gives $\delta(t, T)$ using discrete compounding. With application of continuous compounding, we have:

$$\delta(t, T) = e^{-R(t, T)(T-t)} \quad (8)$$

$$R(t, T) = \frac{-\ln \delta(t, T)}{T-t} \quad (9)$$

The term structure of interest rates is the set of zero coupon yields at time t for all bonds ranging in maturity for $(t, t + 1)$ to $(t, t + m)$ where bonds have maturity of $(0, 1, 2, \dots, m)$. The yield curve is a

plot of the set of yields for $R(t, t + 1)$ to $R(t, t + m)$ against m , at time t .

From the zero coupon rates, we can obtain the forward rates. We can find expression for the forward rates $f(t, S, T)$ where $t < S < T$:

$$(1 + R(t, T))^{(T-t)} = (1 + R(t, S))^{(S-t)} * (1 + f(t, S, T))^{(T-S)} \quad (10)$$

$$f(t, S, T) = \left[\frac{(1 + R(t, T))^{T-t}}{(1 + R(t, S))^{S-t}} \right]^{\frac{1}{T-S}} - 1 \quad (11)$$

Note that from expression (1)

$$\delta(t, T) = (1 + R(t, T))^{-(T-t)}$$

And similarly,

$$\delta(t, S) = (1 + R(t, S))^{-(S-t)}$$

$$\delta(t, S) = (1 + R(t, S))^{-(S-t)}$$

Hence,

$$f(t, S, T) = \frac{\delta(t, S)}{\delta(t, T)} - 1 \quad (12)$$

It is relatively straight forward to construct the yield curve for zero coupon bonds. In most fixed income markets, it's not common to see active trading in zero coupon bonds. It is therefore not common to develop yield curve solely from zero coupon bonds. Usually, therefore, *implied zero coupon rates* are extracted from the coupon bonds to develop *implied zero coupon yield curves*. Ghana is not an exception: all the bonds traded on the Ghana Fixed Income Market are coupon bonds. Meanwhile, a coupon bond can be considered as a collection of several zero coupon bonds. Coupon bonds make periodic coupon payments in addition to the face value payment on the date of maturity of the bond. To develop the zero coupon yield curve, we need to extract implied zero coupon yields from the coupon bonds.

We can write expression relating the price and the periodic payments as follows:

$$P(t, t_m) = \sum_{i=1}^m \frac{C * F}{(1 + R(t, t_i))^{t_i-t}} + \frac{F}{(1 + R(t, t_m))^{t_m-t}} \quad (13)$$

$P(t, t_m)$ = the Price of the coupon bond at time t , maturing at time

F = the face value or the par value of the bond

C = the coupon rate of the bond

Expression (13) can be simplified as:

$$P(t, t_m) = \sum_{i=1}^m C * F * \delta(t, t_i) + F * \delta(t, t_m) \quad (14)$$

Expression (14) can be likened to expression (5).

For the coupon bonds, which have maturity of one year and longer, the yield to maturity is the yield which makes the present value of all the coupon payments and the principal payment equal to the price of the bond. The coupon bond price can be expressed in terms of the yield to maturity as follows:

$$P = \frac{C}{\left(1 + \frac{Y}{2}\right)^i} + \frac{C}{\left(1 + \frac{Y}{2}\right)^{1+i}} + \frac{C}{\left(1 + \frac{Y}{2}\right)^{2+i}} + \dots + \frac{C}{\left(1 + \frac{Y}{2}\right)^{n-1+i}} + \frac{F}{\left(1 + \frac{Y}{2}\right)^{n-1+i}} \quad (15)$$

Where P = full price of the bond

C = annual coupon payment

Y = yield to maturity with semi-annual compounding

F = face value of the coupon bond

$$i = \frac{\text{Days from settlement date to next coupon date}}{\text{Days in the coupon payment period}}$$

Where there are no accrued interest payments, the coupon bond price becomes:

$$P = \sum_{n=1}^N \frac{\frac{C}{2}}{\left(1 + \frac{Y}{2}\right)^n} + \frac{F}{\left(1 + \frac{Y}{2}\right)^N} \quad (16)$$

N = number of years to maturity multiplied by 2, for semi-annual compounding.

Expression (15) can be simplified as follows: given that the first coupon is paid in a fraction i of the next coupon payment, and given also that there are M semi-annual coupon payments afterwards, the full price becomes:

$$P = \frac{C}{2} \sum_{t=i}^M \frac{1}{\left(1 + \frac{Y}{2}\right)^{t+i}} + \frac{F}{\left(1 + \frac{Y}{2}\right)^{M+i}} \quad (17)$$

The settlement period in Ghana is $T + 2$ in the secondary market and $T + 1$ in the primary market. It is however allowed for secondary market participants to settle at $T + 1$ and $T + 0$. For the purpose of this work, we stick to the standard $T + 2$ for our computations. The day count convention adopted in Ghana for all fixed income securities is *Actual/364*.

One of the key challenges in analyzing and constructing yield curve has to do with data reported in different formats. The treasury bills are reported using discount rates while the notes and bonds are reported using their prices which are percentage of the face values. We have to convert the treasury bill data into format equivalent to bond format. Otherwise, the analysis would be misleading. We extract the bond equivalent yield from the discount rates provided. The relation between the bond equivalent yield and the discount rates are provided mathematically below.

$$ir = \left(\frac{F}{P} - 1\right) * \frac{364}{t} \quad (18)$$

$$dr = \left(1 - \frac{P}{F}\right) * \frac{364}{t} \quad (19)$$

ir = interest rate (bond equivalent yield)

dr = discount rate

P = Price

F = face value

T = time to maturity

Day count convention in Ghana is *Actual/364*

$$P = F * \left(\frac{1}{1 + ir * \frac{t}{364}}\right) = F * \left(1 - dr * \frac{t}{364}\right)$$

$$ir = \left[\frac{1}{\left(1 - \frac{dr * t}{364}\right)} - 1\right] * \frac{364}{t} = \frac{364 * dr}{364 - dr * t} = \frac{dr}{\left(1 - dr * \frac{t}{364}\right)}$$

$$dr = \frac{364 * ir}{364 + ir * t} \quad (20)$$

$$= \frac{ir}{\left(1 + ir * \frac{t}{364}\right)} \quad (21)$$

$$\text{Effective Annual Rate} = \left(1 + \frac{ir}{\frac{364}{t}}\right)^{\frac{364}{t}} - 1 \quad (22)$$

4.2 Bootstrapping

The bootstrapping to obtain the spot rates is described mathematically below.

Assume the bond price to be:

$$P_n = \frac{\frac{C}{2}}{\left(1 + \frac{R_1}{2}\right)} + \frac{\frac{C}{2}}{\left(1 + \frac{R_2}{2}\right)^2} + \frac{\frac{C}{2}}{\left(1 + \frac{R_3}{2}\right)^3} + \dots + \frac{\frac{C}{2} + F}{\left(1 + \frac{R_n}{2}\right)^n} \quad (23)$$

P_n = full price of the bond with n periods to maturity

C = annual coupon payments

R_n = zero coupon yield

F = face value of bond

Expression (23) can also be written as

$$P_n = \frac{C}{2} \sum_{t=1}^{n-1} \frac{1}{\left(1 + \frac{R_t}{2}\right)^t} + \frac{\frac{C}{2} + F}{\left(1 + \frac{R_n}{2}\right)^n} \quad (24)$$

$R_t \forall t = \{1, 2, 3, \dots, n-1\}$ is the spot rate already known.

$$R_n = \left[\frac{\frac{c}{2} + F}{P_n - \frac{C}{2} \sum_{t=1}^{n-1} \frac{1}{\left(1 + \frac{R_t}{2}\right)^t}} \right]^{\frac{1}{n}} - 1 \quad (25)$$

4.3 Forward rates

We then obtain forward yield from the zero coupon yield. The bond price is written in terms of the forward rates as follows:

$$P = \frac{\frac{C}{2}}{\left(1 + \frac{{}_0f_1}{2}\right)} + \frac{\frac{C}{2}}{\left(1 + \frac{{}_0f_1}{2}\right)\left(1 + \frac{{}_1f_2}{2}\right)} + \dots + \frac{\frac{F}{2}}{\left(1 + \frac{{}_0f_1}{2}\right) \dots \left(1 + \frac{{}_{N-1}f_N}{2}\right)} \quad (26)$$

$$P = \sum_{n=1}^N \frac{\frac{C}{2}}{\prod_{i=1}^n \left(1 + \frac{{}_{i-1}f_i}{2}\right)} + \frac{F}{\prod_{i=1}^N \left(1 + \frac{{}_{i-1}f_i}{2}\right)} \quad (27)$$

${}_{n-1}f_n$ is the forward rate of the bond maturing in period N

We then have expression for the zero coupon yield and the forward yields as follows:

$$\left(1 + R_n\right)^n = \left(1 + {}_0f_1\right)\left(1 + {}_1f_2\right) \dots \left(1 + {}_{n-1}f_n\right) \quad (28)$$

$$(1 + {}_{n-1}f_n) = \frac{(1 + R_n)^n}{(1 + R_{n-1})^{n-1}} \quad (29)$$

$${}_{n-1}f_n = \frac{(1 + R_n)^n}{(1 + R_{n-1})^{n-1}} - 1 \quad (30)$$

4.4 Curve fitting and interpolation

Numerical methods are required for the curve fitting and interpolation. For this work, we use the piecewise cubic hermite interpolation method for the yield curve fitting. We want to obtain a trade-off between smoothness and goodness of fit. The cubic hermite curve has first continuous derivative at the knot points. The method ensures continuity of the curves at the knot points while preserving monotonicity. We provide a brief mathematical description of the method. Detailed computations could be accessed in numerical texts (e.g. Lancaster and Salkauskas, 1986; Kahaner et al., 1989; de Boor, 2001).

Given data point

$$(X_i, f(X_i), f'(X_i)), \forall i = 0, 1, \dots, m$$

Such that

$$X_0 < X_1 < \dots < X_m$$

Find a function S , such that on each subinterval (X_i, X_{i+1}) , S is a cubic polynomial.

The given function f , is interpolated by S , subject to the following conditions:

$$S(X_i) = f(X_i)$$

And

$$S'(X_i) = f'(X_i)$$

Given

$$S(X) = a + b(X - X_i) + c(X - X_i)^2 + d(X - X_i)^3$$

$$\text{For each } (X_i, X_{i+1}), \text{ Let } h = X_{i+1} - X_i$$

We have:

$$a = f(X_i)$$

$$b = f'(X_i)$$

$$c = \frac{3}{h^3} [f(X_{i+1}) - f(X_i)] - \frac{1}{h} [f'(X_{i+1}) + 2f'(X_i)]$$

$$d = \frac{1}{h^2} [f'(X_{i+1}) + f'(X_i)] - \frac{2}{h^3} [f(X_{i+1}) - f(X_i)]$$

Each cubic polynomial produces a curve. These curves join smoothly to produce the entire yield curve.

5 Results and discussion

Table 2 shows the zero coupon yields, par yields, forward yields and discount yields as of 19th December 2016. The term to maturity ranges from six months to ten years. Table 3 shows the zero coupon yields for some selected dates. As stated earlier, domestic bonds with the longest tenor were the seven-year bonds until ten-year bonds were issued in November 2016. So the maturity spectrum ranges from minimum of 91 days to maximum of 7 years in some cases and 10 years in other cases, depending on the date. This work excludes the 15-year bond because it is not yet trading on the secondary market. Figures 1-9 show the yield curves of some selected dates. We observe that the curves are approximately flat. They are neither normal nor inverted. This might require further study to investigate the dynamics or behaviour of bond yields in Ghana. We also observe that, the yields around the one-year and two-year maturity periods are sometimes either very high or very low. Upon investigation, we find that the one-year and two-year notes sometimes sell at either very high premium or very high discount. These result in very low yields and very high yields respectively around those

maturity spectra. For instance, on 15th February 2016, some notes traded at prices as low as 94.3567 per cent of 100. Similarly, on 21st November 2016, some notes traded at prices as high as 102.3623 per cent of 100. These deviate significantly from the general price level of other bonds which is 100 plus or minus few basis points. A further study is recommended to ascertain the reason for high volatility in prices of the one-year and two-year notes. We believe the yield curves we have produced from the bond data reflect the actual interest rate environment in the Ghana bond market.

Table 2 Zero coupon yield, par yield, forward yield and discount yield on 19th December 2016

Term to maturity (years)	Zero coupon yield	Par yield	Forward yield	Discount yield
0.5	0.1915	0.1915	0.1187	0.9144
1.0	0.1922	0.1924	0.1682	0.8423
1.5	0.2012	0.2014	0.2492	0.7488
2.0	0.2250	0.2209	0.2986	0.6558
2.5	0.1889	0.1919	0.1484	0.6390
3.0	0.1880	0.1908	0.1822	0.5877
3.5	0.1810	0.1851	0.1427	0.5451
4.0	0.1799	0.1843	0.1703	0.5024
4.5	0.1804	0.1843	0.1838	0.4591
5.0	0.1809	0.1844	0.1849	0.4244
5.5	0.1813	0.1844	0.1855	0.3907
6.0	0.1817	0.1845	0.1861	0.3580
6.5	0.1821	0.1845	0.1865	0.3267
7.0	0.1825	0.1846	0.1868	0.2970
7.5	0.1828	0.1846	0.1871	0.2694
8.0	0.1832	0.1847	0.1873	0.2440
8.5	0.1835	0.1848	0.1874	0.2213
9.0	0.1838	0.1849	0.1875	0.2017
9.5	0.1841	0.1850	0.1875	0.1853
10.0	0.1843	0.1851	0.1875	0.1726

(Source: Authors' computation)

Table 3 Zero coupon yields some selected trading dates

Term to maturity (years)	Feb 15 2016	Mar 14 2016	Nov 21 2016	Dec 19 2016	Mar 20 2017	Apr 20 2017
0.5	0.2474	0.2449	0.2306	0.1915	0.1655	0.1785
1.0	0.3017	0.2432	0.2189	0.1922	0.1942	0.1582
1.5	0.2463	0.2433	0.1289	0.2012	0.2019	0.2023
2.0	0.2481	0.2475	0.2320	0.2250	0.2194	0.2001
2.5	0.2471	0.2425	0.2058	0.1889	0.2136	0.2018
3.0	0.2547	0.2427	0.2048	0.1880	0.2068	0.2018
3.5	0.2543	0.2427	0.2028	0.1810	0.2078	0.2018
4.0	0.2528	0.2427	0.2006	0.1799	0.2044	0.2016
4.5	0.2490	0.2426	0.1959	0.1804	0.1989	0.2013
5.0	0.2420	0.2424	0.2348	0.1809	0.1948	0.2008
5.5	0.2307	0.2430	0.2345	0.1813	0.1913	0.2001
6.0	0.2142	0.2482	0.2337	0.1817	0.1879	0.1990
6.5	0.1914	0.2615	0.2320	0.1821	0.1847	0.1977
7.0	0.1614	0.2869	0.2290	0.1825	0.1817	0.1960
7.5	-	-	0.2244	0.1828	0.1791	0.1939
8.0	-	-	0.2179	0.1832	0.1768	0.1914
8.5	-	-	0.2091	0.1835	0.1750	0.1884
9.0	-	-	0.1977	0.1838	0.1737	0.1848
9.5	-	-	0.1834	0.1841	0.1730	0.1806
10.0	-	-	0.1657	0.1843	0.1730	0.1758

(Source: Authors' computation)

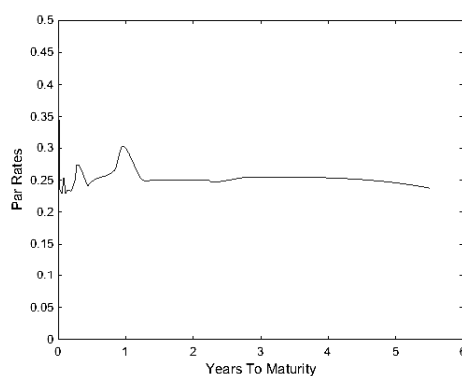
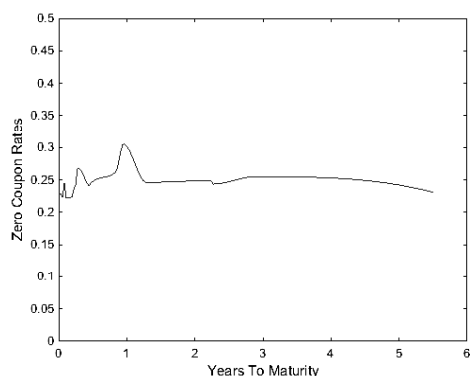


Figure 1 Zero coupon yield curve on 15th February 2016 **Figure 2** Par rates curve on 15th February 2016

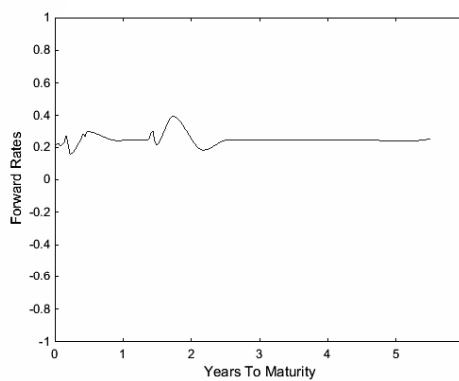
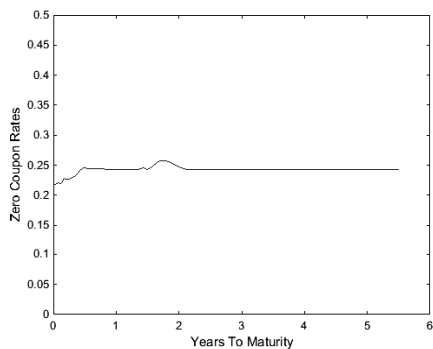


Figure 3 Zero coupon yield curve on 14th March 2016 **Figure 4** Forward yield curve on 14th March 2016

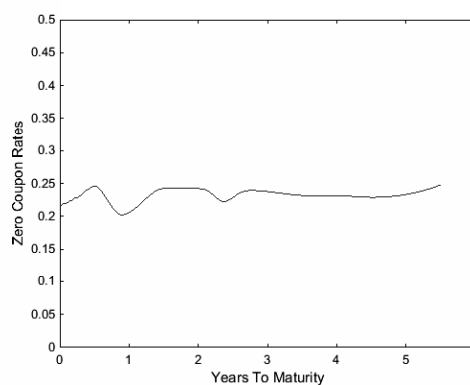
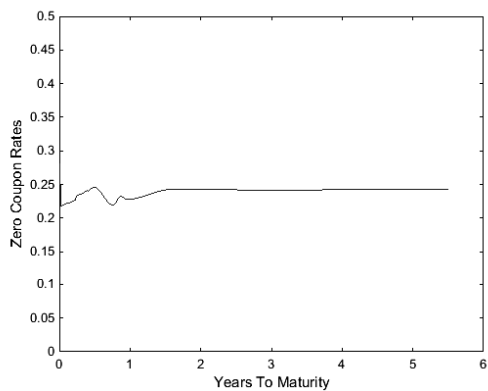


Figure 5 Zero coupon yield curve on 18th July 2016 **Figure 6** Zero coupon yield curve on 22nd August 2016

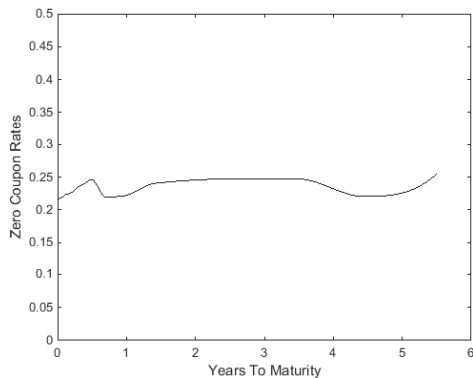


Figure 7 Zero coupon yield curve on 19th September 2016

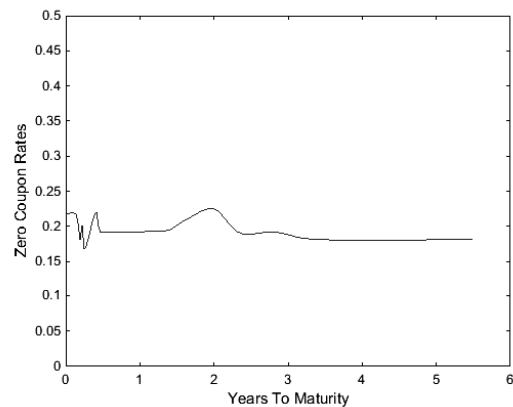


Figure 8 Zero coupon yield curve on 19th December 2016

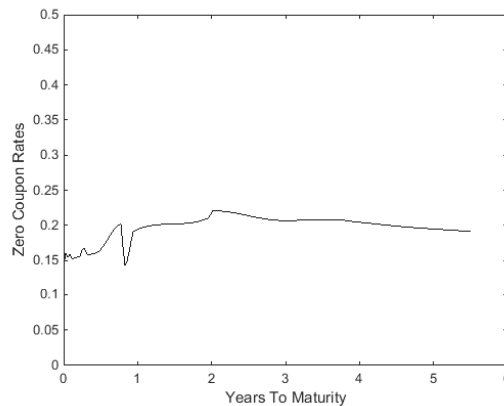


Figure 9 Zero coupon yield curve on 20th March 2017

6 Conclusion and recommendation

We have been able to solve the problem of non-availability of zero coupon yield curve in the Ghana bond market. We have produced a yield curve that can be used as a benchmark in the Ghana bond market; for the pricing of corporate bonds and other relevant financial instruments. These curves could be used for decision making by domestic and international investors and potential investors. The yield curves could also be used by the Bank of Ghana to monitor the expectations in the macroeconomic environment. Our work provides an insight into the level of bond interest rates and the term structure of interest rates in Ghana. Our work would serve as literature for further studies on yield curve in Ghana and Africa. This work provides background for the future establishment of database of daily yield curves. We recommend a study to investigate the dynamic behaviour of the interest rates in Ghana.

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Acknowledgement

We wish to express our profound gratitude to the staff and management of Bank of Ghana; especially the Treasury Department; for all the insightful information given us during the course of this work. We are also indebted to the staff and management of the Ghana Stock Exchange (especially, Ghana Fixed Income Market) and the Central Securities Depository for the necessary information and data given us. Special thanks go to Mr Patrick Smith-Assan of the Treasury Department of Bank of Ghana and Miss Levina Serwah Sackey of the Ghana Fixed Income Market. Any shortfall in the paper is the authors' sole responsibility.

New Managerialism in Higher Learning Institutions: A Case of University of DAR ES SALAAM and University of ZAMBIA

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Abstract This paper aimed at exploring new managerialism in higher learning institutions by focusing on changes on organizational structures. This is contrary to existing literature on transformations taking place in higher learning institutions in developing countries whose focus has been on effects on equity issues and reaction from academic members of staff. Four themes: de-bureaucratization, auditing quality of services, performance appraisals and information technology are used to review what has been going on in terms of adoption of new managerial techniques and methods at the two institutions. From this review this paper argues that while new managerialism in higher learning institutions is capable of improving quality of service and performance, it also has potential of bureaucratizing the organizations. An outcome that is not desirable in new public management models. The paper makes suggestion on how this can be avoided by management and concludes that there is need for more empirical work to examine how organizational structures are unfolding due to many initiatives and efforts aimed at improving quality and performance in higher learning institutions.

Key words Public management, new managerialism, higher learning institutions, bureaucratization, Tanzania, Zambia.

1 Introduction

This paper is based on an understanding that higher learning institutions have also been devising means of improving quality of their services and performance as current public management models are demanding. Specifically they have been adopting new managerialism in order to survive requirements of competitive environments and general reduced funding for the public sector. New managerialism refer to the adoption of management techniques by the public sector associated with the private sector organizations (Jan-Erik Lane, 2000). Historically, New Public Management (NPM) ideas can be considered to have thrived on managerialism doctrine associated with capitalist enterprise in the early industrial societies. NPM entails a shift of stress on process to stress on outputs, from orderly hierarchies to an intently competitive basis for providing public services, from fixed to variable pay, from a uniform and inclusive public service to a variation structure with more emphasis on contract provision (Hood, 1995).

On the other hand key characteristics of new managerialism include erasure of bureaucratic rule, use of markets for service delivery, devising means of auditing quality of services being delivered and monitoring employee performance (Deem and Brehony, 2005). Though it is not the interest of this paper to dwell on the differences between the two concepts, it can be asserted that both approaches are anti-bureaucracy, anti- monopoly, interested in improving performance and quality of services. To this effect in the private sector ideas and practices of managerialism have been advocated for since 1970s while in the public sector there appreciation began in the 1980s (Reilly and Reed, 2010).

Universities all over the world have a traditional role of contributing if not guiding social, economic and political development of their countries. These expectations have been heightened in new environments of competition, scarce resources and search for market-driven knowledge. University of Zambia and University of Dar es salaam have been adopting mechanisms aimed at improving quality of services and performance. For example they have been establishing new positions, colleges, units, centres and coming up with new programmes. Some education legislations have also been amended requiring all higher learning institutions to establish quality assurance mechanisms. The Zambian Higher Education Act No 4 for 2013 makes this provision. Governments have also been very critical on university operations in recent times. At the 46th Graduation for the University of Zambia, the minister of education in a speech read on her behalf pointed out that the institution needed to be

restructured to make it a more profitable public university. During the 13th cabinet meeting held at state house on 14th August 2017, cabinet approved a plan to unbundle university of Zambia into five (5) colleges in order to improve efficient and effectiveness in the operations of the institution. It is not only quality and performance that has been the concern. The Minister of education in Zambia has often times called on the university to increase its internally generated revenues and categorically urging them to operate like business entities. Emergency of private universities have also added a dimension to the changes taking place forcing public universities to relook at the way they have been operating in order to keep up with the competition. In Zambia there are about twenty (20) registered private universities a situation that is different two decades ago. The university strategic plan recognizes how their counter parts in the private universities have developed demand-driven curricula and come up with new products and projects making the public institution appear outdated in services they provide. (University of Zambia Strategic Plan, 2013-2017).

University of Dar es salaam declared their intention to run the institution differently in 2011 when they convened a panel of experts to examine operations of the university and make recommendations that would enable it achieve optimal performance in the changing circumstances of 21st century (Annual Report, 2010/11). All these factors have been responsible for changes taking place at the two study universities. While intentions have been aimed at improving quality of service, performance and innovation, these activities have also resulted in changes in organizational structures threatening desired leaner bureaucracies.

This paper is exploring how the efforts aimed at improving performance and quality of services at the University of Zambia and University of Dar es salaam are expanding organizational structures of the two universities. Expanded organizational structures are undesirable in the current public management approaches. They can result in stale decision making and service delivery processes. From conceptual discussions of managerialism, the paper uses four themes under which managerial changes in the two study areas are discussed; de-bureaucratization, devising means of auditing quality of services, monitoring employee performance and use of information technology in service delivery. Document analysis is used under each theme to describe activities and identify how they contribute to expansion of current structures. Source of information has been institutional annual reports, strategic plans, monitoring of examinations reports, ministerial statements and websites. Formative documents are reliable source of information as they provide descriptive information about institutions and their activities. Analysis can be drawn from this kind of information. The paper begins by discussing the concept of managerialism, why managerialism and review of the literature on the concept. This is followed by a discussion on the context of transformation in the two study areas. Later a discussion on the managerial transformations taking place, their effect on organizational structures and benefits so far. A way forward is provided on what management can do to avoid the problem of over expanded structures and lastly conclusion.

2 Meaning of managerialism

Some specific definitions of the concept can be helpful in understanding their adoption in higher learning institutions. First definition is one referred to as “ideological principles on which the economic, social and political order of advanced industrialized societies is based” (Enteman, 1993). This definition reflects macro level role of managerial techniques in achieving development goals. However it can also be used to understand what is likely to happen at micro or institutional level. These techniques are expected to improve employee performance, customer satisfaction and increase productivity. In higher learning institutions, you would expect improved performance among teaching staff, satisfied staff and students, efficient services and increased number of publications in peer reviewed journals. Managerialism has also been defined as “belief that all aspects of organizational life can and should be managed according to rational structures, procedures and modes of accountability in pursuit of goals by policy makers and senior managers (Reilly and Reed, 2010). In this understanding two strands of managerialism has been identified. First is ‘entrepreneurship’ which focus on devolving authority and ‘service innovation’ designed for surviving competitive environments. Entrepreneurship as discussed under new approaches to public management is not necessarily viewed as profit making

but any acts by public managers aimed at shifting resources from low yielding areas in terms of productivity to those viewed to be worth spending resources on (Osborne, 1993).

In context of higher learning institutions, you would be referring to introducing or discontinuing certain programmes, separating or merging colleges, schools, units and departments or establishing new ones. The second strand is the 'culture management' which prioritizes alignment of the beliefs and values of managers with those of the policy makers. These views also fits the principal –agent theory in which it is assumed that the agent in this case senior public managers will act according to the interests of the principal or policy makers.

Managerialism will therefore imply changing ways in which institutions are managed. This can include abolishing or merging of positions with the aim of streamlining service provision. Decentralizing decision making in which top management is relieved of some duties with their equivalent authority and resources with the aim of improving efficiency and effectiveness. Devising mechanisms to improve quality of service provision can mean investment in information technologies and instituting quality assurance systems. Monitoring of employee performance is aimed at accounting for resources spent by individuals in the organization by associating them to results produced. In higher learning institutions this can take a variety of forms ranging from introduction of new colleges and schools, programmes and courses for academic activities and Directorates and units for non-academic activities and use of information technologies to improve service provision.

Having discussed the concept of managerialism, what are the triggers for these changes in higher learning institutions? Broadly two premises can be advanced that are influencing transformations in higher education.

3 Why managerialism and what are its triggers in higher learning institutions

First ideas on what was going on in the public sector and why change was needed is articulated by David Osborne in his 1993 article on 'reinventing government'. He gives this description "government today consists of lot of very dedicated people trapped in bad systems - budget systems that provide incentives to waste money, personnel and civil service systems that are cumbersome and provide little incentive. These systems and others must be changed if government has to improve performance" (Osborne, 1993). Osborne suggests six commonsense principles acting as an anchor upon which changes seeking to improve performance in public institutions can be based.

'Catalytic government' is the first principle and is about the idea that government should 'steer' rather than 'row'. This promotes a notion that government is not the only actor that can solve problems but that there are so many alternatives including involvement of other actors. 'Competitive government' promote injection of competition in service provision which is contrary to monopoly in the old model of public management. Competition is envisaged to force organizations to aim for higher productivity. Higher learning institutions are now facing competition from both public and private universities. 'Mission driven government' is another principle suggested against the background that government institutions are driven by rules than focusing on missions or what they ought to achieve. Related to this principle is 'Result -Oriented government' were accountability would shift from inputs to outcomes and results. 'Customer driven principle' aims at bringing in closer link between what is spent and the results. Customers are empowered to make choice among different service providers. Consequently service providers will be forced to be responsive to their customers as they risk being out of business. In higher learning institutions, this may not only be reflected in reduced student numbers but also reduced government funding. Last principle is the 'enterprising government' in which a notion of earning rather than spending is promoted (ibid, p 352 -354).

If higher learning institutions are to be taken as subsystems of governments as opposed to stand alone sectors, then they also fall under these descriptions of inefficiencies. This means changes that are going on in higher learning institutions are part of broader government efficiency achievement programs and quality improvement for services. For instance it is only recent that governments in Africa have been passing higher education legislations establishing Qualification Authorities and other Quality Assurance Bureaus charged with monitoring quality of services in higher learning institutions. In Zambia the Higher Education Act No 4 of 2013 established the Higher Education Authority. The

Authority is charged with function of developing, overseeing and maintaining national qualification framework. University of Dar es salaam Quality Assurance Bureau was only established in 2007 to act as an internal organ to monitor and evaluate quality assurance processes.

The second premise is that universities are now in interactions with various actors apart from the state. This understanding can be traced in the network governance approaches. Institutions need to interact in order to share resources, create synergies, out-source services and access funding. All these activities can have effect on their operations including organizational structures and systems put in place. Ferlie and colleagues actually argue that network governance approaches can also be used to identify 'signs' and 'symptoms' of changes taking place in higher learning institutions (Ferlie et al, 2008). This means changes being observed are not only those resulting from vertical interactions with the state but also horizontally with other actors.

4 New managerialism in higher learning institutions

There has been literature accumulating under similar themes of this paper though most of it is from western countries like the United Kingdom (Deem Rosemary, 1998), Australia and the United States of America. In Africa scanty studies have been done about South African Universities and focus of these studies has been the effect of new public management approaches on access and equity issues and how it has changed the general culture of academic life (Vallay, 2007; Rajan, 2003; Vaira, 2004; Webster and Mosoetsa, 2001).

In South Africa, literature reports that adoption of new managerial approaches has pushed students out of higher learning institutions through financial exclusion and lack of academic support. Structurally, some departments have been shut down for not being considered relevant (Salim, 2007). Other organizational changes include the taking on of new tasks by members of staff affecting organizational arrangement and governance structures (Vaira, 2004). Antagonistic kind of relationship between management and members of staff has been other outcomes (Webster and Mosoetsa, 2001).

A study by Rajan focusing on American universities report on effects of commodification of university education. That is conceptualizing students as consumers and offering them greater choice and control over their learning, institutionalizing complaints and redress procedures and publication of student satisfaction surveys. This has resulted in loss of responsibility by students for their work, unwillingness to be judged and little tolerance for expansion of their studies beyond routine and adoption of instrumental kind of attitude towards their work (Rajan, 2003).

The above studies have been focusing on staff attitudes, changing student perceptions and new roles taken by members of staff resulting from implementing new approaches of public management in higher learning institutions. It is not enough to only know how the members of staff and students are reacting to these changes. It is also important to establish how organizational structures and systems are unfolding in response to these new managerial changes. The focus of this paper is to explore how new public managerial approaches are being implemented in higher learning institutions and their resultant effects on organizational structures and systems.

5 Context for transforming university operations

Institutional approach provides a framework for describing operations of institutions by focusing on their structures, functions. Legal powers and relationships with other institutions (Anderson, 2011). Context of university transformation is discussed under the three themes: structure, functions and legal powers. These are important characteristics when analyzing institutional operations.

5.1 Structure

University of Zambia is the first and oldest public institution of higher learning established in 1966 and uses a school and directorate model in its operation. It is made up of nine (9) schools: Agricultural sciences, Education, Engineering, Humanities and Social Sciences, Law, Medicine, Natural science and Veterinary Medicine. Directorates are Quality Assurance and Distance learning. All schools are headed by Deans while directorate, institutes and centers are headed by directors. Government has just approved a plan in which the nine schools would be established into five colleges. This may have implications depending on what organizational structures would be suggested.

Organizational and management structure has the Vice chancellor at the top followed by Deputy Vice chancellor, Registrar, Librarian and Bursar. From this point two downward layers emerge for academic and administrative structure. For Academic, you have Dean of schools, Heads of Departments and academic members of staff. For administration you have Dean of students, managers and directors of units and centres.

University of Dar es salaam is the oldest higher learning institution in Tanzania initially established as an affiliate college of The University of London in 1961. Management and administrative structure for the University consists of the Vice chancellor with three Deputy Vice Chancellors (DVCs) under (academic, administration and research). From this point a layer emerges under each of the two DVCs (academic and administration). For academic you have three directors – public service, research and undergraduate studies. Under DVC – administration you have Dean of students, Directors and managers for human resource administration, planning and finance, computing centre, ICT and estates. Principles of constituent colleges and campus colleges, Dean of schools and director of university library also report to the two DVCs depending on the issue. Last layer is for heads of departments, coordinators of centres and bureaus (University of Dar es salaam Annual Report, 2010/11). There is possibility of the structure expanding further as the university establishes more colleges or centres.

5.2 Legal powers

The University Act No 11 of 1999 which has been repealed and replaced by the Higher Education Act No 4 of 2013 provides the framework for university education in Zambia. It also provides for quality assurance and quality promotion in higher education. Zambia Qualification Authority Act No 13 of 2011 also aims at improving quality of higher education. The Authority has the specific role of developing, overseeing and maintaining a national framework for promotion of quality education in higher learning institutions. At institutional level, the University adopted the strategic plan approach in implementation of its activities. Two strategic plans have been implemented so far.

University of Dar es salaam Act of 1970 which was later repealed and replaced by Act No 7 of 2005 establishes its existence. The university is governed by the 2007 university charter which makes provisions for the functions of the university administration and appointments of officials, powers and rules governing university administration bodies and staff members (University of Dar es salaam Annual Report, 2013/14).

5.3 Functions

The repealed Act of 1999 provides for functions of the university. That is to provide education, promote research and advancement of learning and disseminate knowledge. The university offers postgraduate, under graduate and distance programs. Currently the university has a student population of the 12,450 (full- time) with 621 full time lecturers translating into a lecturer: student ratio of 1:20. The ending 2013 to 2017 strategic plan provides ten strategic directions for the university which among them include human resource capacity and management, institutionalizing quality assurance systems and expanding and promoting use of information and communication technologies (University of Zambia, 2013 -2017 Strategic Plan). The main source of funding for the university is government grant which is about 54%. 36% is raised from tuition fees and 10% other incomes.

Teaching, research and public service constitute the core activities for the University of Dar es salaam. Current student population is 19,650 and academic staff figure provided by the 2013/14 annual report is 1,194 translating into a lecturer ratio of 1:16. Administrative staff figure as provided by the university website is about 1,023. The university is funded by the United Republic of Tanzania though the government budget is far lower than the council budget which is viewed as reflecting real needs of the university. For example during the 2009/10 academic year government approved budget was only 42% (TZS 68.26 against TZS 163.81) of council approved budget reflecting how underfunded the university is.

The following section discusses transformations that have been taking place in higher learning Institutions and argue that changes that have been taking place have potential of going against the desires of new public management in long term.

6 Is there movement towards de-bureaucratization?—Changes in organizational structure

Adoption of new public management require that organizations operate with leaner organizational structures with decision making powers decentralized to lower ranks of the organization. To the contrary quests of wanting to operate in tune with current managerial prescriptions has resulted in creation of new positions within management and administrative structures. With provisions made in the strategic plan, University of Zambia has introduced positions of strategic manager with a secretary and one administrative officer. In line with values of viewing universities as entities that should engage themselves in raising internal resources, the position of Director, Business development has also been created. Other positions established is Quality Assurance director with eight support staff. A mid- term review of the implementation of the 2013-2017 strategic plan (unpublished) has further recommended creation of the position of an international liaison officer. This has been done following an assessment that there has been a reduction in the number of foreign students and exchange programs for both members of staff and students. Other establishments include position of assistant registrar within the Deputy Vice- Chancellors office and creation of a unit in charge of research and consultancy.

Though it is too early to really establish the effects of these positions on university decision making and other processes, immediate analysis is that most of these positions are managerial and will need support staffs within their establishments. Meaning the effect is not only additional organizational layers but also increase in wage bill of the university which is already struggling with paying off terminal and retiree packages to members of staff.

University of Dar es salaam has also been tilting towards expansion in contrast to reducing bureaucratic layers as prescribed by new public management approaches. The quest of the university to operate under new organizational structure was recognized when the university commissioned a review into the organizational structure and operations of the university by a panel of experts in higher education development and management. The team consisted of local and international experts and was led by the former Vice chancellor of university of Ghana prof Clifford Nii Boi Tagoe. The task of the team was to propose ways in which the university needed to reposition itself to ensure optimal performance in the changing circumstances of 21st century. (University of Dar es Salaam Annual Report, 2013/14). The report was submitted to the university in August, 2011.

After the review into the operation procedures, delivery systems, academic programmes and activities, the university embarked on an organizational reworking exercise which resulted into a three tier administrative system. That is departments, middle layer consisting of colleges, schools and institutes and lastly central administration. The new structure also reflects devolution of powers to academic units as it resulted from abolishing of intermediary layer of faculties. The new structure is being described by the university as a 'leaner bureaucracy' (University of Dar es salaam Annual Report, 2010/11). However the applauded structure has the potential of bloating as the university keep establishing additional positions. For example during the 2012/13 reporting period, the university reports having created a position of Deputy Vice Chancellor in charge of Research with two directorates under this office. That is one under research and the other in charge of knowledge exchange.

7 Devising means of auditing quality of services

Quality assurance is one of the values that need to be embraced by organizations operating under new approaches to public management. Auditing quality of services means focusing on three core activities universities are mandated to perform. That is teaching, research and public service. Previously issues of quality assurance at The University of Zambia has been the task of the Senate Committee. With establishment of the Directorate for Quality Assurance all quality assurance matters are to be handled within this directorate. In their 2017 Quality Assurance framework (which is yet to be implemented) the directorate came up with a three tier structure. The Senate Quality Assurance Committee which will be in charge of overall implementation and monitoring the effectiveness of quality assurance strategies and practices in the university. Secondly the Quality Control Circles within academic, Research and non-academic units. These are expected to identify, analyze and report on

quality related issues in their respective units. Lastly is the Quality Assurance Directorate which is considered as the coordinating secretariat. It is planned that the Directorate establishment would include two managers (academic and non-academic), three quality assurance officers -academic, non-academic and ICT, a Senior administrative officer and management secretary (University of Zambia Quality Assurance Framework, 2017).

University of Dar es salaam have had an operational quality assurance bureau since 2007. The Bureau is charged with the mandate of monitoring and evaluating quality assurance. For example the Bureau evaluates conduct of examination processes and report on activities like time management, capacity and condition of examination rooms, invigilation commitment, cases of examination irregularities and student identification process. The 2014/15 Semester I and II evaluation report for example indicate that 1.5% of the examination rooms were not in good condition at the time of the examinations. With regard to commitment by invigilators, the report indicate that 16.4% of invigilators being relaxed. That is reading newspapers, working on laptops or marking scripts (University of Dar es salaam Monitoring of Examinations, 2014/15).

8 Monitoring employee performance

Performance monitoring system within university of Zambia is not yet established. A step taken towards this process has been the training of supervisors like Deans, directors and Heads of department in performance appraisal. Currently a resemblance of monitoring employee performance available is the introduction of quarterly reporting system where members of academic staff report on teaching and non-teaching activities like research, publications and participation in conferences. For teaching activities individuals complete forms in which they provide statistical information on how many assignments were received in the past month, how many of those have been marked and returned to the students. For non-teaching activities information on number of research activities carried out, consultancy and workshops or conferences attended is also completed. This information is submitted to Heads of departments and later relevant Deans of schools. Final recipient of this information is relevant senate committees for compilation of senate reports.

During the reporting period of 2013/14, University of Dar es salaam introduced the Open Performance Review and Appraisal System (OPRAS). OPRAS replaces the annual confidential performance Appraisal system in which members of staff filled in their performance reports and evaluation was conducted confidentially. Under the new system, members of staff are requested to sign performance agreement with immediate supervisors by setting objectives that are in line with annual institutional goals. From this point of view, the new appraisal system fits requirements of new ways of monitoring employees and evidence that universities are also adopting these new methods. However no evaluations have been done so far to establish outcomes of this approach and how information is being used for decision making. A study focusing on utilization of evaluation results in universities in Uganda found that procedural rules (that is institutional documents guiding the process) have a positive effect on utilization of evaluation results by a public sector agency (Kabuye, J. and Basheke, B.C.; 2017). However in highly bureaucratized institutions, there is a tendency of sticking to binding rules as opposed to being flexible and this can affect any type of decision making including performance result utilization.

9 Use of information technologies in service delivery

Use of information technologies has been embraced by learning institutions as they have to meet the demands of competition in the education sector. Enrollments, teaching, registration and publication of results all have to be aided by technology in order to increase efficiency in service provision. The University of Zambia plans to rework the systems under which services are being provided so as to make them innovative and competitive and cost effective. This idea is being branded as Business Process Re-engineering (University of Zambia, 2013-2017 Strategic Plan). As a result of these efforts student admission processes, administrative and course registration and publication of results is now being done online. Consequently this should result in reduced time and cost of conducting these activities.

University of Dar es salaam has the goal of promoting use of ICT in teaching and learning. It is hoping that by 2023, at least 30% of the undergraduate programmes are offered electronically (University of Dar es salaam Corporate Strategic Plan 2014-2023). Already the university has been using information technology in student registration and publication of results.

This also reflects the recognition of universities that they now operate in competitive environments and their need to improve efficiency of service provision. However with regard to student registration usually by end of the semester when students are supposed to be writing examinations, a good number of students would not have registered as a result of not having paid their tuition fees. This reflects contextual factors which some authors have been critical with regard to implementation of new public management especially in developing countries (Antwi et al, 2008; Omeyefa, 2008).

10 Newly established positions and possible effect on decision making

To have a better picture of what is going on at the two institutions in terms of the propensity of wanting to create positions, the following table shows the positions created in the last seven (7) years or more.

Table 1 Positions and Units created in the last seven (7) years

Institution	S/N	Positions	Type
University of Zambia	1	Director Business Development	Managerial
	2	International Liaison Officer	Support staff
	3	Assistant Registrar (DVCs office)	Support staff
		Units	
		<i>Strategic Management</i>	
	4	Strategic Manager	Managerial
	5	Administrative Officer	Support staff
	6	Secretary	Support staff
		<i>Quality Assurance</i>	
	7	Director – Quality Assurance	Managerial
	8	Management Secretary	Support
	9	Quality Assurance Manager—academic	Managerial
	10	Quality Assurance Manager—non academic	Managerial
	11	Quality Assurance Officer—academic	Support staff
	12	Quality Assurance Officer—non academic	Support staff
13	Quality Assurance Officer—ICT	Support staff	
14	Senior Administrative officer	Support	
	<i>Research and Consultancy (no information on positions)</i>		
University of Dar es salaam	1	Deputy Vice Chancellor—Research	Managerial
	2	Director—Research	Managerial
	3	Director Knowledge Exchange	Managerial

As an illustration of possible effects of added positions to already heavy bureaucratic structures, we take an example of a process that should take place when a new course or programme is being introduced at the University of Zambia. Initiation starts with concerned department which submits its intentions to the curriculum review committee at that level. From this level, the case would move to similar committee at school level and later senate. With the proposed quality assurance framework, there is added structure of quality control circle at departmental level. First concern is that there will now be two committees at departmental level. Meaning before a decision goes to the school level, it has to pass through the two committees affecting promptness of decision making. Secondly, most likely same people will belong to the two committees raising issues of objectivity in decisions that will be made. At Senate level same outcome is expected. That is the Senate quality assurance committee will have to endorse appropriateness of courses or programmes being proposed before final approval

by senate.

11 Discussion: Which methods are most likely to be beneficial?

There is indication that adoption of new managerial methods has potential to improve performance and quality of services in higher learning institutions. Instituting mechanisms to auditing quality of services has helped university of Dar es salaam to document service delivery process and identify areas of improvement. For example the monitoring of examination process has enabled the university to plan for building of additional infrastructure to improve capacity problems during examinations. However as already observed while aiming at improving quality there is also possibility of expanding the organizational structures which is not desirable in the literature of contemporary public management models (Hood, 1995; Osborne, 1993; Jan-Erik Lane, 2000; Rainey in Guy Peter, 2007). For example the planned organizational structure for the Quality Assurance Directorate at the University of Zambia will have a total of eight (8) personnel. The newly established unit of research and consultancy will most likely unfold in the same direction. University of Dar es salaam has been introducing new positions too like position of DVC research and two directors. This is not a good indication for institutions that need to be reducing both in terms of number of bureaucratic layers and personnel.

Instituting an Open Performance Review and Appraisal system by the University of Dar es salaam meets the requirements of new approaches in managing public institutions. In that there system is a transition from a confidential to an open system in which the employee gets involved in deciding on the objectives to be achieved. It should however be noted that this would be a complete change of culture among academicians who have always perceived themselves as autonomous and whose activities may not be questioned (Ferlie, 2008). This could be the reason why some of the reactions so far from academic members of staff are being described as 'extension of managerial control' from empirical evidence in South African universities (Webster and Mosoetsa, 2001). It is a feeling that there is too much control from management as they try to monitor performance, a practice that is considered new and may be abominable in academic circles.

New approaches to public management recommend 'leaner' bureaucracies and at the same time disaggregation of units. In higher learning institutions, the outcomes are giving indication that as universities are establishing units and centres, there is potential of expanding the institutions into large bureaucracies. What this means then is that any introduction of units, programmes or centres will be requiring additional members of staff employed and necessary infrastructure. For Osborne (1993), when there is a problem, government does not have to always raise taxes. In the current situation, is it always necessary to create new positions in order to improve performance and quality of services? For instance in the university of Zambia case, does the institution need a manager for strategic planning and implementation of activities or this task could be managed by a committee under the supervision of the Deputy vice chancellor? In the following section, a suggestion is made on how to address the problem of over expansion of organizational structure.

12 What management can do to address the problem?

Solution is based on quality assurance proposed organizational structure for university of Zambia. This paper provides a counter proposal to the proposed structure. University of Zambia operates on a committee system from departmental level to school and senate level. In other words, there is already a structure through which activities of quality assurance can be implemented. Quality assurance unit has created parallel committees at departmental and senate level. Instead of having a full flagged quality assurance structure, this paper proposes that within the unit, there is only need of a manager who reports to Deputy Vice chancellor. The manager will have a secretary and from here the next personnel will be two quality assurance officers (academic and non-academic) and should be based at school level where most activities take place. At departmental level instead of recruiting a new personnel, the department should nominate one member of staff to be in charge of quality assurance activities and this should be rotational. The proposed structure is as follows:

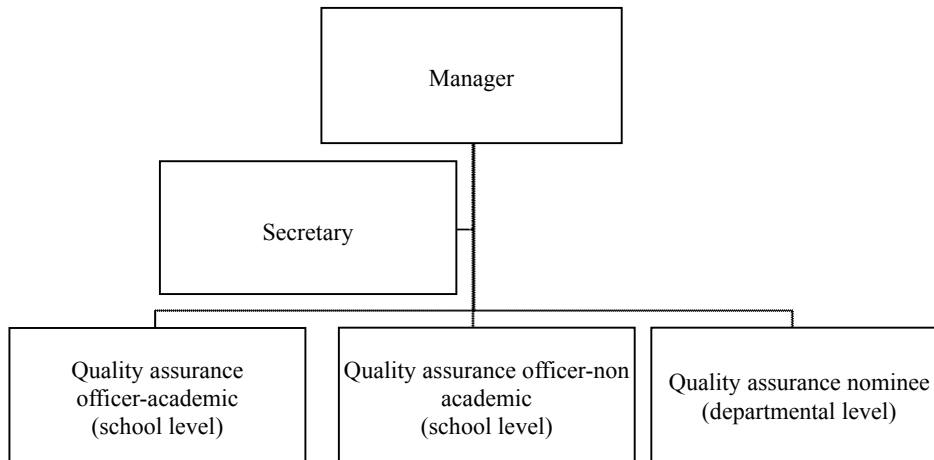


Figure 1 Proposed structure for quality assurance unit

The proposed quality assurance structure by the University of Zambia require recruiting eight (8) personnel: Director, two managers, three quality assurance officers, senior administrative officer and management secretary. The above structure is not only leaner than the one proposed by the university but also using existing structures to carry out additional activities. This is also in line with current methods of restructuring organizations in which multi-tasking is promoted in order to have flat organizations as opposed to increasing layers vertically. Secondly, the proposal also uses existing resources. Meaning only three (3) new personnel would be needed compared to eight (8). It should not always be the case that new recruitments are needed to implement new activities but tendencies should be towards task addition to existing staff and if necessary trainings should be provided.

13 Conclusions

This paper has reviewed that new managerialism in the two higher learning institutions is having outcomes that are not desirable in contemporary public management. In long term it has potential of resulting in very large bureaucratic layers which threatens efficiency and effectiveness of organizations. Key drivers for change as observed is competitive environment from private universities forcing public institutions to raise standards in their services, need to supplement government grants and the urge to respond to current knowledge requirements of the market.

Conclusion of this paper is that there are methods that are promising in improving performance and quality of services in higher learning institutions. Auditing quality of service and use of information technologies is now very important in universities as they have transitioned from being monopolies to organizations that are competing for students and funding not only with the private sector but also among public universities. Auditing quality of services helped university of Dar es salaam, identify and address university problems efficiently.

However as universities are coming up with new establishments of directorates, units, colleges or any other initiatives aimed at improving performance and quality of service, there is potential of bureaucratizing the organizational structures instead of making them 'leaner'. There is need to make assessment before new structures are created to ensure that new objectives are not fitting in current structure. If every new task, programme, initiative etc will have equivalent structure and personnel, then there is possibility of being against what is being prescribed by the new public management model.

This paper therefore proposes further research work in higher learning institutions to empirically uncover structural unfolding of universities as they adopt these methods. So far there is evidence that their outcomes may not remain within confines of new managerialism.

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Contemporary Local Governance and Indigenous Institutions: The Case of the Sidaama Southern Ethiopia

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Abstract Nowadays, enormous change and improvement are occurring in governance practices throughout the world. Democratic decentralization, in particular, has become a concern in many countries, especially in the developing world countries like Ethiopia. Successive Ethiopian governments since Menelik II, have introduced and implemented modern governance system. This happened despite the existence of indigenous institutions which have been playing an indispensable role in guiding the social-political and other life of the society, especially, for rural area communities in filling the gap of the formal state institutions, that are often weak or absent, and its penetration to rural areas has been poor. Thus, given the limitations of modern institutions, relying on traditional institutions could be an attractive option to improve local governance. This is because, when compared with state structure, traditional institutions do not need to build from the start. At local level creating new and efficient state institutions can be difficult, costs and it needs time as well. Accordingly, qualitative research methodology was employed in the study for its appropriateness to investigate indigenous institutions and local governance by drawing practical evidence from Sidaama province and data was collected through the use of key informant interview, focus group discussions, personal observation and secondary source consulting. The study revealed that these indigenous institutions and their governing systems are pivotal to manage the multifaceted affairs starting from day-to-day affairs of the community. In pluri-national polities like Ethiopia, the thick bonds of national identity and solidarity are, neither in no way are affected by preservation and promotion of indigenous ways of knowing as a tool for strengthening local governance nor an oxymoron to the Ethiopian national identity. Thus, indigenous institutions are mechanisms for improving the performance of formal local governance institutions. Finally, the study suggested that local development policies and programs must take into account these indigenous institutions which have a vital role for the upgrading our contemporary local governance endeavors..

Key words Indigenous Institutions of Sidaama, Local Governance, Sidama (Sidaama), Ethiopia

1 Introduction

In most sub-Saharan countries' attempts were observed to integrate indigenous institutions after immediate period of decolonization. However, in Ethiopia, indigenous institutions of the different ethnic groups largely remain non-integrated in to the formal governance system, but have continued to exist, operate at the grass root or local level in line with or at times as an alternative governance system as compared to the formal structure (Collony, 2005). Of course, Ethiopia does not have the colonial legacy which was experienced by all African countries except Liberia (Cotula, Toulmin, and Hesse, 2004). In Ethiopia, marginalization of indigenous knowledge and institutions carried out by its successive governments' (Crewett, Ayalneh, and Korf, 2008). The successive Ethiopian regimes since Menelik II have introduced and fairly implemented modern governance system. This resulted in introducing largely external-modeled formal state institutions, as believed modern and necessary to replace the indigenous/informal institutions; though, continued to play an indispensable role in guiding the social-political and other life of the society (Zelalem, 2012). In addition, the governments have embarked on the centralization of power since the country's inception; and in particular since the second half of the twentieth century the country has become an extremely centralized state (Zemlak, 2011).

Nowadays, Ethiopia has been undergoing a process of decentralization with the coming to power

of the Ethiopian Peoples' Revolutionary Democratic Front (EPRDF) since 1991 especially with promulgation of the 1995 constitution. This has changed the previous unitary state structure to federal, with a federal government at the center and regional governments at local level (Alem, 2004 and Zemlak, 2011). The country has been pursuing decentralization as the tool of creating an enabling environment to foster development and good governance at the local level. In line with that both political and fiscal authorities have been decentralized up to the local levels. However, development study analysts, practitioners and funding partners persist pointing to the fact that, despite some achievements, the country lingers still in limitations. Even if, the current regime give attention to nations, nationalities and peoples' identity, the indigenous institutions which regulate the lives of majority rural people have not been adequately utilized from development spectrum in general and local governance in particular. On the other hand, the country continues to face with daunting challenges of corruption, low public participation, inefficient local service delivery, political and social instability, poverty, inequality and weak local government institutions (Dejene and Yigremew, 2009; Zelalem, 2012; Tilahun, 2014). At this juncture, one can easily observe the existence of gaps between to practice and policy documents. These are: recognizing the relevance of indigenous institutions and knowledge in policy documents and failure to implement indigenous institutions as partner to development process in general and local governance in particular.

The Sidaama like the other communities in Ethiopia are endowed with various indigenous institutions and cultural practices. The Sidaama indigenous institutions still exist, in spite of their incorporation into the centralized state system which is also common to the other Ethiopian communities (Tolo, 1998). Even though indigenous institutions of the nation exhibit paramount potential for governance in general and local governance in particular, they are not yet mobilized as resource and are rarely studied and documented. Successive Ethiopian governments had little or no attempt to utilize this knowledge and institutions in local governance of the Sidaama. With that in mind, this study seeks to fill the gap in the literature concerning the abovementioned recent paradigm shift by examining the nexus and compatibility between local governance and indigenous institutions for better local governance.

1.1 Objective of the Study

The overall objective of the study is to investigate nexus and compatibility between local governance and indigenous institutions for better democratic local governance; in particularly this will be done with a view of exploring the meaning, ingredients, salient features, and institutional structures and roles of indigenous institutions to local governance in the context of Ethiopia in general and Sidaama (Sidama) in particular.

1.1.1 Specific research questions

Based on the general objective, specific objectives are:

- Investigate the ingredients, salient features, institutional structures, and roles of indigenous governance institution (elders' institution) to ensure better local governance in Ethiopia, and in Sidaama particularly;
- Examine how local government and indigenous institutions are working in contemporary Ethiopia in general, and in the Sidaama in particular; and
- Examine a possibility to integrate indigenous institution into modern local governance endeavors with the objective of ensuring better governance at local level.

1.1.2 Scope of the study

The study primarily explores the nexus and compatibility between local governance and indigenous institutions for better democratic local governance in Sidaama, Southern Ethiopia. Thus, scope of the study is limited to explore local governance and Sidaama indigenous elders' council and governance (*Cimeessu Songonna Gashshootu Hayyo*).

2 Local Governance and Indigenous Institutions: A Literature Review

2.1 Local Governance in Africa and Ethiopia

Nowadays, enormous change and improvement are occurring in governance practices throughout the world. Democratic decentralization, in particular, has become a concern in many countries,

especially in the developing world like Africa. “The major promise of democratic decentralization or democratic local governance is a key to building popular participation and accountability in local governance, and government at a local level will become more responsive to citizen desires and more effective service delivery” (Balair, 2000). Due to the growing interest in local development, many countries have passed legislation to decentralize governmental structure and such process has been supported by many international organizations, development analysts, practitioners, and funders (Lutz and Linder, 2004).

Africa in general and Sub-Sahara African countries, in particular, have the least structures of decentralized governance. For continent’s being highly centralized has become a part of their ‘problem rather than be a part of the solution’. But, with the economic and political reforms generated by the economic crises and policy failures of the 1980s, and 1990s associated with the formal government system; several countries embarked on reforms that included the restructuring of their systems of governance. At the end of the day, however, the continent’s decentralization process resulted in inefficient, corrupt and ineffective in providing access to basic services. It is also failing to mobilize the high levels of social capital for improved development or local governance (Olow, 2006).

In modern history of the Ethiopian one of the milestones was, the reign of Menelik II (1889-1914). Menlik II reign marked large scale unification of Ethiopian national territory and able to double the territory under his control between 1872 and 1896. As the empire expanded more and more, diverse ethnic groups have been incorporated in to the empire (Adejumobi, 2007). The present regime, which comes to power by overthrowing military government in 1991, started implementing the concept of decentralization after assuming the power (Gizachew, 2012). The regime immediately up on gaining the power formed transitional government in collision with other political groups. Another important landmark of this regime is 1995 federal constitution, which made Ethiopian federal state comprising nine regional states and two autonomous cities. Also, it allocate powers and responsibilities between central and those all regional governments and two autonomous cities. Accordingly, regional state government also formally devolves decision making authority and control over resources to *Zone*, *Wereda* (district) and *Kebele* (sub-district) administration. Each of different government levels has similar structure legislative (law making) body, judiciary (court system) and a number of sectors of specific administration (UN-Habitat, 2002).

2.2 Indigenous Institutions and Knowledge

Some call it local knowledge, others indigenous knowledge, and also some others prefer traditional knowledge. According to Zelalem (2012), currently, the term indigenous knowledge is used interchangeably with terms like local knowledge and/or traditional knowledge. Whatever the terminology being used, it needs to be made clear that this study is about knowledge held by local peoples or the knowledge of an indigenous community accumulated over generations in a particular environment.

Based on this argument, indigenous knowledge refers to the sum of facts that are known or learned through experience or acquired by observation, study and handed down from generation to generation by given group of society. It reflects many generations’ experiences and problem-solving habits by local groups at the local level (UNEP, 2008). For Warren (1991), it is local knowledge that is unique to given culture and society. Also, it is the basis for local decision-making for the local community in agriculture, health, natural resource management and other activities. It is rooted in community practices, institutions, relationships and rituals.

As an important component of culture, indigenous institutions enforce the rules, norms, and values by harnessing the cordial relation among and with other communities. It is also relevant by structuring, constraining and enabling individual behaviors; institutions have the power to shape the capacities and behaviors (Hodgson, 2006). According to Ostrom, “institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. Also, institutions structure incentives in human exchange, whether political, social, or economic....”(cited in Hodgson, 2006:9).

Institutions are made up of formal (rules, laws, constitutions), informal constraints comprised of (norms of behavior, conventions and self-imposed codes of conduct), and their enforcement

characteristics. However, Hodgson (2006) criticized this division as formal and informal institutions. For him, the dividing line between institutions that are entirely formal in one hand and entirely informal institutions on another hand is not correct; this is because formal and informal institutions always depend on each other in order to operate with complementary nature. Whatever the case, this study followed the second categorization of institutions as it seemed relevant to the case in hand.

For Ostrom (1997) indigenous institutions refer to “shared knowledge, understandings, institutions and pattern of interactions that a group of individuals bring to any activity” (cited in Dejene and Yigremew, 2009:142). It comprises all the structures, systems, and processes that communities have evolved in the course of their history and development to govern them. Furthermore, Kendie and Guri (2010:2) defined it as:

“...the societal norms, values, beliefs...that guide human interaction in any particular community or locality. Indigenous institutions also refer to the leadership structures within the community (chiefs, queen mothers... the traditional land-owners-elders, clan heads, etc.) and their functional roles which ensure that the norms and values of the community are respected. It also includes practices such as the rituals and rites of the people, [marriage system], the funerals, the dowry system, festivals, and the shrines or places of worship of the people.”

According to Dejene and Yigremew (2009:142), in a given society various categories of indigenous institutions found; such as indigenous political and administrative institutions, economic institutions, religious institutions and others. As Gorjestani (c. 2000) clearly discussed, indigenous knowledge and institutions are used at the local level by local communities as the basis for making decisions relating to food security, human and animal health, education, natural resources management, and other vital individual and community activities. This knowledge provides the basis for problem-solving strategies for local communities, especially for the poor.

2.3 Local Governance and Indigenous Institutions

Democratic local government encompasses aspects such as accountability, participation, power devolution, peace-building, better local service delivery, local resource allocation and mobilization (Balair, 2000). It has 'combined set of institutions, systems, and processes, at the local level'. Indigenous institutions are among those institutions which play an indispensable role in local governance process especially in developing world. It is generally thought that in order to achieve democratic local governance, empowered local institutions (both formal and informal) are essential. The existences of empowered local institutions play the key role in the improved local service delivery, build a sense of ownership, democratic representation and participation. Also, create a suitable environment for investment by reducing the risk of social and political instability and conflict (Lutz and Linder, 2004).

Importantly, the causality and linkage remain to be issues of debate among some development analysts and scholars, practitioners, and funders; and despite being undertaken within different internal and external contexts generally indigenous institutions have a paramount role in local governance. As Lutz and Linder (2004) noticed, they are better to enhance community participation and deliver community services given that they are legitimate to govern in the eyes of community than formal state institutions. Even though, in most sub-Saharan countries, these pre-existing institutions were either replaced or simply ignored to govern local relations informally; they have continued to operate in much of the rural area. These indigenous knowledge and institutions seems indispensable for the continent's transformation, as they represent a major part of the continent's history, culture, and political and governance systems (Menski, 2000).

However, various studies from inside and outside Ethiopia points to the fact that indigenous institutions do have challenges that hold back their full potential in contributing to local governance process. In Ethiopia still limitations in appropriately involving indigenous institutions in local governance efforts. As various scholars (Yigremew, 2000; Dejene and Yigremew, 2009 and Zelalem, 2012) indicated, government and development partners do not giving necessary recognition and utilizing indigenous institutions. This led to a prevailing situation in which indigenous institutions are 'ignored and neglected' in the development process in general and governance process in particular.

This study is based on the notion that local governance backed by indigenous institutions is a vital

factor in ensuring better local governance in countries like Ethiopia. As a system that is based on indigenous knowledge, indigenous institutions seems critical to the achievement of effective local governance. As the study by Zelalem (2012) noted, these institutions give opportunities to local people to participate; they tend to be democratic, egalitarian and acceptable by the people. In Ethiopia however, indigenous institutions in general and traditional governance institutions in particular of non-integrated diverse ethnic groups remained marginalized, but, served as parallel and alternative governance for marginalized and skeptic groups of people to seek refuge whenever they face injustice in the formal local institutions of the state (See also, Dejene and Yigremew, 2009).

At this point, given, the realities that indigenous institutions are deep-rooted and existed within the society, they can play a vital role in offering maximum opportunities for local people to participate or for community mobilization, enhance accountability and develop the sense of ownership in local governance endeavors. Thus, in modern world state structure, indigenous institutions have the potential to play parallel roles with formal institutions (Kandie and Guri, 2007b). Effective local governance requires strong institutions that bring together all actors and stakeholders. Subsequently, the effective integration of such indigenous knowledge and experiences into local development endeavors could play an indispensable role to achieve meaningful community participation and empowerment, enhance local service delivery, peace building and gives decision-making power for beneficiaries. As Shah and Shah (2006: 2) noted, better local governance, therefore:

is not just about providing a range of local services but also about preserving the life and liberty of residents, creating space for democratic participation and civic dialogue, supporting market-led and environmentally sustainable local development, and facilitating outcomes that enrich the quality of life of residents.

As Blair (2000) observed, if there is democratic local governance at the local level, local government can become 'more responsive to citizen desires and more responsive in service delivery'. Meaningful, recognition and employ of indigenous knowledge and institutions may increase local government effectiveness and accountability; and community participation and ownership of local development initiatives, which in turn seems to serve as an effective vehicle to accelerating the effective local governance. This study assumes that indigenous institutions for effective local governance are central to creating and sustaining an environment conducive to community participation and ownership as well as to recognize and empower people's and their local knowledge and experiences.

3 Research Methodology and Description of the Study Areas

3.1 Description of the Study Areas

The Sidaama represents people that belong to the East Cushitic Language group. Today the geographic area occupied by these people constitutes the Sidaama land, with its total land area more than 7200 km². The Sidaama land is located in the North Eastern part of the South Nations, Nationalities and Peoples' Regional State (SNNPRS) and bounded by Oromia in the North, East and South East, with Gedio Zone in the South, and Wolaita Zone in the West (SZF&EDD, 2015). The Great East African rift valley dissects the Sidaama land into two: Western lowlands and Eastern highlands (Wolassa, 2009).

According to the administrative system of the current regime, the Sidama land constitutes Sidaama Zone and Hawassa (*Hawaasa*) City administration. The *Sidaama* Zone constitutes 19 districts locally called '*Woredas*' and four city administrations of Yirgalem, Alatta Wondo, Lako and Bansa whereas Hawassa city administration is the capital city of the Sidaama Zone with eight sub-cities as well as the capital of SNNPRS. The Sidaama language (*Sidaamu Afoo*) is one of the major East Highland Cushitic languages in the country. It is also one of the major spoken languages in Ethiopia. *Sidaamu Afoo* is the 5th language in terms of the number of people speaking the language and assumed to be above 4 million speakers (SZF&EDD, 2015). The Sidaama language is being used for writing and reading purpose since 1932, and from 1992 it became the official language of Sidaama Zone (Markos et al., 2012).

3.2 Research Methodology

The study was based on multidisciplinary approach; field and library-based approaches were

employed. The study employed qualitative research approach.

The primary sources was employed so as to obtain contextually specific qualitative information about the interplay of local governance and indigenous institutions, as well as to capture the experiences, judgments, and perceptions of local community, indigenous institutions leaders, development analysts, practitioners, and local government officials (accordingly, data were collected from, 60 purposively selected key informants interviews, 8 FGDs and personal observations). Specifically, the library-based research included: (i) analysis of policies, laws, and institutions of country's local governments; (ii) examination of monographs, reports, and other materials issued by local, national and international law and development analysts, governmental and non-governmental organizations, bilateral and multilateral funders, and other institutions related to governance, local governance and indigenous institutions; and (iii) the assessment of relevant best practices and experiences. Finally, the data was organized and cross-referenced. Then, the data was analyzed and interpreted.

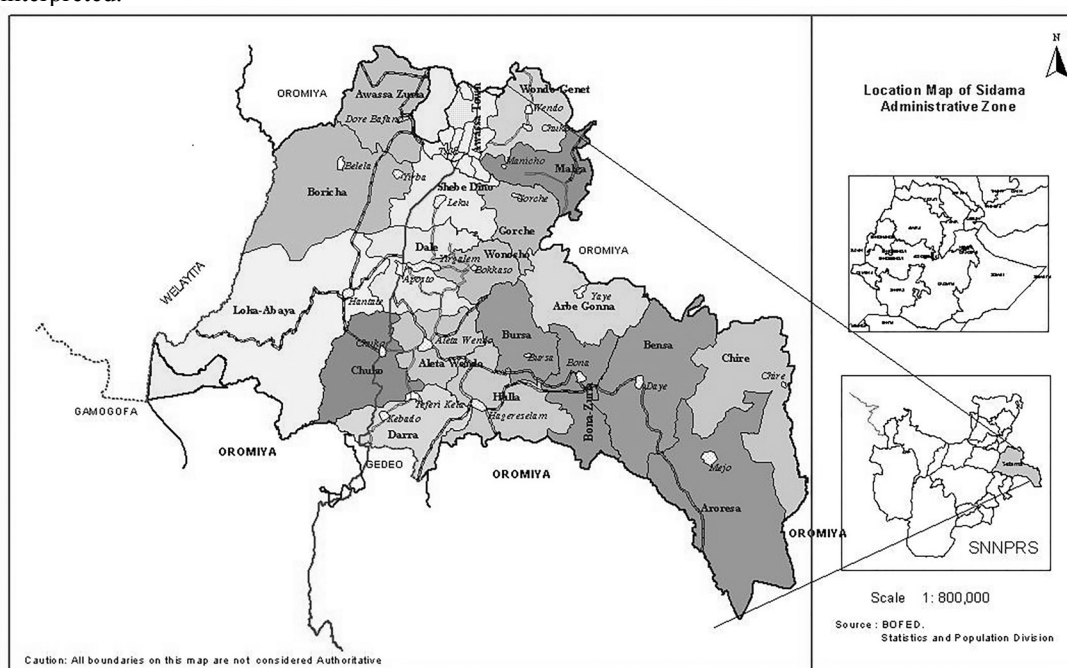


Figure 1 Map of Sidaama Land

4 Findings and Data Interpretation

4.1 Indigenous Institutions in Ethiopia

Scholars both from inside and outside Ethiopia have studied the various roles and contributions of indigenous institutions like in terms of improving local income and livelihood, local service delivery, local resource mobilization, conflict prevention and mitigation and others (Desalegn et al., 2007; Wolassa, 2009; Kiros, 2012 and Zelalem, 2012). According to seminal work done by Dejene and Yigremew (2009:142); indigenous institutions are crucial for community wellbeing of developing countries. The roles of these institutions include; local resource mobilization, provision of service for the community, information exchange, enhancing community participation, protecting the interest of the people and enhancing their 'claim making-up power'. In addition, indigenous institutions help the development efforts by keeping track of funds, collecting loans, maintaining buildings and equipment, to operate irrigational structures, repairing local roads and by managing other community resources such as health centers, schools, natural resources and others.

4.2 Sidaama Elders' Council and Indigenous Governance (*Cimeessu Songonna Gashshootu Hayyo*)

Primary data revealed that in Sidaama elders (*Cimeeyye*) take the lions share in governing the political, social and economic affairs of the society. The elders have great wisdom in setting peace and security among its members. They also have leadership grace in protecting, sustaining and promoting harmony (see also, Betena, 1991 and Markos et al., 2012).

Before Menelik's expansion to Sidaama land, there was no modern centrally organized governance system in Sidaama area. As Aadland noted (2002), however, the diversified ethnic groups including the Sidaama after conquered by the armies of Menelik II, the regime did not attempt to integrate the respective indigenous knowledge and institutions in to governance system promoted by the then regime in power. Moreover, for decades, the reign of the emperor resulted in 'marginalizing' the local cultures and indigenous institutions of the nations. Before this period Sidaamas lived under their own form of the indigenous governance system, and led by *Chimessa* called *Mooto* (king). The *Mooto* (king) executed or led his government through elders' council called *Songo*. Prominent elders representing different villages and communities (clans and sub-clans) participate and used to sit at the *Songo*, and discussed and passed decision in all the affairs of the nation including the day-to-day affairs of the society (Markos, 2014).

Songo is one of the principal elements in the indigenous elders' system in Sidaama. The *Songo* consists of the leading personalities called *Cimeeyye* (highly respected elders). The decision of *Songo* is believed to be fair and just, because it is based on the concept of supreme truth or true way of life (*Halaale*) which is at the center of the social and culture of the Sidaama nation (Wolassa, 2016). This is also corroborated by the well-known scholar of Sidaama culture, John Hamer (1987:112-113, as cited in Markos, 2014: 113) as:

"*Songo* constitute the formal organization for making policy and settling the disputes that arise within and between hamlet, neighborhood, and descent groups. It is in the day-to-day functioning of these groups where quarrels are resolved and policies devised for avoiding autarky at the house-hold level for preserving the community cooperation."

In the indigenous governance system of the society, elders' council operates as an independent unit. In the community, the elder's council plays a vital role by governing and dealing with various socio-economic and political issues.

The primary data and also the study conducted by Markos and his colleagues (2012) revealed that, in Sidaama there are four hierarchies of elders' council. *Ollu Songo* (The hamlet elders' council) is the first level council in the society. This council of elders' deals with issues related to social disputes at lower level among the members of the village or at family level. The hamlet council deals with less complicated issues in the society and has great contribution to solve village level conflicts. The next council is higher than the hamlet elders' council and lower than sub-clan *Songo* known as lineage council. It encompasses various village level elders' councils and participants of this *Songo* are those elders who come from hamlet level councils. The lineage council deals with cases of appellate nature coming from hamlet council and the other issues that are above to hamlet council.

The third level of council of elders is called sub-clan council and established by elders who come from lineage councils of elders and deals with complicated issues in the society. The members of this *Songo* are elected and represented based on different criteria. These include experience and maturity, good acceptances in the lineage council, from the family of council leaders, being circumcised and participation in the age-set system (*Luwa*)¹ (see also Betena, 1991 and Markos et al., 2012). The highest, the final and influential elders' council in Sidaama is called clan council (*Ga'rete Songo*). The clan council leaders consist of clan leaders and others. Clan leaders held the positions based on age merit and lineage.

The Sidaama nation has fourteen clans, where all of them have their own clan council and

¹Luwa (age-set) is administered by the age grade system, where each grade rotates every after eight year. There are five rotating grades in Luwa system: Darara, Fullassa, Hirbora, WawassaandMogissa. Luwa grade does not depend on the age of the individual. It depends on the grade of one's father. An old person who did not pass through Luwa cycle cannot become Chimessa (Betena, 1991).

independent power to decide over their socio-economic and legal matters. Even though, each clan council operates as an independent unit, the clan elders' council works in together with other clan councils on matters related to the Sidaama nation in general and inter-clan rivalries in particular. Appeal is possible against the decision of the council elders (*Songo*).

4.2.1 Songo, Seera and the Principle of Halaale

The elders' council uses *Seera* to implement their decision. *Seera* is a socio-cultural, political and administrative institution which reflects a unique and egalitarian culture of the Sidaama society. *Seera* refers to a customary law or a rule which governs the social life of society (Markos et al., 2012). According to Aadland (2002:41), *Seera* is a "set of local cultural norms and codes, which regulates communal social structure and interaction". Thus, in Sidaama individual and /or community interactions and relations are governed by *Seera*.

Aadland (2002) that *Seera* (indigenous law of society) has no written procedures and enforcement mechanisms but the individuals abide by it because of the fear of breaking the supreme truth (*Halaale*) which is associated with the fear of God (*Magano*). If members of the community fail to fulfill the obligation of the community or involve in wrong doing, this results in financial or social ostracism (*seera*). When individuals are sentenced according to the moral code of *Seera*, it is called *Seera* is sanctioned (*Seerronni/Seera Worranni*) and this may result in exclusion from community socio-economic and other cultural activities, "where the recalcitrant becomes non-person as people refuse to work, eat or associate with him" (Wolassa, 2016:261).

This traditional law of the society is based on long established tradition and takes cultural variables and local reality into consideration; more effective in governing them and able to give solution which can be accepted by society. Also, the people strictly obey it; in fear of social ostracism, the social stigma and fear of *Halaale* which is associated with fear of God. Thus, in the community this moral code has paramount role by governing the behaviors of community members.

4.2.2 Analysis of Strengths and Weakness of Indigenous Institution

With regard to their strength, it is understood that the institutions are culturally embedded and popular. They are based on norms and values of the community and are accessible to community members and are more powerful in influencing the behaviors of the community members. For example, the community members highly respect the elders' institutions and their social sanction; also for them, these institutions are less complicated and give solution relatively in a short period of time than modern bureaucratic institutions. Moreover, indigenous institutions are based on life experiences of the community; they ensure affordable and efficient access to justice for all members of the community. For instance, in the community, the elders' institution (*Chimessa* institution) decisions are strongly flexible and take local situation into account, based on truthfulness (*Halaale*), which has vital role towards fair decision that must not hurt any of the party and has a great power to bring long lasting solution.

Yet, indigenous institutions have weaknesses (especially nowadays), because they lack formal or written rule and regulations for governing the community members. Since rules are unwritten, the references for cases are difficult and this might sometimes give excessive power to elders. For instance, the function of *Cimeeyye* is intermingled, *i.e.* fusion of power, but this does not presuppose the institution is undemocratic. In the elders' institution of conflict resolution, there is no distinction as a criminal and civil case rather the same elder's council entertains all without having specialization. Also, the institutions lack book keeping and documentation. Furthermore, men are active participants while there is little room for women in the institution. For example, it is observed during the research that women and youth are not active role players in the elders' meetings as members of the council (*Songo*).

4.3 How Indigenous Institutions Would Implement Current Government Policy to Strengthen Local Governance

The federal decentralized governance that is being implemented since 1990s in Ethiopia gives prominence to ethnic identity and ethnic self-government. However, indigenous institutions and organizing principles are not accepted as a direct basis for present-day political reconstruction despite claims to include them as a 'buffer and conduit' between the state/government policy and citizens quest

for indigenous social order. In addition, indigenous institutions would supplement government policy as genuine partners in development on the basis of their two distinct features: the existence of well-defined norms despite the absence of written procedures and a hierarchical system headed by the sovereign; the direct participation of members through the dialogic process of *Affinno*¹ in the decision making could be an added impetus to democratic governance. Therefore, indigenous institutions could be genuine partners in the overall government drive of combating poverty through furnishing the government the requisite legitimacy, moral, social and quasi-judicial functions. Thus, the elders' council in particular and indigenous institutions in general plays paramount role to local governance by sustaining peace, security and social harmony.

Importantly, as Aadland (2002:41) discussed, *Seera* for instance, provides 'social security' for members and it regulates the procedure of decision making in the community through consensus; it obliges the community members to "accommodate to the majority, to seek harmony and consensus rather than individual opinion and personalized justice". In addition of supporting modern justice system by regulating the behavior of individuals and community not to commit the crime, it also plays a crucial role for community members by increasing their cooperation for various activities like local service delivery, natural resource management and mobilizing local resources for community wellbeing. This in return increase local governance efficiency and reduce burden of formal local governance institutions.

In order to strengthen local governance empowered local institutions (both formal and informal) are essential. The existence of these play key role for innovation and productivity, also create suitable condition for investment by reducing risk of social and political instability and conflict. Thus, for countries like Ethiopia, good local governance strategy requires employing both institutions to promote governance process. According to Chakravarti (2005: 28, cited in Rodriguez-rose, 2010), formal institutions are important in development process as they provide "adequate incentive for growth by minimizing risk, uncertainty and corruption [...] facilitate efficiency in economic performance". On the other hand, as Tegegn (2001) argued, indigenous institutions play various social, economic and political roles in local development by filling gaps of those formal institutions. Further, for Amin and Thrift (1994: 23), these institutions, in addition to being substitute for weak formal institutions, are essential for "reduction of transaction cost, for rooting economic activity within any territory, and for enhancing local interdependence, generating greater local economic association" (cited in Rodriguez-rose, 2010).

Importantly, according to Hodgson (2006), when informal institutions are recognized by formal institutions, they become more important and effective. Also, Lutz and Linder (2004) demonstrated, given the limitations of modern institutions, relying on traditional institutions could be an attractive option to improve local governance. This is because, when compared with state structure, traditional institutions do not need to build from the start. At local level creating new and efficient state institutions can be difficult, costs and it needs time as well. Therefore, it is logical to include the existing institutions that were already functioning at local level to improve local governance performance.

More importantly, in a well-functioning state, the indigenous institutions used to play a complementary role rather than mere being a substitution. Informal institutions are mechanisms for improving the performance of formal institutions. The Positive impact of informal institutions on formal institutional development has been described as synergy or co-production. Synergy perspectives argue that the proliferation of informal arrangements not only helps people get by, but contributes to the development of new institutional frameworks for improved service provision and democratic participation. In study area indigenous institutions are playing a more development role in modern governance systems through their ability to contribute to local administration in the preparing an annual kebele (village) development plan; ensuring the collection of land and agricultural income tax; organizing local labour and in kind contributions to local development activities and others.

¹The principle 'Affini/Affino' (Public hearing and submitting cases to elders/elders council). Affino is one of the cultural practices of the Sidaama that unequivocally show dialogic debate when conflict arises and create consensus based mutual settlement. It is also a transparent way of discharging socio-administrative tasks concerning individual, group and community affairs (Markos, et.al. 2012 & 2014).

4.4 Indigenous Institutions vs. Local and National Identity

When it comes to the maintenance of indigenous institutions of governance, the constitution explicitly states nothing an indication to a minimal attention accorded to the contribution of the indigenous institutions. However, again, the devolution of government power, in general, stated in Article 88:1 of the Ethiopian current constitution which explicitly states “guided by democratic principles, government shall promote and support the People's self-rule at all levels.” The process of decentralization also positioned itself in Article 47(1). The issue of preservation of indigenous epistemologies is not to romanticize and exoticise traditional institutions but rather to give them their rightful place and do justice in relation to their role as important social capital stocks which in turn play pivotal role in local governance.

In pluri-national polities like Ethiopia, the political self-governance, devolution of functions of indigenous institutions and strengthening of local identity is a must as it was evident that the alienation of some groups by the past successive regimes in the governance process had severe socio-political implication in intergroup relations in the state. Solving this problem by enabling every group to participate in the socio- political progress of their community saw the strengthening of the local government system in Ethiopia and has minimal impact in affecting the transcendent Ethiopian national identity. The thick bonds of Ethiopian national identity and solidarity are, neither in no way are affected by preservation and promotion of indigenous ways of knowing as a tool for strengthening local governance nor an oxymoron to the Ethiopian national identity.

Thus, it is important to note that indigenous institutions become central to achieve improved local governance and represents a possible alternative for progress among the rural poor. In order to utilize these esteemed hands of the indigenous institutions in local governance process; it is recommended that it should be incorporated into modern state structure governance efforts. Regarding this argument Kandie and Guri (2007a) asserted that, in modern world state structure, indigenous institutions play parallel development roles with formal institutions at local levels. Further, they create suitable environment to mobilize local resource for local development. And provide alternative solutions for policy-makers and development practitioners with deeper insight into the many different aspects of sustainable development and the interrelated role of local culture.

5 Conclusion and Suggestions

To sum up, the Salaam indigenous institutions are culturally embedded and popular. They are based on norms and values of the community and are accessible to community members and are more powerful in influencing the behaviors of the community members. These institutions have vital potential to play for local governance; they are still intact among Ethiopians in general and Sidaama in particular. For nations like Sidaama, these institutions are powerful resource and key elements to overcome local governance problems. Though, these institutions are established due to social, political, economic and spiritual demands, they have potential to complement the local governance efforts of modern institutions in identified activities like local service delivery, natural resource managements, conflict solving, local agriculture, local income, local resource mobilization and others. Thus, inclusion of indigenous institutions in local governance efforts of modern institutions reinforces these goals

Accordingly, this study suggested that, indigenous institutions play vital roles in local governance efforts; and as a result there is a need to strengthen, recognize and empower them. This study also suggests that given the role being played by these institutions, it is imperative that they should be made to complement the contemporary local governance efforts of modern institutions. Local government, policy makers and others should build the capacities of these institutions and involve them in local governance efforts. In pluri-national polities like Ethiopia, the political self-governance, devolution of functions of indigenous institutions and strengthening of local identity is a must as it was evident that the alienation of some groups by the past successive regimes in the governance process had severe socio-political implication in intergroup relations in the state.

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A Sectoral Analysis of FDI Inflow in Ghana: The Implications for the Proposed National 40-year Strategic Plan of Ghana

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Abstract Theory argues that FDI inflows play a significant role in the socio-economic development of host countries, especially in developing countries. Drawing from the long-term planning school from the strategic management field, the study aims to examine the sector (s) that drive most FDIs inflow to Ghana in order to identify the sector that can be used as the cornerstone of a competitive advantage in the light of the proposed 40-year national strategic plan of Ghana. The study uses a secondary data set consisting of the annual FDI inflows into Ghana from 2002-2013 from the Ghana Investment Promotion Centre. The data set consist of the total number of projects, the dollar value and the ownership composition that flowed to Ghana from 2002-2013. By employing descriptive statistics such as bar graphs, charts and tables, the results show that in terms of the contribution of projects, the service sector dominates FDI inflows to Ghana. But with regard to the total dollar value of invested capital, the building and construction sector dominated the period from 2002 - 2013. With regard to the ownership composition, it is found that the wholly owned investments far outweighs the joint venture projects (JVs) to Ghana. Bases on the results, implications of the study on the proposed 40-year national strategic plan are suggested.

Key words Strategic plan, Foreign direct investment, Ghana

1 Background

Foreign direct investment (FDI) inflow is one of the topics which has constantly engaged the attention of economist, academics, governments and practitioners. Foreign Direct Investment (FDI) has seen a massive increase all over the world in recent times due to the role it plays in economic development of most countries. Unlike in the past where FDI was dominated between developed countries, the pattern of investment flow to developing countries including Africa have improved and is steadily changing. A report by (UNCTAD 2002) noted an increase in total FDI flow to developing countries from 8 per cent in 2000 to 26 per cent as at the end of the year, 2015. The share of FDI to developing countries in 2012 was however 52 per cent, accounting for the first time FDI to developing countries exceeds the share of FDI to developed countries (UNCTAD, 2014a). A study conducted by Gorg, Gold, Hanley and Seric (2017) revealed an increase in FDI to African countries from 1 per cent in 2000 to 3 per cent in 2015. Amendolagine, Coniglio and Seric (2017) explained FDI as an essential determinant of structural change and the modernisation that characterised the economies of developing countries. Their study confirms the work by Kelly (2016) who pointed FDI as a fundamental component in the development process of developing countries in their transition from a low income status into a middle income status.

In host countries, especially in the developing world, it is argued that FDI inflows complement investment capital, technology transfer, innovation, managerial capacity, technical skills and access to international distribution channels (World Bank, 2013; Abduai, 2004). It is also found that other benefits of FDI inflows to host countries include, strengthening local competition, infrastructure development, employment generation and resource utilization (Denisia, 2010; Insah, 2013; Offiong & Artsu, 2014). Aside, the benefits to host governments, the investing firm also gains from FDI. Among the benefits which accrue to the investing firms include, but not limited to low cost of production, local market access, business expansion, access to natural resources and enhanced return on investment (UNCTAD, 2008). Scholars who researched into FDI has noted a significant number of benefits that FDI inflows bring into countries in the world (economic growth, employment and productivity, financial development, quality environment, poverty reduction, good governance and welfare) and

Africa is not left out. Researchers (Ameer and Xu, 2017; Malikane and Chitambara, 2017; Amendolagine et al., 2017; Kelly 2016) found a positive impact of FDI on economic growth in African countries. Ameer and Xu (2017) found a long run significant positive effect of FDI on economic growth, depicting the importance of FDI in the development of countries. Based on Southern Africa data, Malikane and Chitambara (2017) found a similar support for the importance of FDI.

Foreign direct investment also allows the transfer of technology. Through FDI, the transfer of technology that could not be achieved by the host country's own efforts are made possible (Feldstein, 2000). The technology transfer is usually in the form of a variety of new capital assets. With new and advanced technology transfer, the human capital of FDI host nations is developed as employees receive training in the course of operating on the FDI's project. FDI inflows add to the stock of capital of host economies. FDI involves transfer of resources which add to the host nation's capital stock. This external capital inflow helps bridge the savings-investment gap of the host country (Ugwuegbe, 2014). Here, the investing company's investment capital increases the capital base of the host country. FDI exposes the host nation to international market by improving the competitiveness of the host country. According to UNCTAD (2005), developing countries share of FDI has increased from 4% in the 1980 to 36% as of 2004. Consequently, on the world economy, UNCTAD (2013) projected a 1.6 trillion rise in FDI in 2014 with 1 trillion increase each year to 2016. However, these increases were projected to be relatively larger in developing countries.

FDI inflows affect both the quantity and quality of the labour in Ghana. On job creation, FDI inflows to Ghana between the years 1994 to 2002 has been linked with employment of nearly over 72,300 Ghanaians and 4,600 foreigners in Ghana (UNCTAD, 2003). The introduction of new occupational groups, improved skills, and higher productivity are indicators of improved work force as a result of technology diffusion from FDI inflows into Ghana (United Nations, 2003). Different foreign projects in Ghana come with different skilled personnel, experts in various project areas, new and/or improved technologies, and opportunities for training of local workforce abroad. There have been significant increases in technology through the influx of machinery and equipment which has contributed enormously to the capabilities of the local industries through skills formation.

Of the theories of FDI (e.g. Dunning, 1988 [Electric paradigm]; Hymer, 1973 [internalization theory; Vernon, 1996 [Product Cycle Theory]), the electric paradigm (Dunning, 1988) predict and explain the benefits of FDI to both host governments and the investing firms. Studies offers empirical supports to the theoretical assumptions of FDI inflows. For instance, using evidence from Mexico and Indonesia, Blomstrom (1994) confirmed that there is a spillover effect from FDI and the competitiveness of local firms. From Lithuania's sample, Smarzynska (2002) also confirmed that local firms supplying to foreign companies receive spillover effect. In another study by Gorg and Greenaway (2004), it was confirmed that FDI impacts positively on domestic investment, international trade and transfer of skills and technology.

Following from the empirical and theoretical benefits of FDI, most countries in the developing economies make initiatives such as economic liberalization policies and economic recovery programmes to attract FDI. To protect and promote the competitiveness of developing countries on the international market, most African countries after independence imposed trade restriction, including controls and restricted foreign capital inflows. Yet with the influences of the globalization process, the trends have changed. In recent years, however, much focus has been geared towards promotion FDI inflows into developing countries. Of the countries in sub-Saharan Africa, Ghana is one of the countries that has employed a number of measures to accelerate growth and development in the country via FDI inflows.

In Ghana, for instance, there has been the promulgation of the legal instrument, for example Act 478 in 1994 which aimed at reducing obstacles, loosening restrictions to and creating incentives for FDI (Cotton and Ramachandran, 2001). Among the initiatives in Ghana that aim to attract FDI, include, but not limited to resourcing the Ghana Investment Promotion Centre to act as the one-stop-shop for investment in Ghana and the Ghana Free Zone Authority. In 2009 and 2010, Ghana was ranked amongst the top 10 global reformers by the World Bank's Doing Business Team (ADB and ADF, 2012). In 2011, the African Business Panel Survey release ranked Ghana fourth (4th) amongst the best

destinations in Africa for FDI. Ghana followed Kenya who ranked 3rd, Nigeria and South Africa in the ascending order. In terms of recipients of FDI, Ghana ranked 7th in Africa, and 3rd in Sub-Saharan Africa at the end of 2010 according to the United Nations Conference on Trade and Development report. Ghana has also experienced growth in the private sector with much contribution from the service sub-sector.

According to the Ghanaian Daily Graphic (2015, P.5), Ghana plans to have to a 40-year strategic and/or development plan in order to achieve the socio-economic prosperity the nation aspires. Whilst this initiative is in line with long-term planning school from the strategic management field, (e.g. see Johnson and Scholes, 2011; Thompson *et al.*, 2012; Pearce and Robinson, 2013), yet the proposed plan lacks some of the major requirements of long-term planning process, namely analyzing the external environment, which includes the analysis of the most strategic sectors of the Ghanaian economy in the area of FDI. The reason for this is that being a developing country, FDI inflow will play a significant role in the socio-economic process of the Ghanaian economy. Drawing from assumption, the purpose of the study is to identify the most strategic sectors of the Ghanaian economy in terms of FDI contributions in order to integrate such sector (s) in the proposed 40-year national strategic plan as a cornerstone for competitive advantage. To explore this issue and make recommendations to the proposed national strategic plan, the rest of the chapter is sub-divided as follows. Section 2 deals theoretical foundation and empirical literature; Section 3 focuses on method, results and analysis. Section 4 deals with the implications of the study.

2 Theory and empirical literature

In this sub-section, the theory that informs the study and sample of empirical literature are reviewed.

2.1 The Dunning theory

The study is based on the assumptions of the Dunning's (1988) electric paradigm to explain the effects of the FDI inflows in host countries. The basic assumption of the theory is that FDI inflow is motivated by three main factors, namely ownership, location, and internalisation advantage, popularly known as the OLI theory. First, the assumption of the ownership specific advantage is that certain ownership specific advantages that are exclusive to the investing firm (e.g. tacit knowledge, technology) enhances its chances to outperform competitors in the host country and the product market, making the FDI initiative profitable and viable. The reason is because the ownership specific advantages enable the investing firm to produce quality products and at a lower cost and outperforms competitors which insulates the investing firm from the power of other competitive forces (e.g. the threats of new entrants, the bargaining power of buyers and sellers and the threat of substitution). Second, the location specific advantage assumes that in addition to the ownership specific advantage, the investing firm obtains other advantages that are specific to the location of the host country. Among the location specific advantages include, but are not limited to political stability, purchasing power, availability of infrastructure, including transportation and telecommunication networks as well as other specific policies (e.g. free zone and tax holidays). This location specific advantage makes FDI transaction viable in the host country. Third, the internalization principle assumes that with the existence of the first two conditions (ownership and location advantages), the investing firm is better off by undertaking an FDI project by itself in the host country other than operating through licensing and/or franchising. The combine implications of the OLI theory is that with the fulfillment of the three conditions, there is a win-win situation between the investing firm and the host country. What this means is that, by operating the FDI the host government enjoys both macro and micro advantages, including employment generation and technology transfer respectively. The investment firm benefits through the OLI advantages. Consequently, FDI becomes beneficial to both the investing firm and the host government. Implicitly, both the investing firm and the host country become better off other than before the FDI deal.

2.2 Strategic management, national strategic planning and environmental analysis

The strategic management literature makes the analysis of the external environment a key requirement in any long-term planning process. According to Pearce and Robinson (2013), once a path

has been created (e.g. 40-year national strategic plan in the case of Ghana), a detailed analysis of the environment must be undertaken to identify opportunities and threats and predict their impacts on the plan. In line with researchers (e.g. Johnson, Whittington and Scholes, 2011; Thompson *et al.*, 2016; Pearce and Robinson, 2013), the detail analysis of the external environment involves a critical analysis of the themes such as the political, legal, economic, social-cultural, technological and the ecological environments in order to identify their consequences on a proposed strategic goals. According to the researchers above, the legal and political environment looks at the past and the present policies and programmes of government, including laws so as to determine their potential effect on the proposed plan. The economic environment looks at the issues such as interest rate, exchange rate, government expenditure, national income, including the overall gross domestic product (GDP) of a nation in order to make strategic decisions. The social cultural environment examines trends in national demographics in term of age distribution, concentration of the population, culture and attitudes and to examine their effect on long-term plan. The technological environment looks at the state of technology in the country to examine which activities are driven by technology and its likely implications on the national strategic plan. The ecological environment examines the influence of life supporting systems on a long-term plan. However, of these influences, the key among them are the economic and the socio-cultural influences. Implicitly economic and the socio-cultural environments include the examination of most strategic sub-sectors of an economy, including an assessment of demand and purchasing power in the most FDI concentrated sectors. Consequently, it is when all these are done can an informed judgement be made with regard to the direction of the national strategic plan, such as the proposed 40-year national strategic plan of Ghana.

3 Clarification of concepts

3.1 The concept of foreign direct investment (FDI)

Foreign direct investment (FDI) defines investment by foreign individuals, firms, and/or governments in a host country. FDI according to OECD, reflects an investor (e.g. a resident of one country obtaining a lasting interest in an establishment that is resident in another country). It entails the control of ownership in a business enterprise in a country by an entity based in another country either partly or wholly (OECD, 2000).

3.2 Forms of FDI

Once a firm engages in FDI, it becomes a multinational enterprise (MNE). An investor investing in a different country or undertaking FDI could have a wholly owned company established or become partners to an existing firm(s). FDI could take various forms varying from the line of operation or business, ownership composition. FDI could take the form of vertical or horizontal FDI, Acquisition or Greenfield, Wholly owned subsidiary or Joint Venture (Chen, 2007).

Vertical FDI is an investment in upstream in supplier (backward) or downstream with the distributors purchaser (forward) in line of the line of business. In contrast, FDI that is in the same industry as the mother company at home country is termed as a horizontal FDI.

Acquisition exists when an existing company in a foreign country is purchased. Greenfield entails the setting up of a new company in the host country. Most cross-border investments are in the form of mergers and acquisitions rather than Greenfield investments. The reason is because mergers and acquisitions are quicker and less expensive relative to Greenfields.

Also the ownership composition of FDI could be wholly owned or partially owned (JVs). FDI takes the former form when the company in the host nation is entirely owned and controlled by the foreign investor. Joint venture ownership occurs when one or more foreign firms and at least a local company join to form a new company.

4 Empirical literature

This sub-section deals with sample of empirical literature that confirm the motivation of the paper.

Abdulai (2005) conducted a study in the area of sectoral contribution to FDI in Ghana by the non-mining sectors comprising of the manufacturing services, tourism, building and construction,

export trade, agriculture and general trade. The results show that between 2000 and 2003, a total value of \$412.8 million FDI inflows flowed to Ghana. Of this, the highest contribution was recorded in the service sector and it was attributed to large investment in the telecommunication sub-sector. In that study, the researcher also found the manufacturing sector to be the second largest contributor to FDI inflow, but the general trading sector came third in both numbers of projects and value contributions to FDI. Results from Abdulai (2005) also showed the export trading sector making the least contribution to FDI (both number and value) over the period.

Rajeswari and Akilandeswari (2015) examined the sectoral contribution to FDI inflows in India for the period 1991 to 2014. The authors also found that the maximum contribution of FDI inflows took place in the service sector, particularly the financial and non-financial services, namely telecommunication, information technology, hotel and tourism. In that study, the analysis of the FDI inflow was in two-folds: 1991 to 1999, and 2000-2014. In the first period (1991-1999), the service sector came second to the electrical equipment contributing US\$ 1213.66 million as against US\$1393.13 million. Trading was 11th with US\$ 201.48 million, hotel and tourism in 14th with US\$ 91.33 million, whilst the construction and automobile industry placed 21th and 22nd respectively. Between the year 2000 and 2014, the service sector placed 1st making the highest contribution to FDI with US\$ 41,111.80 million values contribution. This was followed by the construction industry which experienced a tremendous rise in contribution with US\$ 23,951.68 value.

In a similar study, Kornecki (2006) found that the service remained the largest contributor to FDI in Poland, Hungary and Czech Republic in the late 1990s and early 2000. This confirmed the growing trend of the FDI contribution in the service sector in transition economies (Protsenko, 2003). In this study, the author further found that the real estate sector became the next contributor of FDI inflows.

Consistently, the dominance of the service sector in FDI contribution has been revealed by a more comprehensive study by the World Investment Report (WIR) in 2014. The World Investment Report (2014) provides results on primary, manufacturing and service sectors for both Africa and Least Developed Countries (LDCs) for the 2004-2013 period. The analysis revealed similar trends for both Africa and least developed countries.

For Greenfield FDI projects, WIR (2014) revealed that the value share in the primary sector experienced a decrease from 53% in 2004 to 11% in 2013 for African; 74% to 9% for LDC. That of manufacturing sector also reduced from 32% to 26% whilst that of the service sector experienced a rise from 13% in 2004 to 63% in 2013. Also on the value contribution over the period, the contribution or share of the primary sector in total FDI values reduced from 74% of total FDI value to 9%. The manufacturing sector experienced a growth from 16% in 2004 to 21% in 2013, whereas the service sector experienced a high increase in share of value contribution to total FDI value from as low of 10% to a high of 70% in 2013.

Review of empirical studies suggests that the service sector on the average dominates in the project contribution to FDI in most developing countries. In terms of value contribution, although the literature does not show a clear indication of the service sector dominance, it is however clear that the manufacturing and service sector make remarkable contributions to FDI values.

5 Methodology

The study employs secondary data set gathered from the Ghana Investment Promotion Centre (GIPC) on FDI inflows to Ghana. Ghana Investment Promotion Centre (GIPC) is a governmental agency, responsible under the GIPC Act, 2013 (Act 865) for encouraging and promoting investments in Ghana from abroad. The data set consists of: 1) individual projects inflows into Ghana, 2) the total dollar value of the FDI investment inflows and 3) the ownership composition of the investment projects (total wholly owned versus joint venture projects). The data was received in a roll form when an official letter was sent to the Centre requesting for the information. The data was screen to ensure its accuracy before uploading on to excel and running the various charts that inform the analysis. The analysis makes use of statistical tools like the mean, and frequencies in analysing the data.

6 Analysis, results & discussion

6.1 Number of FDI projects registered on sector basis

Analysis of data reveals that the number of projects registered by GIPC covering the twelve year period (2002-2013) totaled 3,421 as presented in Figure 1 below. Out of this total, the service sub-sector was found to account for the majority of the projects over the period. For example, with a total of 1,069 projects registered, the service sector accounts for about 31% of the overall total number of projects registered. This is followed by General Trading and the Manufacturing sectors with 730 and 725 projects respectively representing approximately 21% each. The Building and Construction sector, and the Tourism sector follows with a total project of 342 (10%) and 263 (8%) respectively. Accounting for the least number of projects is the agricultural and export trade sectors with 146 (approximately 4%) projects each. This clearly indicates that on average, the service sector recorded a more FDI related project than the other sectors of the Ghanaian economy.

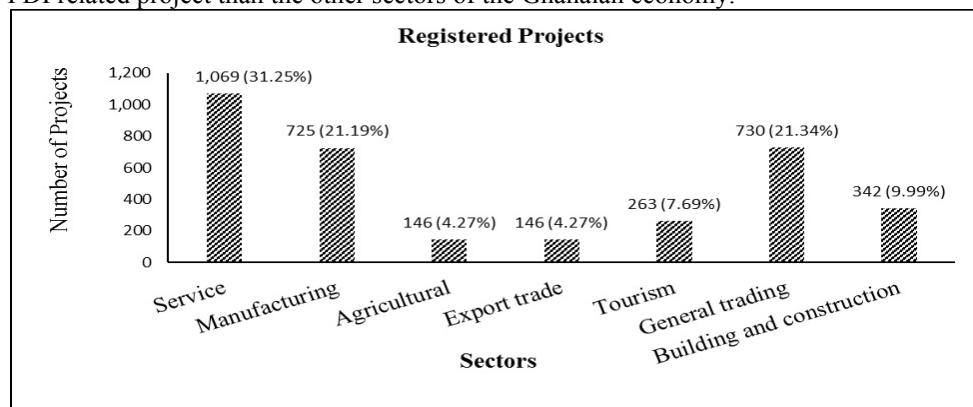


Figure 1 Number of registered projects for the 2002-2013 period (Source GIPC, 2014)

Table 1 below offers the details of the individual projects that were registered and their corresponding percentage contributions. Of the 12 years, it can be ascertained that the year 2011 recorded the highest number of projects totaling 489 projects, followed by 2013, that is 393 projects whilst 2002 recorded the least, accounting for 141 projects.

Table 1 Number of registered projects by sector (2002-2013)

Sectors	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total	%
Service	36	38	49	44	68	52	84	87	143	195	142	131	1069	31.25
Manufacturing	44	40	52	79	63	87	49	59	60	76	53	63	725	21.19
Agriculture	14	13	9	9	6	15	16	13	15	10	12	14	146	4.27
Export Trading	2	16	6	8	13	12	18	4	18	24	13	12	146	4.27
Tourism	19	19	23	16	19	32	22	21	24	25	21	22	263	7.69
General Trading	17	25	32	44	49	67	73	52	85	110	86	90	730	21.34
Building & Construction	9	11	12	20	20	32	24	19	30	49	55	61	342	9.99
TOTAL	141	162	183	220	238	297	286	255	375	489	382	393	3421	100.00

Source : Constructed from GIPC Data, 2014

6.2 Total dollar value of FDI contribution by sectors

Whilst Figure 1 and Table 1 focus on the number of FDI's projects registered annually, Figure 2 and Table 2 below deal with the total US dollar value of each projects registered. For instance, from Table 2, the individual total dollar value contributions over the 12-year period can be seen as follows: 1) Service (\$3,548.53 million), 2) Manufacturing (5,761.18), 3), Agriculture (\$1,268.18 million), 4) Export trade (\$81.79 million), 5) Tourism (\$287.44 million), 6) General Trading (\$1,667.40 million), and 7) Building and construction (\$12,826.51 million). Among the dollar value contributions of the FDI inflows, the building and construction sector had the largest contributions of FDI investment in Ghana. This is followed by the manufacturing sector, which is also the second largest contributor to total registered FDI project. The service sub-sector (highest share in FDI projects) ranks third in the

value contribution to FDI, followed by the general trading sector, the agriculture sector, tourism, and finally export trade. From the analysis, the results for the service and manufacturing sectors on their value contribution to FDI is consistent with results from previous studies which found the two sectors to compete in value contributions to FDI.

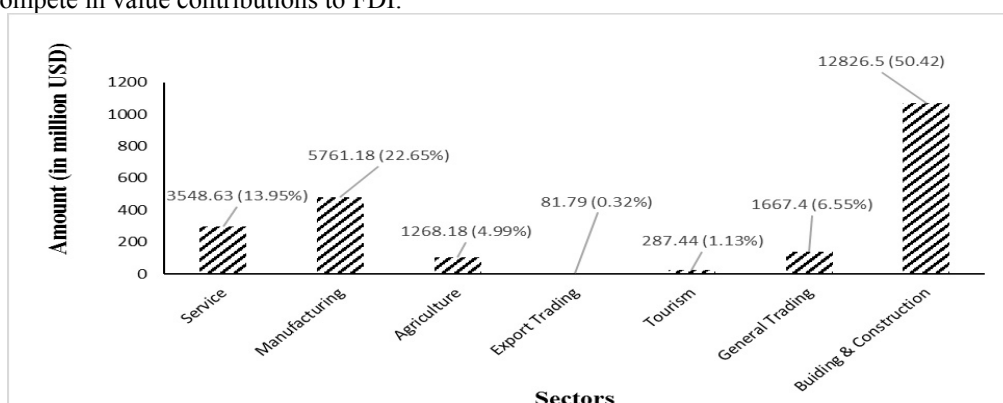


Figure 2 Value contribution to FDI by sectors (overall) (Source GIPC, 2014)

Also, Table 2 presents the general results on the annual value contribution by the various sectors over the years. The total value contribution by each sector with the respective percentage is also shown below.

Table 2 Value of registered projects by sector (2002-2013)

Sectors	Project value (in Million Dollars)									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Service	6.71	67.17	97.85	39.72	61.07	54.76	292.96	210.7	609.39	512.5
Manufacturing	20.71	21.39	28.25	37.41	2,172.78	156.92	236.41	98.06	108.9	358.26
Agriculture	20.79	8.4	5.76	4.28	6.45	36.39	57.45	102.42	345.19	512.5
Export Trading	0.06	1.22	0.38	3.53	9.3	2.05	6.17	1.33	19.41	8.08
Tourism	4.78	4.01	40.81	4.02	15.01	9.18	4.08	60.55	6	36.75
General Trading	7.36	12.02	16.67	34.56	35.94	61.04	836.2	35.1	56.04	99.15
Building & Construction	9.06	2.27	15.29	90.23	67.31	38.3	2,097.34	118.64	123.06	6,067.71
TOTAL	69.47	116.48	205.01	213.75	2367.86	358.64	3,530.61	626.80	1,267.99	7,594.95

Table 2 Continued

Sectors	2012	2013	Total	Percent (%)
Service	537.49	1,058.31	3548.63	13.948
Manufacturing	2,000.34	521.75	5761.18	22.645
Agriculture	14.46	154.09	1268.18	4.985
Export Trading	20	10.26	81.79	0.322
Tourism	36.75	65.5	287.44	1.130
General Trading	165.39	307.93	1667.4	6.554
Building & Construction	2,699.79	1,497.51	12826.5	50.417
TOTAL	5,474.22	3,615.35	25,441.13	100.00

Source: Constructed from GIPC Data, 201

6.3 FDI ownership composition

The ownership composition of the FDI inflows in Ghana over the period is presented in Figure 2. From Figure 2, most FDI inflows are based on joint ventures (JVs) than wholly foreign owned ownership in the early years (2003-2004). In 2002, 41.18% of FDI inflows in Ghana were wholly foreign as against 58.82% JVs. In 2003 and 2004, there were more JVs than wholly foreign FDI inflows by 6.1 %, 5.47% points respectively. The FDI ownership composition turned to increase more

in the wholly foreign projects relative to JVs. From 2005 through to 2013, FDI inflows were more in foreign owned than a joint ownership. The share of wholly foreign investments in total FDI inflows was more than that of JVs. On the average, the results reveal that there have been more wholly foreign direct investments relative to FDIs with joint venture ownership. The detailed presentation is followed in Table 3 below.

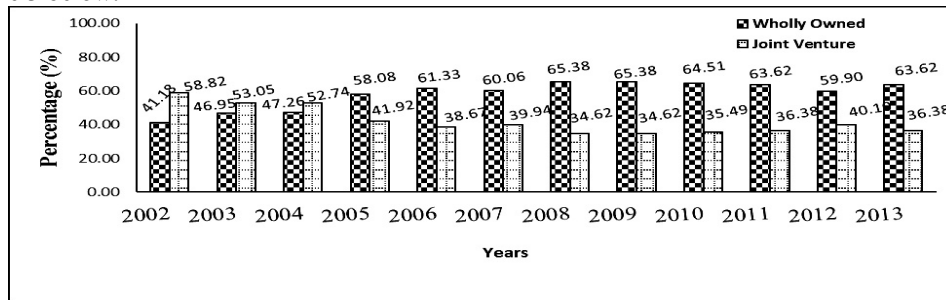


Figure 3 Ownership composition of FDI inflows (2002-2013)(Source: GIPC, 2014)

Table 3 FDI ownership composition (2000-2013)

Year	FDI ownership composition				Total project
	Wholly owned		Joint venture		
	Freq. (#)	Percent (%)	Freq. (#)	Percent (%)	
2002	63	41.18	90	58.82	153
2003	77	46.95	87	53.05	164
2004	95	47.26	106	52.74	201
2005	133	58.08	96	41.92	229
2006	157	61.33	99	38.67	256
2007	185	60.06	123	39.94	308
2008	187	65.38	99	34.62	286
2009	170	65.38	90	34.62	260
2010	249	64.51	137	35.49	386
2011	327	63.62	187	36.38	514
2012	239	59.90	160	40.10	399
2013	327	63.62	187	36.38	514

Source: Constructed from GIPC Data, 2014

7 Conclusion and implications

Among the seven sectors (service, manufacturing, agriculture, export trade, tourism, general trading, and building and construction) of the Ghanaian economy considered by this study, the service sector registered the most FDI projects in the country on average (approximately 89 projects), followed by general trading with an average of approximately 61 projects, manufacturing (60 projects), building and construction (29), tourism (22), agriculture (12) and export trade (12).

Although the service sector dominated in the number of registered FDI projects over the years, followed by manufacturing, yet the building and construction sub-sector dominated in terms of value contribution to FDI inflows into the country. On the average, the building and construction sector contributed almost four times more than the service sector that contributed most in terms of project number over the years (\$1,068.88 million on average as compared to \$295.719 million for the service sector). The export trading sector was the least contributor to FDI both in the number of registered projects and project amount. For instance, Building and construction recorded not many individual projects compared to the other sub-sectors, yet it recorded highest value than these various sectors thereby making it the sector dominating in terms of value contribution.

FDI ownership composition was also found to be more JVs than wholly foreign in the first three years (2002-2004). Beyond the third year (2004-2013), the ownership composition of FDI in Ghana has been wholly foreign.

Implications on the 40-year Ghana's development plan

Ghana's 40-year strategic plan spells out the vision and the strategic goals of the country and so the outcome of this study has a number of strategic consequences.

First the government must use the construction sub-sector as the cornerstone for achieving most of the strategic goals in the 40-year national development plan. Implicitly, a number of public private partnerships initiatives must be considered with the sector. There must be a more technology transfer within the sub-sector. So the government and/or its agency like the Ministry of Trade and Industry in collaboration with the Ghana Investment Promotion Centre must sensitize the foreign investment community about the importance and the benefits of joint ventures with indigenous firms. This must be seriously emphasized in order to benefit from the technology transfer to be used as the cornerstone for a competitive advantage in the proposed 40-year strategic plan.

Having found the construction sector to be strategic in this analysis implies that a comprehensive policies must be drawn to inform the development of the sector. In addition, the statistics produced in this study should be used to predict the growth of the construction sub-sector vis-à-vis all other sectors. The result shows that the service sector dominates FDI inflows to Ghana. What this means is that the 40-year development plan must target growth of the manufacturing sub-sector, this is because the economic transformation of the Asian countries, especially the BRICS group of countries (China, Russia, India, Brazil and South Africa) are found to be as a result of their manufacturing potentials.

The contribution of the service and building and the construction sub-sectors in terms of number of projects and the value of FDI investment amount is very revealing in the light of the proposed 40-year development plan. This means that these are the strategic sectors of the Ghanaian economy; they are the sub-sectors that derive demand and purchasing power, employment and among others. Going forward concerning the proposed 40-year national development plan, there is the need to remove all the unnecessary threats surrounding these sub-sectors, so that the strengths of the nation can be used in these areas to promote and grow the sectors whilst collaborating with foreign investors to achieve the strategic goals of the proposed 40-year development plan.

Overall, the results serve as an important statistics for a sectoral transformation to achieve the vision of the 40-year development plan.

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Appendix

Table A1 Number of registered projects by sector (2002-2013)

Sectors	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total	Average
Service	36	38	49	44	68	52	84	87	143	195	142	131	1069	89.0833
Manufacturing	44	40	52	79	63	87	49	59	60	76	53	63	725	60.4167
Agriculture	14	13	9	9	6	15	16	13	15	10	12	14	146	12.1667
Export trading	2	16	6	8	13	12	18	4	18	24	13	12	146	12.1667
Tourism	19	19	23	16	19	32	22	21	24	25	21	22	263	21.9167
General trading	17	25	32	44	49	67	73	52	85	110	86	90	730	60.8333
Building & construction	9	11	12	20	20	32	24	19	30	49	55	61	342	28.5
TOTAL	141	162	183	220	238	297	286	255	375	489	382	393	3421	

Source: Constructed from GIPC Data, 2014

Table A2 Value of registered projects by sector (2002-2013)

Sectors	Project value (in million dollars)										
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Service	6.71	67.17	97.85	39.72	61.07	54.76	292.96	210.7	609.39	512.5	
Manufacturing	20.71	21.39	28.25	37.41	2,172.78	156.92	236.41	98.06	108.9	358.26	
Agriculture	20.79	8.4	5.76	4.28	6.45	36.39	57.45	102.42	345.19	512.5	
Export trading	0.06	1.22	0.38	3.53	9.3	2.05	6.17	1.33	19.41	8.08	
Tourism	4.78	4.01	40.81	4.02	15.01	9.18	4.08	60.55	6	36.75	
General trading	7.36	12.02	16.67	34.56	35.94	61.04	836.2	35.1	56.04	99.15	
Building & construction	9.06	2.27	15.29	90.23	67.31	38.3	2,097.34	118.64	123.06	6,067.71	
TOTAL		116.48	205.01	213.75	2367.86	358.64	3,530.61	626.80	1,267.99	7,594.95	

Table A2 Continued

Sectors	2012	2013	Total	Average
Service	537.49	1,058.31	3548.63	295.719
Manufacturing	2,000.34	521.75	5761.18	480.098
Agriculture	14.46	154.09	1268.18	105.682
Export Trading	20	10.26	81.79	6.81583
Tourism	36.75	65.5	287.44	23.9533
General Trading	165.39	307.93	1667.4	138.95
Building & Construction	2,699.79	1,497.51	12826.5	1068.88
TOTAL	5,474.22	3,615.35	25,441.13	5,474.22

Source: Constructed from GIPC Data, 2014

Table A3 Share of value contribution to fdi registered projects by sector (2002-2013)

Sectors	Sectoral contribution to total project value (in percentages)										
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Service	9.66	57.67	47.73	18.58	2.58	15.27	8.30	33.62	48.06	6.75	
Manufacturing	29.81	18.36	13.78	17.50	91.76	43.75	6.70	15.64	8.59	4.72	
Agriculture	29.93	7.21	2.81	2.00	0.27	10.15	1.63	16.34	27.22	6.75	
Export trading	0.06	1.05	0.19	1.65	0.39	0.57	0.17	0.17	0.21	1.53	
Tourism	6.88	3.44	19.91	1.88	0.63	2.56	0.12	9.66	0.47	0.48	
General trading	10.59	10.32	8.13	16.17	1.52	17.02	23.68	23.68	5.60	4.42	
Building & construction	13.04	1.95	7.46	42.21	2.84	10.68	59.40	59.40	18.93	9.71	
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

Table A3 Continued

Service	9.82	29.27
Manufacturing	36.54	14.43
Agriculture	0.26	4.26
Export Trading	0.37	0.28
Tourism	0.67	1.81
General Trading	3.02	8.52
Building & Construction	49.32	41.42
TOTAL	100.00	100.00

Source: Constructed from GIPC Data, 2014

Table A4 FDI ownership composition (2002-2013)

Year	FDI ownership composition				Total
	Wholly owned		Joint venture		
	Freq. (#)	Percent (%)	Freq. (#)	Percent (%)	
2002	63	41.18	90	58.82	153
2003	77	46.95	87	53.05	164
2004	95	47.26	106	52.74	201
2005	133	58.08	96	41.92	229
2006	157	61.33	99	38.67	256
2007	185	60.06	123	39.94	308
2008	187	65.38	99	34.62	286
2009	170	65.38	90	34.62	260
2010	249	64.51	137	35.49	386
2011	327	63.62	187	36.38	514
2012	239	59.90	160	40.10	399
2013	327	63.62	187	36.38	514

Source: Constructed from GIPC Data, 2014

Ad-Hoc Committees/Taskforces as Policy and Governance Platforms for Complexity Management in Nigeria

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Abstract Bureaucratic institutions have received knocks for being ill-suited to cope with the tasks and circumstances of contemporary governance. Changes in technology, markets, complexity of policies, regulation and investigations coalesce to produce situations in which governments increasingly show penchant for seeking alternative organizational approaches. However, the management and relationship of these new governance modes with the traditional bureaucratic institutions remain unclear and ill-defined in many practical situations. The use of ad hoc committees/taskforces beyond mere policy advice, as policy and governance hubs and networks, are considered in this study as part of these alternative organizational approaches. This study examines their use, relationship with mainline bureaucratic agencies, effectiveness, and challenges in providing administrative solutions in Nigeria. Findings reveal that ill-defined procedures and guides for the operations of ad hoc bodies offend the traditional governance institutions, generating frustrating conflicts. It is suggested that there is need for regulating the process and manner of setting up ad hoc committees as policy and governance hubs, and, they should operate more as collaborating entities between various individuals/organisations considered relevant and traditional institutions of government so as to enhance integration of views, consensus and ownership of outcomes, rather than work in parallel or as solution merchants.

Key words Ad-hoc committee and taskforce, Bureaucratic institution, Policy and governance networks, Network management, Complexity management

1 Introduction

Despite the existence of statutory, formal bureaucratic ministries, agencies and departments (MDAs) that are mandated with specific duties of governance, the use of various types of ad-hoc committees, commissions, panels or taskforces¹ as policy and governance platforms has been an age-long practice in governments. Their relevance as institutions of policy formulation and governance has sometimes, prompted their qualification as the fifth arm of government (Campbell, 2002). Their use in governance issues is multijurisdictional and multi-dimensional-transverse all the arms of government and responsibilities. Committees, commissions or taskforces as the case may be, are generally qualified as advisory bodies, even though they have also been used to pursue not just policy advisory responsibility, but its implementation, evaluation and other goals such as quasi-judicial roles and handling of various complex problems faced by governments. In more recent times, changes in technology, markets, formation and implementation of complex policies, regulations and investigations coalesce to produce situations in which governments increasingly show penchant for seeking the use of networks (what is usually described as the new governance paradigm in public administration) as alternative organizational approaches to manage complexities and deal with the day to day issues of public administration. This approach requires the collaboration of various non-state actors in a nonhierarchical mode of administration (Provan & Kenis, 2007). Yet, in almost every country, bureaucratic institutions that are part of the formal and statutory structure of government remain intact, necessitating that it is not just enough to introduce and create new creatures of governance; there should be adequate adaptation and seamless interrelationship between the formal traditional government institutions like the bureaucracy and these collaborating institutions.

Ginsberg and Burgat (2016) observe that advisory committees are established for a number of

1 While there may be some differences among the various concepts used to describe ad-hoc bodies, no effort is made here to differentiate them.

reasons, which may include acquiring new ideas from non-governmental experts, removing certain controversial topics from politically charged arenas, and reducing the workload of executive branch employees and Members of Congress. Invariably, this also underscores the feasibility of using these bodies beyond mere advisory roles, as policy and governance networks in today's complex administrative environment. While the use of ad hoc bodies as policy advisory bodies is not new in government, examining their role in the light of the trending policy and governance networks is scarcely discussed in literature. Increasing complexity of problems that face many modern governments continue to endear them to the use of policy and governance networks. This then informs the concern of this paper towards examining the role of ad hoc bodies as policy and governance networks. Some relevant questions that the study seek answers to therefore border on what the standards should be in establishing ad hoc committees beyond the traditional role of policy advice to that of policy and governance networks. What should constitute their powers/roles and relationship with core statutory institutions of government, and, what the challenges of their use as instruments of policy and governance networks are? The objective of the study therefore is basically to conceptualize ad hoc bodies including taskforces, panels and committees largely understood hitherto as advisory bodies, as possible policy and governance networks. Specific objectives include examining their roles/relationship in relation to the mainline bureaucratic agencies, and investigating the challenges that could mar the benefits accruable from these important administrative organs in dealing with complex and wicked societal problems, using the Nigerian experience.

Three important administrative issues considered complex and of high societal importance by various Nigerian federal administrations since 1999 are focused on for the study. These were the desire to reform and re-organize the public administrative system through institutional re-organization and restructuring, the pursuit of the petroleum sector reforms, and the general concern to ensure security of life and properties especially with the rise of Boko Haram insurgency in the country. There is no extant data on such committees established in Nigeria within the period covered by this study or any other. However, a total of 30 ad committees (10 each from the three focused areas) are documented in this work through literature search in the three key areas focused on. Empirical data were collected through in-depth interviews (IDI) with members of 9 (three from each area) of these identified committees. Committees whose members participated in the IDI are asterisked in Table 1).

Table 1 List of some Ad-hoc committees in three complex administrative issues in Nigeria 1999 to 2017

General administrative reforms and re-organisation	Petroleum sector reforms and institutional restructuring	Security
1.The 34 member Special Committee on the Review of Petroleum Products Supply and Distribution (SCRPPSD) (2000)*	1.The Presidential Panel on the Review, Harmonization and Rationalization of Federal Parastatals, Institutions and Agencies (Ahmend Joda Committee (1999)	1. Special Presidential Committee on Amnesty to Niger Delta War Lords (2009)
2.The Oil and Gas Reform Committee (OGRC) (2000)	2. Olusegun Obasanjo's Economic Team (1999-2003)	2.Presidential Committee On Dialogue and Peaceful Resolution of Security Challenges In the North-Kabiru Tanimu Turaki, Minister of Special Duties-Chairman. Also known as Amnesty Implementation Committee (2013)
3.The Petroleum Products Pricing Regulatory Committee (PPPRC) (2001)	3.Obasanjo's Public Service Reform Team (PSRT) (2003)	3.Presidential Committee on Small Arms and Light Weapons-Amb. Emmanuel Imohe- (Chairman) (2013)
4. Oil and Gas Implementation Committee (OGIC) (2007)*	4.SERVICOM Initiative*	4.The Victims Support Fund (VSP) – T.Y. Danjuma Committee (2014)*
5.The Justice Alfa Belgore committee (2012)	5. A new National Strategy for Public Service Reforms (NSPSR) team (2007);	5.The Safe School Initiative (SSI) (2014)
6.The Dr. Christopher Kolade Subsidy Re-investment and Empowerment Programme Board, (SREP) (2012)	6.National Development plan for Vision 20-20 Team (2007)	6.Presidential Initiative on the North East (PINE) (2014)
7.The Nuhu Ribadu-led Petroleum* Revenue Special Task Force	7.Steering Committee on reform chaired by the SGF, with HCSF as Deputy Chair (2007-2010)	7.Presidential Arms Procurement Probe Committee -chaired by Air Vice Marshall John Ode (rtd)
8.The Kalu Idika Kalu committee on National Refineries Special Task Force (2012)	8.The Federal Service Management Committee	8.Presidential Committee on the North East Initiative (PCNI)- T.Y Danjuma Committee (2016)
9. The House of Representatives Ad-hoc Committee (the Lawan Farouk Committee) on Subsidy (2012)	9.The Presidential Committee on Reform of Government Agencies-Steve Oronsanye (Committee) (2011)*	9.Numerous Parallel Initiatives implemented by the Federal Government and Development Partners
10. Presidential Advisory Committee on War Against Corruption- Isa Sagay Committee (2015)	10. The Abdulrasheed Maina-led Presidential Task Team on Pension Reforms set up in 2010*	

Source: Author Compilation from various Official and Media Report

The interview participants were selected based on accessibility and willingness to participate in the study. Officials in the directorate cadre of five federal ministries or agencies were also interviewed. The ministries were purposively selected based on relevance of the work of the selected committees to the duties of a ministry or agency so as to effectively appreciate the relationship between the committees and the mainline bureaucratic agencies in the area of the committees' assignment. The study also significantly made use of secondary data documented in both government and media reports, including reports of some of these committees. The paper is organised in five sections. Following the introduction is the second section on conceptualization of ad hoc bodies as policy and governance networks. The third section advances the inquiry further into the theory of policy and governance networks to provide the basis for understanding the nature of their relationship with traditional governance institutions. The fourth section provides and analyzes data on the use of ad hoc bodies as policy and governance platforms in the Nigerian context. The last section provides a concluding remark.

2 Conceptualizing Ad-hoc committees, commissions, task forces and panels as policy and governance hubs

Ginsberg (2009) explains advisory committees as provisional bodies created to possibly circumvent bureaucratic constraints to collect a variety of viewpoints on specific policy issues. The entities are often created to bring together various experts—often with divergent opinions and political backgrounds—to examine an issue and recommend statutory, regulatory, or other actions. These bodies can also be designated as commissions, councils, panels or task forces. Campbell (2002), has a limited notion of ad hoc bodies. For him, ad hoc commission or committee has policy formulation responsibilities limited to an issue or group of related questions; they are advisory and rarely have power to implement their findings or recommendations; they are infrequently mandated with administrative authority, except for the powers conferred on them to assist them in collecting and gathering information. He excludes bodies set up to investigate wrongdoing, to assign responsibility for disasters, or to make explicit and detailed studies of internal management from his notion of ad hoc committees. Campbell's focus is basically with the federal advisory committees established under the United States Federal Advisory Committee Act (FACA), 1972, whose roles are strictly limited to policy advisory functions.

However, for Ginsberg and Burgat (2016), advisory committees are established for a number of reasons, which include acquiring new ideas from non-governmental experts, removing certain controversial topics from politically charged arenas, and reducing the workload of executive branch employees and Members of Congress. These tasks draw them close to responsibilities in line with the principles of contemporary policy and governance networks which surpass mere policy suggestions or recommendations. Indeed against Campbell's view, federal advisory committees "are one of only a few formalized mechanisms for private-sector citizens to participate in the federal policymaking process" (Ginsberg and Burgat, 2016:1). . As remarked by Ginsberg (2009: ii), "committees are often created to help the government manage and solve complex or divisive issues." Ad hoc committees therefore can be vital in harvesting expertise from various sources, to represent various stakeholders and to deal with complex issues. As a body whose membership draws from various stakeholders and organisations, it is useful for examining complex intergovernmental policy processes, as well as public-private hybrids of governance (Galey and Youngs, 2014). They could be constituted as inter-organizational and collaborative strategies, and for Kapcu (2014), "in difficult times, collaborative strategies and cross-boundary institutions gain importance for sharing resources, solving complex policy problems, and leveraging experience and knowledge." The composition of an ad hoc committee could therefore imbue it with the required capacity to operate as a policy and governance network platform. This is because membership are usually "fairly balanced in terms of the points of view represented and the functions to be performed," and the committee may "not be inappropriately influenced by the appointing authority or by any special interest" (U.S.C. (FACA) Appendix 5(2) as in Ginsberg and Burgat, 2016:1-2). Committees could in some significant ways, meet some qualities of

networks such as being self-organizing and autonomous (Rhodes, 1997). They could be useful in policy arenas where public access to and participation in debates and discussions are as important as (or, possibly more important than) the policy recommendations that emerge from those discussions (Ginsberg and Burgat, 2016).

Within the Nigerian administrative system examined here, the policy roles of ad-hoc committees have been found to include investigative and policy implementation roles. In some instances, some bodies set up as ad hoc committees especially in the executive arm have graduated themselves into some kind of arms-length or autonomous policy coordination and implementation hubs. It is based on this that these bodies are conceptualised here as governance and policy networks because they serve not only as knowledge hubs for policy making, but as fora for interest coalitions so as to enhance legitimacy (Besussi, 2006).

Though there is no generally agreed notion of policy and governance networks, there is no doubt that it has found increasing usefulness in analyzing the structure and processes of policy making and governance not only in terms of a pluralist orientation that focuses on the relations between the state and interest groups but on the trending “managing networks [that] is focused on solving complex policy problems through horizontal coordination between interdependent actors” (Klijn and Koppenjan, 2012:4). These scholars identify three epochal tradition of use of ‘networks’ in policy literature, namely: (a) the policy networks tradition that focuses on the relation between the state and interest groups (and the influence on public policy making), (b) the service delivery and implementation tradition that focuses on coordination problems in delivering public services in a fragmented setting, and (c) the tradition of managing networks that is focused on solving complex policy problems through horizontal coordination between interdependent actors. In the light of the new governance approach, the core concepts and assumptions of policy and governance network include:

1. *Actors, interdependency and frames*: Policy and service delivery is formed and implemented in a network of interdependent actors.

2. *Interactions and complexity*: As a consequence of the interdependencies between actors and the variety of perceptions and strategies that they rely on, complex interaction and negotiating patterns emerge in problem solving, policy implementation and service delivery

3. *Institutional features*: Interaction patterns result in institutionalization of relationships between actors. These can be understood as patterns of social relations (interactions, power relations etc.) and patterns of rules.

4. *Network management*: The complexity of processes within networks requires guidance and management of interactions. This is usually referred to as network management. These activities are aimed at facilitating interactions, exploring (new) content and organizing interactions between actors. The horizontal nature of network management implies that it is a different activity compared to traditional intra-organizational management (Klijn and Koppenjan, 2012:5-6)

Historically, the decline of New public Management gave way to the understanding that neither the government exclusively nor the markets could solve today’s wicked problems that confront contemporary governments, hence the tendency to intensify the use of networks and collaboration with non-state actors in policy and governance processes. As is shown in this study, ad hoc committees have been used for policy advisory and formation purposes, investigation or probe, as well as policy/reform or programme implementation. The administrative importance of ad hoc bodies as knowledge and interest coalition hubs cannot be underestimated since they can be used to acquire viewpoints from business, academic, government, and other networks and interests.

Despite the usefulness of these bodies, the critical question remains how their acts could be harmonized with the interests of traditional bureaucratic agencies that are often challenged or jolted by the changes accruable through the activities of policy and governance networks. The recommended practice is that networks should be anchored and coordinated and managed by traditional government institutions (Fowler and Biekart, 2017). But often this is not the case as in some of the cases examined in this study and has not be the standard for network management. Nonetheless, defining this relationship can be key to the success of network operations.

3 Examining the relationship between policy and governance networks and the traditional bureaucracy

The bureaucratic organisation has received various knocks as ineffective and inefficient means of carrying out public actions since the time of Weber. Critics believe that the bureaucracy enhances stability in organizational practices and provides little room for change, creativity and innovation in the shortest time. Olsen (2007:3) summarizes some major criticisms against the bureaucracy and the consequence thus:

“The bureaucracy” has faced lasting and relentless criticism for being ill-suited to cope with the tasks, purposes, and circumstances of contemporary democracies. It is too big, powerful, hierarchical, rule-bound, in-different to results, inefficient, lazy, incompetent, wasteful, inflexible, unaccountable, inhumane, and harmful for democracy, economic efficiency and individual freedom. Bureaucratic organization belongs to a simple, legalistic and authoritarian society. It is incompatible with complex, dynamic and individualistic societies. The end of the era of bureaucracy has been observed, predicted, or prescribed. It is forecast to be replaced by the era of enterprise, market- or network organization, and non-legal, “soft” means of governance. Some see a paradigmatic shift as inevitable and irreversible.

The paradigmatic shift has taken various dimensions since the neoliberal era manifesting in the New Public Management (NPM), various brands of the new governance paradigms, the complexity and chaos theories and so on. The common tenet of these alternative organizational and administrative theoretical models is that the bureaucracy is broke and cannot really serve the current administrative challenges imbued with complexities; hence, the need for a move away from traditional bureaucratic ideas of “good administration” with their emphasis on orderly hierarchies (Hood, 1991). Grobman (2005:354) avers that “the boundaries of organisations have been permeated through the use of virtual organizations, consultants, outsourcing, temporary hires, and ad hoc teams.

Thus, ad hoc committees or teams as included by Grobman (2005) and as briefly articulated in the previous section could be perceived as policy and governance network structures. Networks basically refer to a set of relatively stable relationships which are of non-hierarchical and interdependent nature linking a variety of actors, who share common interests with regard to a policy and who exchange resources to pursue these shared interests acknowledging that co-operation is the best way to achieve common goals (Börzel, 1997). For Mendizabal (2006), networks include traditional research group for policy producers. Policy networks are inter-organizational and or collaborative networks that focus on ‘solving public policy problems through and in networks’ (Klijn and Koppenjan, 2012:3).

Policy networks are conceptualised as a typology of interest intermediation and network governance ((Galey and Youngs, 2014; Borzol, 1997), as an inter-organizational policy making structure (Klijn and Koppenjan, 2000), a public management tool and strategy (Kapucu, 2014) and so on. In these and many other perspectives in which governance networks are implied, the fundamental understanding is that policy and governance networks are a set of relatively stable relationships which are of non-hierarchical and interdependent nature, linking a variety of actors, who share common interests with regard to a policy and who exchange resources to pursue these shared interests acknowledging that cooperation is the best way to achieve common goals (Borzel, 1997; Besussi, 2006). As mechanisms to address complex societal problems whose causes span diverse institutions, networks require the alignment and application of different competencies and locations of authority and power (Fowler and Biekart, 2017). Clearly, governance networks are not mere advisory bodies, whose policy advice may be taken or abandoned.

The bureaucratic organization is characterised by its hierarchical structure, division of labor, centralized control, discipline, standardized procedure, emphasis on planning rather than improvisation, minimal relationship to those outside the organisation (Grobman, 2005; Morgan, 1997). It is believed to be deterministic and reductionist suggesting that there could be a linear relationship between inputs and outputs. On the other hand, networks and new governance platforms demand less emphasis on hierarchy and less defined authority, interdependence rather than minimal relationship to outside organisations, and dynamism rather than determinism towards dealing with problems. Proponents of complexity and chaos theories see nonlinear organisational entities in the light of Complex Adaptive

Systems, CAS (Chan, 2001; Killian, 2008). They are meant to introduce innovation and improvisation through and with the bureaucratic agencies rather than work in parallel or at cross purposes with them. They contrast with a linear approach to management that is conventionally supported by the bureaucratic organization.

However, the management of networks remains a confused theoretical and practical issue. Often detailed information about the actual practice of, and responsibility for guiding a network or multi-stakeholder initiative (MSI) are not provided (Fowler and Biekart, 2017). Precisely, it is contemplated that the relationship of networks and the traditional bureaucratic institutions of government if not properly defined and managed, could be challenging and conflictual. Brans (1997) argues that the part of network approach that focuses on network management places too much emphasis on the role of cooperation and consensus and ignores conflict, power and power differences. Often, the network approach considers the government organization to be just a party as any other collaborator, and neglects its role as the guardian of the public interest which the primacy of interest can threaten. More so, it is also neglected that it has an interest that could diverge from the common good and this could be as strong a hindrance to policy success. Peters (2010) avers that bureaucracy behave like a set of competitive entrepreneurs and could engage in competition primarily when their core interests are threatened.

Networks are often characterized by interest conflicts (Rhodes, 1997). Thus, Kiljn and Koppenjan (2012) recommend extensive networking between the actors and managerial activities to achieve satisfactory outcomes. They also reveal that network management requires negotiating skills, skills to bind actors and skills to forge new solutions that appeal to various actors whose resources are required to implement solutions. Often these are difficult to reach and network can be aborted especially where there is lack of trust, reciprocity and loyalty. The sure way to build trust in a network is for actors to “take each other’s interest into account” (Kiljn and Koppenjan, 2012:193). Thus establishing network is one thing and managing it is another.

Network management requires an orchestrator for effectiveness. “Orchestration is a mode of governance by which an “orchestrator” enables other actors (the “intermediaries”) to cooperate and achieve common goals”, (Klingebiel and Paulo, 2015: 3). Fowler and Biekart (2017) use the term interlocutor in their study, and identify other terms that are used to designate this important role in a network or collaborative arrangement, namely host, secretariat, focal point, platform, facilitator, node, and so on. For them, the term interlocutor is a label covering a wide array of names for entities that fulfil a collaboration unction for MSIs. While the literature is still unfolding about who should be and the specific duties of an orchestrator or coordinator in a collaboration (Fowler and Biekart, 2017), Blanco, Lowndes and Pratchett (2011) note that policy governance networks should be orchestrated by a government institution and should emphasize on notions of trust, loyalty and reciprocity. These scholars further give the inkling that network governance may “not necessarily result in the replacement of hierarchy” and “within networks, coordination by hierarchy and market is not necessarily absent.” Klingebiel and Paulo (2015) suggest that the orchestrator in a governance network should usually reside with the government institution rather than other institutional options and locations. Why this may be correct for some obvious reasons, I would subscribe to the view that what is important is for the interest, confidence and trust of the bureaucratic agency to be secured in a network, especially as most political executives may consider networks as circumventing bureaucratic weaknesses. Furthermore, it is important to underscore that networks are becoming relevant because of the increasing complexity of social problems (Blanco, Lowndes and Pratchett, 2011; Kiljn and Koppenjan, 2012). This demands that there should be a limit to what a network in form of an ad hoc committee is expected to do in contradistinction to the routine tasks of a bureaucratic institution. In other words, the justification, effectiveness and relationship of ad hoc committees usually employed to manage complex situations should be perceived in terms of its interconnectedness with the system it is trying to reform, assist or influence towards change and the complex nature of the problem. Complexity management requires ‘connectivity and interdependence’ (Mitleton, 2003) and ‘change needs to be seen in terms of co-evolution with other related systems’ (Chan, 2001). Though the complexity theory is described as the chaos model, it is not all about chaos and confusion because it

underscores “shared adaptation through cross-over replication.” The cross-over replication is possible when “other organizational actors with whom the first set of individuals comes in contact subsequently transfer some assumed values and norms to other organizational members. This recurring pattern of crossover replication serves to create a partly and wholly shared self-organizing culture that characterizes the dynamic nonlinear organizational environment” (Killian, 2008:59).

In essence, the goal of using ad hoc committees as change tools and managing complex situations may not be effective in situations where there is little interconnectedness and interdependence in their work with the relevant stakeholders, including statutory bodies. That their membership are usually variously constituted does not guarantee operational relationship and collaboration. The chaos model of change, which the use ad hoc policy hubs supports, is characterized by a dual focus on the internal and external environments and a shared learning among and between internal and external actors (Killian, 2008). Similarly, Eppel (2009:24) avers that “the dynamics of complex systems arise from each element that makes up the system being influenced by, and in turn influencing, each other constituent. The dynamism of the system can result in the emergence of new patterns through self-organisation of the elements of the system. For Killian (2008: 60), viewing networks as

Allies in the coproduction or co-provision of public goods and services requires dramatic changes in traditionally held beliefs concerning the role of government and of public administrators. Therefore, changing the hearts and minds of public administrators and the cultures of their employing agencies to facilitate perceptions and actions that reflect cooperation rather than competition, partnership rather than sectoral partisanship, and a united belief in promoting the common good are essential ingredients in successfully realizing this model of reform.

The significant contribution of the policy and governance network approach to resolving complex policy problem therefore will be based on the “focus on the process of interaction and resolution of policy problems by the affected participants” (Eppel, 2009: 45), rather than on imposition of views as recommendations or outright sidetracking whether of traditional bureaucracy or any other important party for policy choice and implementation.

4 Ad-hoc committees as policy and governance platforms in Nigeria

Nigeria, a former British colony nurtured in the colonial political tutelage of parliamentary democracy, changed to the presidential form of government modelled after that of the United States in 1979. The country which became independent in 1960 had 29 plus years of military rule. It returned to democratic rule, a period now regarded as her fourth republic in 1999. Ten out of the 18 years of this period of unbroken democratic rule have also been ruled by former military rulers as presidents – President Olusegun Obasanjo (8 years) and Muhammadu. Buhari, who is currently in the third of his first four-year tenure. A number of features of this past history apparently have pre-disposed the country to frequent recourse to the use of ad hoc bodies to deal with administrative problems coupled with the fact that public administration today underscores the importance of governance and collaborative networks. First, the Nigerian military rulers were known to have usually abolished the legislature when they came into power. While laws by military governments were made by decrees, usually great inputs were sought through various advisory committees. In essence, there was much reliance on the use of ad hoc committee system as policy platforms during the military era. Second, in the usual military manner of using military court marshals, task forces and panels, a number of issues including judicial responsibilities and policy implementation roles were carried out through the use of various ad hoc committees, panels and task forces. Thirdly, the military is known for its disposition to tackle issues with ‘immediate effect’, underlying the penchant to provide the aura of urgency and dispatch in dealing with problems by leaders in a military fashion, thereby often sidling the statutory bureaucratic agencies believed to be slow and lethargic. Fourth, the change from parliamentary to presidential system would tend to have insititutionalised extensive use of committees in the executive branch, even where there exists statutory bodies responsible for the task in question. In other words, the change to the presidential system merely extrapolated the penchant to the committee system to the executive branch, thus promoting their frequent use for various policy roles, including implementation, oversight and adjudication. Finally, as mentioned above, it is not unlikely that the global trend of new

governance paradigm being promoted by many countries since the 1990s could also predispose the leaders to frequent reliance on ad hoc committees as new organizational forms to pursue governance functions. The important question remains whether appropriate standards, structures and roles are applied in setting up these ad hoc bodies so as to maximise the benefits.

As highlighted above, the federal executive in Nigeria could be said to be profuse and indiscriminate in its use of ad hoc committees. Table 1 shows a random compilation of 30 ad hoc bodies for just three administrative issues focused on in this study. Onwuemenyi (2012) avers that past successive Nigerian governments have a well-established reputation for setting up committees, with little or no effect. According to him, the Shakespearean maxim 'all sound and fury, signifying nothing' best describes the rash of setting up ad hoc committees and task forces in Nigeria. He however admits that one outstanding point about these many task forces and committees is that they are populated by very eminent citizens with great knowledge and experience in the private sector, government and politics, anti-corruption, economy, law, labour and other activities that may be brought to bear on their mandates. What then hinders such committees from usually succeeding in their mandates?

It is revealed that proliferation in establishing ad hoc committee invariably derives from wanton discretionary powers that rest with politicians, whether in the legislature or executive, in the country, which are often abused.¹ Apparently, there is no existing law as yet in the country regulating and standardizing the conditions for setting up ad hoc bodies or engaging partnerships in policy and governance. In some instances, a number of committees have been established on a matter of concern without efforts to link up the activities of these committees. There is often duplication by both the Executive and the National Assembly to set up committees for the same purpose. While both branches have different mandates, there is no doubt that such duplication goes to reveal the extent of working at cross purposes by the two policy-relevant institutions. Afegbua (2012) had remarked that the number of committees from the respective sectors of the economy calls to question the preparedness of government to genuinely confront the challenges facing the country. Committees therefore are not set up to build trust between the two institutions and indeed the various interests from where committee membership derive, but often to provide grounds for one institution to discredit the other or to counter the policy position of the other. In the petroleum sector for instance, at least four executive committees were set up in just two months in 2012. These include

- The Justice Alfa Belgore committee set up to meet with organised labor and other stakeholders with a view to resolving issues that may arise from the controversy about the removal of fuel subsidy (Idonor, 2012);
- the Dr. Christopher Kolade Subsidy Re-investment and Empowerment Programme Board, (SREPB), to oversee and ensure the effective and timely implementation of projects to be funded with savings accruing to the Federal Government from the removal of petroleum subsidy (Idonor, 2012);
- the Nuhu Ribadu-led Petroleum Revenue Special Task Force to determine and verify all petroleum upstream and downstream revenues owed and payable to the Federal Government of Nigeria, and to take all necessary steps to collect all debts due and owed. (Report of the Petroleum Revenue Special Task Force, 2012); and
- the Kalu Idika Kalu committee on National Refineries Special Task Force. Part of the committee's term of reference was to ensure that the country's refineries produce at optimum capacity (Oladipo, 2012).

These were in addition to many that have been set up since 1999 towards achieving the difficult task of reorganisation, privatisation and commercialisation of institutions in the sector. These were the main policy objectives in the sector since 1999 and even earlier as contained in the Public Enterprises (Privatisation and Commercialisation) Act 1999 or its earlier version, the Privatisation and Commercialisation Decree No. 25 of 1988. Some of the other committees included the Special Committee on the Review of Petroleum Products Supply and Distribution (SCRPPSD) (2000), the Oil and Gas Reform Committee (OGRC) (2000) and the Petroleum Products Pricing Regulatory

1 IDI with officials of three Ministries, viz, Ministry of Petroleum Resources, Office of the Head of Service of the federation and Ministry of Defence on 18/01/2017 and 30/04/2017

Committee (PPPRC) inaugurated in March 2001 amongst others. These various committees expectedly produced various reports and policy directions, thus failing to produce a policy consensus in the sector. For example, Obasanjo's deregulation policy between 2003 and 2007, which led to the establishment of the Petroleum Product Pricing and Regulatory Agency (PPPRA), a separate regulatory institution for petroleum pricing in 2003, benefited from the report of SCRPPSD (2000) and Petroleum Products Pricing Regulatory Committee (PPPRC) inaugurated in March 2001. On the other hand, the Oil and Gas Reform Committee (OGRC) (2000) headed by Dr. Rilwanu Lukman that produced the first ever Oil and Gas Policy (NOGP), was fully supportive of institutional re-organisation in the sector and unbundling of NNPC.

As a result of the poor attention given to his committee's report and his disapproval of the way the oil industry was run under Obasanjo, Lukman who was the Presidential Adviser to Obasanjo on Petroleum Resources was to voluntarily resign in 2003 (Oduniyi, 2003). Obviously the benefit of committees as networks that should articulate and harmonise interests and produce the most acceptable policy options were not fully explored as various committees are bound to subscribe to different solutions. A member of Special Committee on the Review of Petroleum Products Supply and Distribution (SCRPPSD) further showed that the President Obasanjo was selective in the implementation of the committee's reports as other important recommendations like restructuring of the NNPC and its subsidiaries, privatisation of all four government refineries, encouragement for the establishment of private refineries to ensure competition and so on were overlooked¹. Evidently, some issues recurred in the recommendations of the SCRPPSD and OGRC showing that most of the stakeholders in the two committees could subscribe to one policy direction if there was effective management of these committees as policy and governance platforms. This merely reduces the work of committees to the traditional role of policy advice, rather than their use as collaborators in dealing with a matter of concern.

President Yar'adua who succeeded Obasanjo in 2007 was to recall Rilwanu Lukman as the Honorary Presidential Adviser on Petroleum, Energy and Strategic Matters and later appointed him as the Minister for Petroleum Resources. Obviously, Yar'adua had a different idea of reforms in the petroleum sector and seemed to favor the report of the OGRC as against Obasanjo's preference to deregulation. Yar'adua was to re-appoint Lukman as the chair to the reconstituted Oil and Gas Implementation Committee (OGIC) now mandated "to transform the broad provisions in the National Oil and Gas Policy into functional institutional structures that are legal and practical for the effective management of the oil and gas sector in Nigeria" (Iledare, 2008:23). The committee recommended immediate institutional reconstitution in the oil and gas sector and proposed a comprehensive legislative oil and gas instrument that led to the draft Petroleum Industry Bill (PIB), a bill that was in the National assembly since 2009 without passage. The OGIC came up with the recommendation among others, to unbundle NNPC into a number of entities (Nuhu Koko, 2009), a policy campaign that has featured since the Public Enterprises Act 1999.

Based on the report of the OGIC, President Yar'adua announced the unbundling of NNPC and reorganisation of institutions in the petroleum sector in the Federal Executive Council (FEC) meeting of Wednesday, 29 August 2007 (Nuhu-Koko, 2009). This action was immediately declared unconstitutional by the National Assembly for lack of any backing legislation and the undermining of some existing legislations like the NNPC establishment Act, evidently showing the in-comprehensiveness in dealing with the matter and the inability to carry all stakeholders along. It is requisite at this point remark that despite the eminence of the caliber of members assembled in the committee, it failed to recognize the legal implications of its recommendations to the president for implementation. It is also necessary to point out that the committee failed to integrate all interests including the National Assembly as a result of the poor management of the committee towards dealing with such a critical issue of institutional reform in the petroleum sector.² Apparently, there was little policy consensus

1 IDI with a member of the Special Committee on the Review of Petroleum Products Supply and Distribution (SCRPPSD) (13/02/2017)

2 IDI with an Assistant Director, Ministry of Petroleum Resources, 14/06/2016

and failing to pursue this goal through effective negotiating skills to include collaborate with all stakeholders by the committee, left the statutory institutions and other interests affected by the committee's recommendations to work to re-define the policy direction after the committee had submitted its report and dissipated.

The situation in the oil sector is replicated in the two other sectors examined. In a sustained effort to engage in a comprehensive reform of the public administration system, there were consistent and frequent ploys to use ad hoc committees to engage policy and governance issues. Office of the Secretary to the Government of the Federation the Presidency (OSGF) (2015), documents at least 48 of these reforms ranging from broad sectors such as Agriculture, Health, Housing and Urban Development, Education, Transportation, etc. to specific issues and institutions like Pensions, Payroll and Personnel Information System, Public Procurement, Taxation, Public Service Pay, Restructuring and Re-organization of Government Institutions and so on from 1999 to 2014. Most of these reforms were handled through various ad hoc committees. Considering the tendency for reforms to be resisted, it is only crucial that the success of these ad hoc committees could succeed if they operated effectively as networks. Notable committees in the general restructuring and reorganization of government included the Presidential Panel on the Review, Harmonization and Rationalization of Federal Parastatals, Institutions and Agencies (1999) chaired by Alhaji Ahmed Joda, the Public Service sub-Committee (2010) of the Presidential Advisory Council chaired by Lt. Gen. T.Y. Danjuma (rtd.) (2010), and the Presidential Committee on Reform of Government Agencies headed by a former Head of Civil Service of the Federation (HCSF), Steve Oronsanye (2011). Within specific section of the general public administration reforms, the Abdurashied Maina-led Presidential Task Team on Pension Reforms set up in 2010 and dissolved in 2013 is presented as example.

A key recommendation of the Oronsanye Committee, which had been previously noted by other Committees like the Ahmed Joda Committee (1999) was the need to scrap, merge and re-organize many government agencies and parastatals as a result of overlapping mandates "which had tended to breed unnecessary and unhealthy rivalry and waste of valuable human and material resources due principally to the stereotypical manner in which most of the Decrees (laws) setting up the Parastatals, Institutions and Agencies were drafted (Oronsanye et al. 2011). The white paper on this committee's report, rejected most of the recommendations about scrapping and merging agencies with overlapping mandates, the basic reason for which the committee was set up, making the resources spent in the committee unjustifiable. Of course, the production of government white papers are usually done by political and administrative officials and would not be expected to give much promise to any recommendation or action that that would discredit or affect their agencies.¹ The committee claimed to have engaged the various MDAs in interactive sessions, reviewed submissions made, referred to the White Paper on the Report of the Presidential Panel on the Review, Harmonization and Rationalization of Federal Parastatals, Institutions and Agencies (1999) as well as the laws setting up the parastatals and also engaged with other experts. The Committee adopted the "buy-in" approach by interacting and involving major stakeholders within the Public Sector....The Committee interacted with some leaders of previous Administrations, and sought audience with the current leadership of the Senate and the House of Representatives as well as other eminent persons. (Main Report: 8)

But the reality was that the committee consulted rather than collaborated as it ended up producing a one perspective report solely arrived at by the members of the committee. The final policy decision regarding which agencies to merge or scrap was not consensus-oriented. Furthermore, the implementation/final decision on the report was left to government officials who produced the white paper alone without the collaboration of the committee that anchored it. Invariably, while a network or group constituted by various stakeholders has produced the report, the final decision remains with the hierarchy and government. Against this approach, Ansell and Gash (2008) suggest that governance network forum aims to make decisions by consensus (even if consensus is not achieved in practice), and for Stoker (2004), network governance is not about one individual/organisation/group making a decision but rather about group of individuals or organisations or systems of organisations making

1 Interview with a member of the Oronsanye Panel, 30/04/2017

decisions. It is therefore inferred that the committee approach as operated in the context still work to produce reports rather than establishing collaborative engagement.

An important discovery of the Oronsanye committee was the fact that 50 parastatals or agencies were existing without enabling laws, some with expired mandates and tenures, proliferation of research bodies across the ministries (Oronsanye et al, 2011: 9-10), and existence of projects and centres “fully funded by the federal government as though they are legal parastatals having direct budget lines for personnel, overhead and capital allocations” (p. 19). Some of the agencies/parastatals without enabling laws apparently were established as ad hoc bodies. For instance, the Bureau of Public Service Reforms (BPSR) listed among the 50 was set up in 2004 at the threshold of extensive macro-economic reforms being prosecuted under the National Economic Empowerment and Development Strategy (NEEDS), to initiate, coordinate and ensure full implementation of government reform policies and programmes (BPSR, 2004), an epistemic, coordinating and governance entity that could anchor a direction for the macro economic reform for the country. It was not indicative whether the government wanted the BPSR as a permanent statutory agency since reforms are ongoing administrative practice. But without a clear delineation, one is at a loss why the government had not bordered to ensure some legislative backing for the agency if it had wanted it as a permanent body. Similarly, SERVICOM also listed was merely a service compact initiative meant to improve the delivery of service to Nigerians as a right. It began as Presidential retreats and inauguration between June 2003 and July 2004. A committee was set up in the Presidency to provide a framework to help MDAs in the establishment of their SERVICOM units (a service monitoring unit within each public organisation). The objectives were to operationalise government commitments under SERVICOM, to coordinate the formulation and operation of SERVICOM charters of all government ministries and agencies, monitor and report progress and performance under SERVICOM obligations, and carry out survey of services and customer satisfaction (Adenyika and Ema, 2014). These two bodies are considered as policy and governance networks. Both had their membership drawn from various governmental agencies, private sector and the third sector; their responsibilities blur the boundaries and responsibilities of particular sector or government agency; the power dependence involved in their operations requires the relationships of collective actors including institutions and individuals; and above all, being domiciled in the Presidency, provides them the opportunity for steering and guiding the reform processes. Unfortunately, rather than focus on the managerial requirements of a network, the two bodies gradually transformed into bureaucratic agencies, without enabling laws and thus ended up with the usual limitations of pursuing such complex reform issues through hierarchical bureaucratic institutions.

Again, the National Poverty Eradication Programme (NAPEP) was introduced as an interventionist programme in 2001 to replace the Poverty Alleviation Programme introduced as an interim measure in 2000. The National Poverty Eradication Council (NAPEC) was established to coordinate the poverty-reduction related activities of all the relevant Ministries, Parastatals and Agencies. As an interagency policy and governance network, it had the mandate to ensure that the wide range of activities are centrally planned, coordinated and complement one another so that the objectives of policy continuity and sustainability are achieved (Obadan, 2012). The NPAEC like the two discussed committees above has since become a permanent agency with line budgets, and joining other previously established poverty eradication programmes such as the National Directorate of Employment (NDE) under the Federal Ministry of Labor and Productivity and the Small and Medium Enterprises Development Agency (SMEDAN) under the supervision of the Federal Ministry of Trade and Investment. Obadan (2012) avers that there are 14 ministries and thirty-seven (37) core poverty alleviation institutions, agencies and programmes in Nigeria. The coordinating role given to NPAEC was therefore an opportunity to provide and meeting point for these agencies to harmonize policy and actions concerning poverty reduction. As a matter of fact, there was no coordination between the various agencies purporting to engage in poverty eradication except perhaps conflict, competition and duplication¹. An assessment of NAPEP some years back (Tersoo, 2013) reveals that the poor have not

1 Similar opinion expressed by a member of the Oronsanye Committee (30/04/2017) and official of the Ministry of Labour and Productivity 18/01/2017

actually felt the impact of NAPEP as there have been no significant changes in the standard of living of those who have benefited from the NAPEP programmes; it has registered little or no success in achieving its goals of eradicating poverty; the implementation of NAPEP has not effectively targeted the poor; and the agency is marred by poor implementation strategy, bad governance, lack of access to micro-credits or loans and above all corruption by government officials. Oronsanye et al (2011: 95) report that NAPEP had “a copious budget of about N23 billion in just three years (2009-2011), it is lamentable that there has been no significant corresponding achievement.” Ostensibly, a body set up to coordinate bureaucratic institutions engaged in poverty alleviation so as to harmonise policy direction in the sector has itself turned into a bureaucracy, revealing a poor understanding of what policy network should do as an innovative policy and governance entity. Indeed, while the government has the noble intentions to set up ad hoc committees to act as policy and governance networks, it often fails to properly manage these bodies or provide standards for their operations. This provides the ground for these bodies to derail and often seek to transform to permanent bureaucratic institutions, which they are meant to support, coordinate, change and correct their failings.

The Abdulrasheed Maina-led Presidential Task Team on Pension Reforms was set up in 2010 and dissolved in 2013. The Pension Reform Task Team (PRTT) was set up to restructure and cleanse the pension administration system through biometrics capturing, processing of payments of genuine pensioners and blocking loopholes that are prone to corrupt practices; to track and recover pensions of all public retirees at the hit of huge scam in the pension fund administration. Again as a result of improper definition of roles and poor management as a network, this committee got engulfed in some serious conflict with the Office of the Head of Service of the Federation and the National Assembly. The 7th Assembly Senate in 2012 set up a Probe Committee made up of a Joint committee of two standing committees—Establishment and Public Service and State and Local Government Administration to investigate the activities of the Pension Reform Task Team on allegations of corruption. The report of the Senate Joint Probe Committee had indicted the PRTT Chairman, Abdulrasheed Maina for corruption, and subsequently, the Senate issued a warrant for his arrest. The PRTT chairman had to institute a court case against the Senate and its special committee in April 2013 (Tukur, 2015). Despite winning the case and clearing himself of corruption allegations, it is informative that Maina who had been dismissed from the public service was not reinstated, an action he believed to have been orchestrated by the then Head of Service who was obviously benefitting from the mess in the pension sector (Tukur, 2015). The PRTT was dissolved by President Goodluck Jonathan in 2013. This and the corrupt accusation were masterminded by those who were involved in the pension scam and never wanted it investigated and those who wished to share from the recovered loot.¹ In a media interview (Tukur, 2015), the chairman of PRTT defended the issue of allegation of corruption thus:

The Pension Task Team is not a statutory body. Thus, the Head of Service has the exclusive rights for expenditure control of his office. All financial or material engagements of the Task Team are subject of approvals from the Head of Civil Service of the Federation. There is no period when the Chairman of the Pension Task Team who is an ordinary “Deputy Director” became the Head of Civil Service of the Federation. The Head of Service never handed his office to me, so we had no power of approval of ONE NAIRA and no operational budget neither and no bank account to date.

Some clear undercurrents from the role played by the Senate Committee supports the view that some members of the executive institutions like the Head of Service mentioned influenced the establishment of the legislative committee to stop the work of the PRTT². From the view expressed by the chairman of the committee, it was obvious that the PRTT was supposed to operate under the Office of the Head of the Civil Service of the Federation (HCSF). Why, one may ask, was the office unable to discover that the PRTT was overstepping its bounds and involved in corrupt acts, until the senate probe revealed such? Apparently the view expressed by Maina in his interview and the confirmation of such views in the IDI with two members³ of his committee support the conclusion that some people

1 Interview with two members of the PRTT, 21/02/2017

2 IDI with a member of the Pension Reform Task Team, 21/02/2017

3 IDI with two members of the PRTT on 21/02/2017 and 04/03/2017

apparently benefitting from the rot in the pension administration used the senate committee to put an end to the investigation and activities of the PRTT. This position is further strengthened by the fact that the Association of Federal Public Service Retirees, following the dissolution of the PRTT in 2013, called on President Goodluck Jonathan to re-activate the Pension Reform Task Team led by Abdurashheed Maina to manage their affairs (Information Nigeria, 2014). The chairman of the association profiled some of the achievements of the committee to include: impressive transformation of the pension system; creation of pensioners' authentic biometric database, which the federal government had expended huge resources to create, but jettisoned with the dissolution of PRTT; introduction of smart cards to identify pensioners with the intention of stopping the incessant verification exercises; conversion of 142, 000 pensioners' files into electronic filing system; introduction of Electronic Pension Management System as a platform through which the pensions funds could be transparently monitored by the EFCC, ICPC, SSS, police and equally serves as an effective mechanism against corrupt practices; and payment of pension areas of about 52,300 pensioners (Information Nigeria, 2014).

Whatever, the achievements however, few conclusions can be drawn about the use of ad hoc committees as policy and governance networks: (1) using ad hoc committees to take over routine administrative responsibilities of a statutory body without proper definition of their relationship breeds conflict rather than helping to resolve administrative challenges; (2) ad hoc bodies as policy and governance networks, though self-organizing and autonomous, cannot superimpose its will and innovations without driving consensus among all parties. (3) Networks require the alignment and application of different competencies and locations of authority and power (Fowler and Biekart, 2017). A major grouse against the PRTT was the fact that the committee assumed the business of pension administration at the displeasure of those who wanted the status quo to remain.¹ Thus without effective orchestration of the work of the PRTT and a properly defined relationship with the statutory bureaucratic agencies, conflict of interest, witch-hunt and working at cross purposes were the resultant outcomes.

In the security sector, the use of ad-hoc committees was rampant and many of them equally failed to engender the required administrative solutions. A number of complex and lingering security challenge were faced by the country in the period. There were: the Boko Haram insurgency that greatly threatened the territorial integrity of the country, the recurrent Niger Delta militancy, the self-actualization Movement for the Actualization of the Sovereign State of Biafra (MASSOB)/ Indigenous People of Biafra (IPOB), farmers-herdsmen clashes, kidnapping, and so on. To deal with these issues, numerous committees were established, but with little results in most cases. Okereke (2013: 1) for instance, describes the challenge of Boko Haram insecurity and the use of ad hoc committees and panels to address it thus: "the unrelenting insecurity, terrorism/insurgency miasma in Nigeria is disturbing. Innocent people are arbitrarily hacked to death, the issue is talked about for a few days, a committee/panel is assembled and the whole episode fizzles out sooner than later."

The committees often manifest poor capacity as networks. There was low capacity for negotiating skills, skills to bind actors and skills to forge new solutions that appeal to various actors whose resources are required to implement solutions. The Presidential Committee on Dialogue and Peaceful Resolution of Security Challenges in the North headed by Mr. Kabiru Turaki provides some illustration in this regard. In 2013, the committee announced with some air of pageantry that the committee had reached an 'understanding' for a ceasefire with Boko Haram (Okereke, 2013:5), a position the sect released a video to describe as a farce and increased hostility to prove its point. The denial by the sect of any agreement with the committee only goes to show that the resolution if any, were not a product of collaboration and consensual agreement.

In all these cases, it is evident that the committees have not effectively accomplished the tasks for which they were constituted by obvious disagreements of some key stakeholders even when the committee claimed a resolution of a matter of concern. The committees have essentially performed as linear bodies even when their assignments did not require linear policy advice or actions. In most of

1 IDI with PRTT member, 21/02/2017

the cases reviewed above, the committees failed to establish effective collaboration with key stakeholders to its task, including traditional institutions of government such as the National Assembly and bureaucratic institutions. This led to conflicts in a number of cases and outright opposition to the work of the committee in others. Setting up of multiple committees also led to differing perspectives or how to resolve a matter of concern and failed to provide an effective platform for policy harmonisation and consensus.

5 Concluding remarks

Despite the importance attached to the use of policy and governance networks and the depth of literature which it has attracted, the exert relationship that should exist between networks and traditional government institutions is yet to be clearly defined. It is of course generally presumed that networks are initiated and orchestrated by the government (Fowler and Biekart, 2017; Klingebiel and Paulo, 2015; Blanco, Lowndes and Pratchett, 2011). But this assumption seems to disregard the fact that government is not a monolithic institution. Where the political executive decides to use networks or hubs such as ad hoc committees to improve policy and governance, there is need to incorporate other government institutions such as the legislature and the bureaucracy, which may feel threatened by the work of the network. Network approach does not merely consist in consultation of relevant stakeholders but collaboration with them (Ansell and Gash, 2008).

Though the bureaucratic organisation is critiqued and denigrated, it still remains central in the process of governance. Olsen (2007) describes as a puzzle the fact that despite so much criticism, abuse and prediction of the demise of bureaucracy, democracies have continued to give birth to bureaucracies and bureaucrats, and rational administration has continued to be seen as identical to bureaucratically organized administration. Because of its centrality, statutory bureaucratic bodies are more in position to act as the orchestrator or interlocutor, host or coordinator in the process of using networks (Fowler and Biekart, 2017). Even where they are the target of reforms, and ad hoc bodies considered as the hub for change in policy and governance, there should be an interface between them and the change inducing ad hoc bodies to ensure effective and efficient multi stakeholder initiative. Lane (1994) as cited by Wu and He (2009: 21), observes that “while various “new” paradigms may introduce new dimensions, the bureaucratic paradigm continues to provide an indispensable foundation in the field of public administration.

There is no doubt that the use of governance entities including ad hoc committees offer the potential to deliver outcomes that statutory organizations cannot solely accomplish, or do more efficiently. The consequence of using them as an external engagement or stand-alone hubs rather than an internal processes of organisation (Ikeanyibe, Ori and Okoye, 2017) to pursue administrative tasks remains suboptimal in many complex administrative situations in Nigeria. In many instances, more than a committee is set up by different arms of government or even the same arm to consider the same policy issue leading to contradictory views and reports. Perhaps a cue can be taken from the US about setting up committees. Though federal advisory agencies in the US are strictly advisory (Ginsberg and Burgat, 2016), they are set up in such a way that they provide opportunity for all relevant stakeholders in a policy arena to voice their opinions to policymakers. Thus, the “Federal Advisory Committees Act requires all applicable advisory committees to file a charter prior to operation. The charter is required to include the committee’s objectives, the committee’ affiliated agency, the committee’s duties, the estimated operating costs, the estimated number of committee meetings, and the anticipated termination date, among other information.” Presidential committees are particularly found to help the president to garner greater public support for a policy to which the president is already committed; show symbolic concern over a situation at the highest level of government; establish a fact base for others to use; respond to crises; deflect political heat from the president and allow passions to cool when issues become explosive; overcome the “stovepipes” and parochial thinking of the permanent bureaucracy; gather more information about a problem and its policy alternatives; forge consensus among the interests represented on the commission itself; and change the hearts and minds of men (Zegart, 2004:372).

For such presidential or other executive committees to be relevant, studies have shown that they

should aspire to: (1) secure clear agency commitment; (2) find a balance between responsiveness to the agency and independence; (3) leverage resources through collaboration with similar groups; and (4) the group's usefulness to identify future directions or improvements should be determined (GAO, 2012). It is therefore imperative that countries facing similar distortions in the use of ad hoc bodies like Nigeria should contemplate a more regulated framework for their establishment, use and responsibility, making allowances for a more interconnected relationship of such committees with all the relevant institutions of government and other relevant stakeholders. Ad hoc committees meant to go beyond policy advice in their assignment should as much as possible be domiciled with an agency or agencies of government to ensure that effective orchestration and ownership of the committee's decisions and actions. Above all, the capacity to employ more collaborative and negotiating approach should be emphasized by such committees rather than old-fashioned policy recommendatory or committee-rationalized reports and uni-dimensional implementation of programmes. This is in line with the view that network management requires negotiating skills, skills to bind actors and skills to forge new solutions that appeal to various actors whose resources are required to implement solutions (Kiljn and Kopenjan, 2012).

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Climate Science Communication in Africa: Media Coverage and Public Risk Perception *

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Abstract Issues related to climate change have gained more and more global attention. The current paper discusses the status quo of the climate science communication and possible problems in Africa from two perspectives: media coverage and public risk perception. In recent two decades, the concern about climate change in African media has been gradually growing, but it varies considerably across countries. The overall concern level is still low. The public in Africa does not have consistent cognition about the core concepts around climate change. Also, they generally lack the awareness of the climate change, and have heterogeneous risk perception. This paper studies the possible causes of the aforementioned problems and proposes preliminary suggestions accordingly.

Key words Africa, Climate change, Science communication, Media coverage, Risk perception

1 Introduction

1.1 Background

As one of the most significant challenges facing the world today, global climate change is a current natural science issue involving the research in many fields, including environmental and geographical sciences. Meanwhile, due to its tight association with the reduction of greenhouse gas emission, clean energy development, and carbon deals, it has also been a global issue related to national interests including politics, society, economics and diplomacy. In spite of existing skepticism, the fact that the climate is changing cannot be ignored. Mitigation and adaptation to climate change are related to fairness, righteousness, and justice. People and societies may perceive or rank risks and potential benefits differently, due to diverse values and goals^[1]. How individuals and organizations perceive risk and uncertainties and take them into account affects the design of climate policy^[2], as well as climate diplomacy, and cooperation among countries.

For a long time, both developed economies led by the EU and US and developing countries represented by China and India have promoted global climate governance actively. Developing countries are playing more and more important roles. Relatively, the emission of greenhouse gas is limited in Africa. However, no inhabited continent will be more affected by it than Africa^[3]. At the same time, the discourse of power of African countries fails to match what they are suffering or are going to suffer resulting from climate change in climate negotiations. As for people in Africa, they need to recognize climate change scientifically in order to mitigate and adapt to environmental changes. For governments in Africa, they also need to motivate Africa people and international communities to draw more attention to this issue in order to strengthen the voice of Africa countries during climate negotiations.

Recently, China has vigorously enhanced south-south cooperation, and provided support for developing countries to help them deal with climate change^[4]. Deepening the cognition and understanding of the climate science communication in Africa and helping Africa understand climate science effectively are beneficial for China to provide better assistance for African climate change

*Financed by the National Social Science Funds (Project No.: 17CXW013); the Ministry of Education of Humanities and Social Science Funds (Project No.: 16YJC860018); and the Key Research Base of Social Risk in Sichuan Province(SR16A03).

mitigation under the framework of South-South cooperation. In particular, immediately after US announced its withdrawal from the *Paris Climate Agreement*, China reiterated its commitment to the goals of the Agreement and issued a joint statement with the European Union, declaring that the pursuit of clean energy “will become a main pillar of their bilateral partnership”. Although China will not take the leadership for global warming mitigation soon, China is required to strengthen climate diplomacy especially the concern on the issues of African climate.

1.2 Literature review

There is more research in the current literature regarding the influence of climate change in Africa on local crops yield, natural environment and disasters. Also, a few studies have examined some economic and political measures related to dealing with climate change in Africa.

Regarding conducting climate science communication in Africa, some researchers pay attention to various performance in African countries. For instance, Henri-Count Evans, a Zimbabwe researcher, conducted research on the media coverage of climate change in his country^[5]. Herbert E. Batta analyzed the coverage and framework of Nigerian newspaper on climate change^[6], and other researchers like E de Salema et al. studied the media coverage, community perspectives, and policy response on climate change in Mozambique^[7]. A few researchers also mentioned African countries when they did internationally comparative studies. For example, Mike Shanahan analyzed the condition of African countries like Mozambique, South Africa and Zambia in a study which focused on media coverage about climate change in non-industrialized countries. This study also interviewed 111 journalists from 35 countries and regions, including African countries like Benin, Ethiopia, Ghana, Kenya, Morocco et al.^[8].

Research on Africa media from Chinese investigators is relatively limited. Several studies presented China’s media influence on Africa^[9-12] and described strategies of Chinese media launch in Africa^[13, 14]. A few articles focus on media industry in South Africa^[15-17], Egypt^[18, 19], Nigeria^[20-22] and Kenya^[23, 24] and other countries. Some researchers also analyzed the African media framework pattern in Africa from platforms including television^[25], internet^[26], printed copies publishing^[27] and media group management^[28], but there is very limited data on the climate science communication in Africa.

Overall, current research on the climate science communication mainly concentrates on the media study and public surveys in western countries. There is some research about China, India, and a few African countries; however, the quantity and quality are far from enough. In particular, the research on the climate science communication and media ecology in Africa by Chinese researchers is scarce.

1.3 Research design

Combining the second-hand data from many global surveys, literature, and statistics on the media information in Access World News database¹, this paper discusses the current condition of the climate science communication and possible barriers in Africa from the perspectives of media coverage and public risk perception. It answers two questions:

1. How do African media reporting on climate change? Can it be improved?
2. How does the public in Africa recognize the climate change? What is its influence on the global climate governance?

Of note, this paper refers to the current change in the earth’s climate system and its impacts on ecosystem and society by using a term “climate change”. “Climate change” is a better term than “global warming” to convey the coexistence of human activity-related effects and natural climate variability. Global warming may be incorrectly interpreted as that every place of the globe is warming uniformly and growing greenhouse gas emissions only causes the rise of temperature. However, considering that it is inevitable to mention “global warming” when discussing “climate change”, both of them will be included as key words in this paper.

¹ Access World News is a comprehensive resource that includes a variety of news publications worldwide. These sources include major national and international newspapers, as well as local and regional titles as well as newswires, blogs, web-only content, videos, journals, magazines, transcripts and more.

2 Coverage on the risks of climate change by African media

By searching the sources of 420 media in 45 African countries and regions¹ from 1997 to 2016 through Access World News Database, it is found that the media types include blogs, newspapers, journals, magazines, newswires and websites, and languages include English, Afrikaans, French, and Zulu. When both “climate change” and “global warming” are used as the key words to search within the database, the number of stories containing them is 5882 coming from 31 countries.

2.1 The media attention: increasing with great heterogeneity across countries despite the overall low level

2.1.1 The rising numbers of media articles

From 1995 to 2007, the number of media stories on climate change was very low, and started to rise substantially afterwards. Although there was some fluctuation, it tended to ascend as a whole and peaked in 2015. (Figure 1)

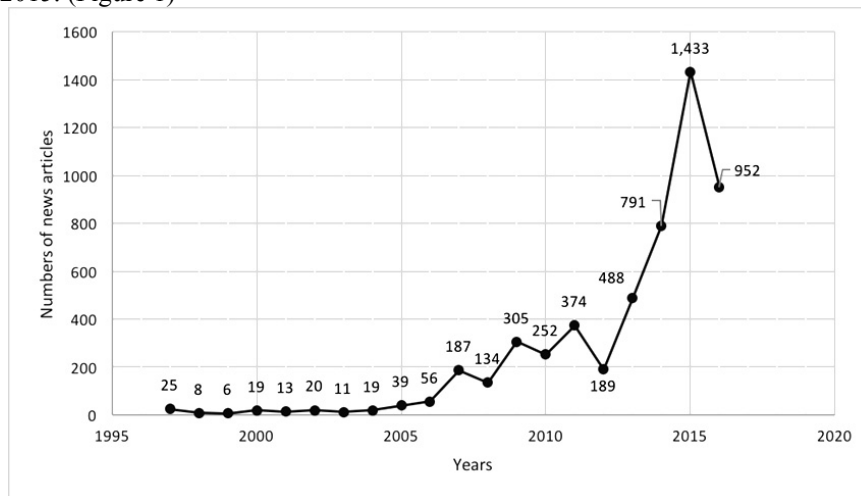


Figure 1 Trend in the number of news articles on climate change in Africa (1997- 2016)
(Data Source: Access World News Database)

In 2007, the Intergovernmental Panel on Climate Change (IPCC) released the Fourth Assessment Report which helped establish the scientific consensus on climate change worldwide. Based on this consensus, a series of international meetings related to climate change were held, attracting the attention of global media. At the end of 2007, the United Nations Climate Change Conference convened in Bali, and the media focused on climate change again. In 2008, a new round of United Nations-sponsored global climate change negotiations took place in Accra, Ghana. John Agyekum Kufuor, the president of Ghana at that time, delivered a speech. This round of negotiation laid important foundation for The Copenhagen conference in 2009. Afterwards, the issue of climate change transferred from a scientific contention to “a part of globally common political discourse system”^[29]. In Paris climate conference in 2015, a historic reduction agreement, *Paris Climate Agreement*, was drawn up. Meanwhile, the ministerial meeting on African environment convened in Paris. The UN Secretary-General of that time, Ban Ki-moon, said that the success of the Paris conference is closely related to Africa^[30]. The number of media coverage also reflected that concern on environment was an important issue in Africa at that time.

In sum, the trend of media coverage in African continent is consistent with the globe. Since 2008, international media coverage on climate change and its relevant research stepped into rapid development^[31]. The articles in every country were on the rise.

2.1.2 Various levels of the concern across countries

Among the 5882 samples, there are 3451 articles coming from South Africa, accounting for

1 Missing data: West Sahara, Guinea-Bissau, Mali, Burkina Faso, Niger, Togo, Guinea, Gabon, Chad, Central African Republic, Somaliland, Lesotho, Cape Verde, Sao Tome and Principe et al.

58.67%. Egypt has the second largest number of stories (n=364), but only accounting for 6.19%. In Somalia, Swaziland, South Sudan, Cameroon, Eritrea, Mozambique and Morocco, the numbers in these countries are less than 10. Among those countries with the highest numbers of articles, South Africa, Egypt, Nigeria and Kenya have strong television industries with regional influence in Africa^[32]. South Africa, in particular, is a country with better economic development. Its media industry has adapted rapidly to the high-tech development of communication technology, which also increasingly enhances international communication and cooperation and forms its own scale. All these make South Africa “the country with most developed media industry in Africa”^[33]. The number of stories is closely related to the number of media and its development, but what still cannot be ignored is that even in countries with better development of media industry, the concern on climate change is still far from sufficient. For example, in Tunisia with internet penetration rate as high as 39.1%, Cameroon with Non-daily newspapers as many as 624^[34], Mozambique with 11 television stations^[35], all of their climate change stories are rare.

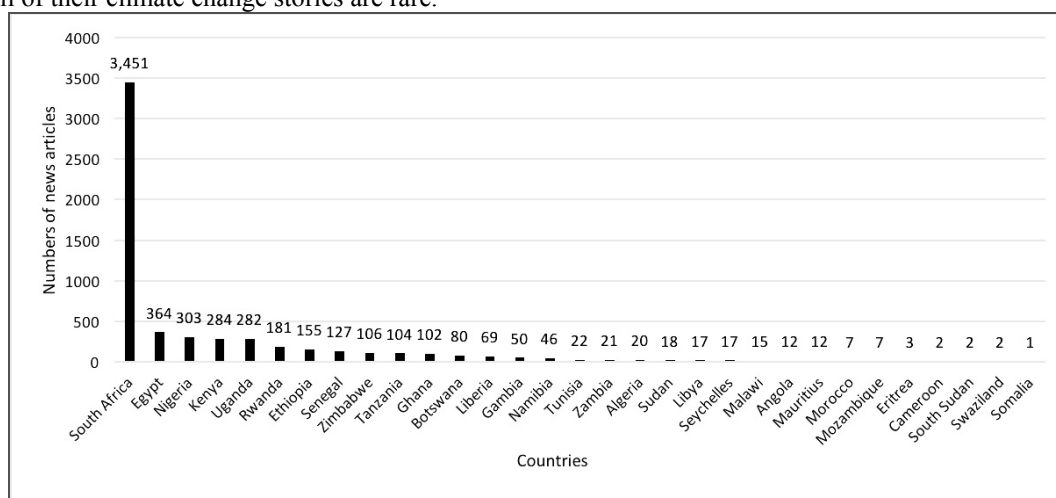


Figure 2 Comparison on the total volume of climate change stories among African countries (1997- 2016)

2.1.3 Low overall concern

Although the number of articles is increasing, Africa is still paid the least attention by the media in terms of climate change around the world^[36], whose articles numbers poorly match to the threat facing African continent from climate change^[37]. In all found articles, which containing “risk” are less than 1050, accounting for less than 20%.

Andreas Schmidt and other researchers analyzed the media attention to climate change in 27 countries, including Algeria, South Africa and Yemen, three African countries, which found that media attention in the former two countries was less than the global average level^[38]. Statistics suggest that two newspapers from South Africa (*Star* and *Mail & Guardian*) published 0.88% of the 28,800 stories in 6 months^[39]. Evans, a Zimbabwe researcher, once asked a senior editor of a local newspaper *The Sunday News*, about the frequency on climate change coverage. The answer is: As and when they become available^[40]. To some extent, it is common in African countries that only when serious environment disaster happens can climate change be mentioned. Generally speaking, the media attention to climate change in African areas needs to be improved.

2.2 Quality of coverage: lack of originality and regional features

For a long time, Africa is dependent on western media and news agency in respect of foreign affairs and local news stories^[41]. In daily news, African media often directly quote western articles as well^[42]. In 2007, Thabo Mbeki, the president of South Africa at that time, admitted such behavior and placed great hopes on the newly-established international news channel by South African Broadcasting Corporation. In the foundation ceremony, he referred that: “A telephone call from Ghana to Nigeria may have to go first to Europe before being rerouted to its destination in the neighborhood. Often, the news and stories in our publications seem to be following the same colonial routes even if not

physically, at least philosophically... even when African broadcasters participate in the dissemination of news it is always in the context of stories filed by foreign news agencies, with headquarters in Atlanta, New York, London and other major cities of the powerful nations.”^[43] An analysis of stories from news agencies in Africa published in the *Graphic* and *Ghanaian Times* showed that out of the 543 stories published in one month, BBC stories accounted for as many as 64%, and 13% came from Ghana News Agency, with the remaining 23% from other agencies^[44].

It is even more so when it comes to topics on climate change. It can be seen from the distribution of the source of stories on climate change published by 8 news agencies in southern Africa, including South Africa, Zimbabwe and Namibia during the period from 2013 to 2014. (Figure 3)

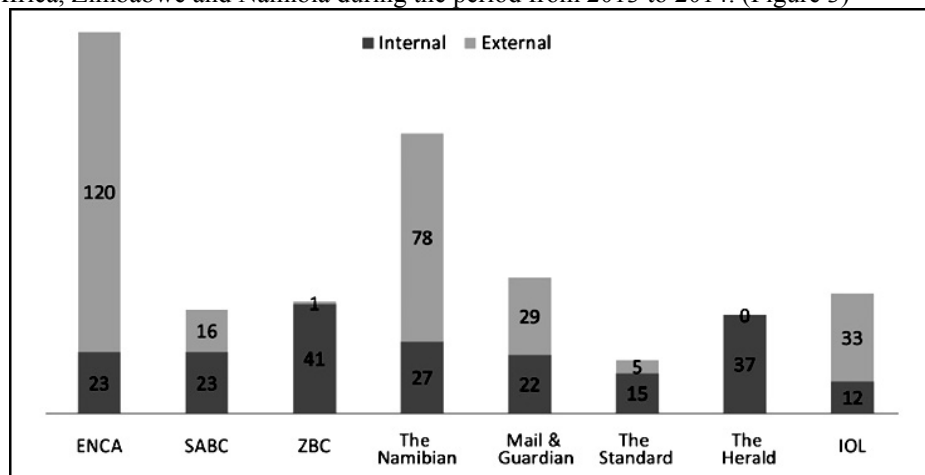


Figure 3 The source of stories on climate change published by African media¹
(Data: Henri-Count Evans & Rosemary Kudzayi Musvipwa, 2017^[45])

The most dominant news sources were *Reuters* and *Agency France Press (AFP)*, and they always lacked local relevance in their representations and largely focused on global problems. Stories of local media, such as SABC, ZBC and The Herald, were largely event-based and related to official announcements and major political meetings- globally and regionally. In addition, there is scarcity of critical articles^[46]. In the first quarter of 2009 and 2010, South Africa newspaper *Mail& Guardian* published 2 and 19 stories on climate change respectively, more than 70% of which were tied to international events with neither South African nor an African background. As for local climate stories, only 6% is related to regional climate issues like Egypt’s Nile Delta. Similarly, among the articles in *The Guardian* in Nigeria on climate change, about 65% of them dealt with international scenarios and gave little or no Nigeria context^[47].

Climate change is absolutely a global phenomenon and an international issue. However, given its actual influence and solution with a strong regional feature, anything related to it must be in accordance with local situation. News coverage of climate change by African media has been less original and relevant than the force of western media and “shapeless operation and media concept” of African media^[48], exacerbated by the lack of understanding of climate change of African correspondents and more interest of media placing on politics and economy rather than on environmental issues.

3 The public risk perception of climate change in Africa

3.1 Knowledge of concept: inconsistent cognition of the core concept of “climate change”

How African media frame the risk of climate change has direct influence on the cognition of African public on climate change. When reporting climate change, many media are supposed to

¹ Horizontal Axis: eNews Channel Africa (ENCA, South Africa), The South African Broadcasting Corporation (SABC), The Zimbabwe Broadcasting Corporation(ZBC TV), The Namibian(Namibia), Mail&Guardian(South Africa), The Standard(Zimbabwe), The Herald(Zimbabwe), Independent Onlin(IOL, South Africa)

convey more scientific information, but the information is usually lost while replaced by “scientific conflicts or horror scenarios”^[49] in order to draw more attention of readers. Further, stories about climate change usually focus on political contentions and debates rather than science itself. Accordingly, the public is confused and shows indifferent^[50]. Joseph Yaro from University of Ghana also agreed that there is no unanimous definition for “climate change” under the context of Africa^[51]. First, due to different impact from climate change on people in different regions, the definition for it varies. For example, in the views of farmers, they believe that climate change means “the rain is too little or too much”, but to fishermen, there is “increasing high stormy weather and rough seas that disrupt fishing activities”^[52]. Second, a main reason resulting in various definitions is the language complexity in African continent. Taking Nigeria for example, its main languages, Igbo, Hausa, and Yoruba, do not have standard equivalent words for “climate change”. Therefore, the public cannot achieve consensus^[53].

3.2 Awareness: lack of climate change awareness

Many studies have shown that, the awareness of climate change varies by different countries. However, overall, such awareness is higher in developed countries than in developing countries. According to a study published in *Nature Climate Change* in 2015 based on Gallup survey data from 2007 to 2008, in some countries in Africa, the Middle East, and Asia, more than 65% people never heard about climate change^[54]. This study analyzed 119 countries around the globe and found that all of the ten countries with the lowest awareness of climate change are African countries (Table 1). For instance, most Nigerians do not understand the science of climate change^[55].

Table 1 Percentage of respondents saying that they were aware of climate change: top and bottom 10 countries Data source: Lee et al. (2015)

Rank (of 119)	Country	Awareness(%)	Rank (of 119)	Country	Awareness(%)
1	Japan	98.9	110	Morocco	30.1
2	United States	97.7	111	Togo	29.6
3	Finland	97.6	112	Nigeria	27.8
4	Norway	97.5	113	Zambia	26.5
5	United Kingdom	97.4	114	Ghana	26.4
6	Australia	97.3	115	Afghanistan	25.4
7	Sweden	96.1	116	Egypt	25.0
8	Germany	96.0	117	Burundi	21.7
9	Netherlands	95.6	118	Benin	20.7
10	Canada	95.4	119	Liberia	20.6

3.3 Concern: diverse cognition of the risk of climate change

As global climate change intensifies, changes in local temperatures and weather patterns may be increasingly detected by the global public^[56], including African countries such as Madagascar, Mozambique, and Rwanda. Perception of local temperature change became the strongest predictor of climate change risk perceptions in many Africans^[57]. A global survey conducted by Pew Research Center in 2017 (Table 2) also indicates that compared with ISIS, Cyberattacks, global economic development, the proportion of African people consider climate change as a bigger threat is 58%, lower than Latin America (74%), Europe (64%), and Asia Pacific areas (61%)^[58].

Table 2 Major concerns by region show divergences in top threat assessment¹

Regional medians saying _____ is a major threat to our country

Data source: Pew Research Center- Spring 2017 Global Attitudes Survey. Q17a-h (2017)

	Europe (%)	Asia-pacific (%)	Middle east (%)	Africa (%)	Latin America(%)
ISIS	74	62	*	54	40
Global climate change	64	61	44	58	74

¹ Bolded figures note the top concern in each region. Underlined figures note the second highest concern in each region.

Cyberattacks from other countries	54	52	40	53	54
The condition of the global economy	37	46	59	51	61
A large number of refugees leaving countries such as Iraq and Syria	41	35	48	55	31
The United States' power and influence	31	35	50	37	47
Russia's power and influence	41	29	35	31	23
China's power and influence	30	47	20	32	25

There is a large distinction among people in countries with different income in terms of the cognition of the harm of climate change^[59]. For example, people in South Africa are “especially worried” about the climate change, while Nigerians do not consider climate change as a globally common issue beyond Nigeria^[60]. Moreover, without a local perspective in climate change stories, African media cut the link between the world and the local, which also leads to inappropriate cognition, especially the attitude of standing-aside of local people on “climate change” as well as insufficient focus of some African residents. All of these retard the operation to deal with climate change among African people^[61].

4 Conclusions

Based on the analyses on the media coverage and public awareness on climate change in Africa, this paper found that although there is an increasing number of news articles on climate change by African media, it still varies from country to country, and the current number of stories is far from sufficient compared to the climate risks that African countries are facing. In terms of the quality of media coverage, both original articles and local consideration are scarce in African media. Media is an important information channel. High-quality stories on climate change help public understand the environment situation and assist policy makers to effectively formulate relevant policy. “Indeed, strategic actions that improve climate change journalism can themselves be forms of adaptation because accurate, timely and relevant information is a critical component of resilience.”^[62] The current situation of the climate science communication causes some problems among African people, such as inconsistent understanding of core concept, general lacking of awareness of climate change and heterogeneous perception in the cognition of the risk of climate change.

Without a doubt, currently, problems in the climate change communication in Africa are the same problems for most countries in other continents. The media play a role in the public's perception of climate change, but such contribution does not bring deeper understanding of the causes and consequences of climate changes^[63]. The suggestion for African media is that when they select source of stories or import programs from other countries, they need to consider the local relevance of these stories or programs. UNESCO also gave advice^[64]:

Fewer disaster narratives and more success stories highlighting how people are adapting, developing solutions and using new technologies that can limit climate change.

More coverage of African roles and responsibilities under the UN climate change convention, and what governments say and do at the international negotiations.

More coverage of the status of National Adaptation Programmes of Action and the National Adaptation Plans.

More stories that demonstrate how climate change affects men and women, old people and young people in different ways.

More stories that explain the causes, including climate change, of events such as droughts and floods.

More stories that explain the human side of climate change and show this is a ‘development’ and ‘people’ issue, just as much as an environmental one.

More stories about the business and development opportunities that climate change present.

Combined with current information communication environment, news stories from traditional major media have limited role in climate communication. However, in some countries like Zimbabwe, a tiny proportion of people are taking the initiative to use new media to improve public awareness of

climate change and to participate in online climate change forums^[65]. In the political upheaval in North Africa since 2011, the role of social network plays in Africa has already been received extensive attention and discussion in many circles^[66-69]. With the internet penetration rate increasing gradually, making the best use of the power of social media to carry out the climate science communication is a promising way.

Future research should analyze the climate communication on the African new media platform, and add appropriate climate data and demographic data so that we can implement cross-match. Further, first-hand data can be obtained through interviews and surveys. These can be very valuable and important supplements to current research.

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