A Multi-Level Analysis of Inter-Departmental Knowledge Sharing in Government Organizations: Illustrated by the Example of Chengdu

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Abstract   Inter-departmental knowledge sharing in government organizations is of positive significance to improve the government's managing ability, efficiency of decision-making as well as administrative performance. Concerning researches on the causes of knowledge sharing, most are focused on macro-level factors to explain group creativity. This paper, through social capital-based viewpoints, analyzes the interactions between macro-level factors and micro-level sharing behavior. It investigates 15 groups with 413 members(civil servants) with regard to the impact of group-level social capital on inter-departmental knowledge sharing, and the interaction between multi-level factors. HLM analysis results show: 1) Individual-level social capital in the form of particularistic trust relations positively influences knowledge sharing. 2) Power centralization, the group level factor, has a significant impact on civil servants' sharing behaviors. It also moderates the effect of particularistic trust on knowledge sharing.

Key words   Inter-departmental knowledge sharing, Social capital, Government organizations, Multi-level analysis

1 Introduction

With the coming of knowledge economy era, knowledge becomes the key resource of economic society, knowledge management has been accepted by most of the enterprises, and knowledge management capabilities are gradually becoming the core competences of an organization. As a knowledge-based organization, how does a government effectively realize inter-departmental knowledge sharing is of vital importance as well. First of all, inter-departmental knowledge sharing in government organization contributes to enriching the knowledge base of it. Secondly, knowledge sharing makes for the improving of the innovation ability of government organizations. Moreover, knowledge sharing also helps improving the quality of government work performance.

However, current researches on knowledge-sharing mostly concentrate on the field of Enterprise Management, in comparison to which, there are few on the knowledge-sharing in Government Organizations. How to effectively promote the integration and sharing of inter-departmental government information resources has become the key point to the management of Government information resources. The knowledge-sharing within the government departments can be divided into 2 kinds: The horizontal knowledge-sharing between workers of the government departments at the same level; the vertical knowledge-sharing between workers of supervising and subordinate departments. This paper focuses on the horizontal knowledge-sharing between staff of the government departments at the same level. This paper defines the Inter-departmental Knowledge Sharing in Government in the following way: The process in which workers of the government departments at the same level realize the knowledge transfer between organizations by the way of information technology and all forms of communication, so as to promote the increasing of knowledge of the government departments both individually and as a whole.

The purpose of this paper is to explore the macro-level structural factors that influence the process of staff's knowledge sharing in government organizations of China. Knowledge sharing is a social process in which people exchange information, share knowledge, and come up with new ideas. Social capital is therefore vital to the success of innovation, since it encourages interaction and cooperation. Most existing research points to macro-level factors to explain group creativity, while little research has been done exploring how macro-level factors affect micro-level sharing behavior. This paper deploys a multi-level model to study three things: 1) The effect of micro-level social capital on individual knowledge sharing; 2) The extent to which individual sharing behavior is influenced by

macro-level social structures; and 3) micro-level factors interact with micro-level social capital.

2 Literature review: Social capital and knowledge sharing

Nahapiet and Ghoshal was the first to put forward the concept of social capital in the management circle. They have noted, social capital plays a vital role in creating knowledge [1]. In their estimation, social networks not only provide opportunities for knowledge exchange, but also foster the brain-storming interaction that makes it possible to create new ideas and to mutually motivate each other through exchange and combination. As suggested by the above-stated theories, the notion of social capital is now introduced into the study of knowledge sharing.

Napiet and Ghoshal's theory has inspired many scholars to investigate the social capital of groups and to explain team performance by reference to structural factors. In most empirical studies carried out by sociologists, the measurement of social capital is rather simple: It is measured primarily by trust [2][3]. Tsai and Ghoshal[4] studied the impact of research associations and trust ties among different units on their respective innovation performance. They showed that a high degree of associations significantly facilitates the process of combination and exchange. Following this study of "external social capital" [5], scholars found many other external factors that significantly influence knowledge creation in a group (or unit or firm), such as a short knowledge path to other groups, coordination mechanisms among organizational units, and the network location of a group.

Some other research focused on the question of how the "internal social capital" of a group influences its creative ability. For example, one study discovered that a structurally diverse group is a good environment for obtaining outside knowledge [6]. A structure containing strong ties has also been shown to enhance knowledge creation[7]. Although the usefulness of high density in network structure is disputable[8], a structure with low power concentration has been found to be helpful by most studies[9].

As useful as these studies are, more work needs to be done to explain how internal structural factors influence individual sharing behavior. One benefit of social network theory is that it can help to explain the impact of macro-level factors on collective behavior via micro-level analysis. Understanding how structural factors affect individual behavior is the first step in achieving this goal. Some solid multi-level analyses have already come out, such as one showing that group trust and norms moderate the effect of micro-level reciprocity on knowledge sharing[10], and another which finds that the networking preference and perceived importance of networking to a team can motivate individuals to build networks[11]. This paper follows this path and studies how structural factors directly influence individual sharing behavior and indirectly moderate the effects of micro-level social capital on knowledge sharing.

3 Theoretical framework and research hypothesis

The Theoretical Framework that this paper brings out mainly forms the basis of the following 3 factors: (1) Social exchange theory. From the perspective of Social exchange theory, individual participates in the knowledge-sharing for the purpose of building a trust, mutually beneficial relationship and gaining other's approval. (2) Previous research results. (3) In-depth interviews to local government. In August 2013, the author of this paper respectively conducted in-depth interviews with government staff of Sichuan Province and Chengdu city in order to understand the current situation of knowledge-sharing between the government departments. Synthesizing the aforementioned literature review on individual knowledge sharing, social capital and social networks, we propose for this study the theoretical framework shown below:

A large amount of research has shown the importance of trust in organizational management. Trust relations help to guarantee the effectiveness and improve the efficiency of organizational management. Hypothesis 1 thus follows:

Hypothesis 1: A person with a higher degree of general trust tends to share his/her knowledge.

In Chinese government organizations, however, particularistic trust, which is trust based on dyadic relationships, plays a more important role. These ties facilitate social exchanges in daily life. In government organizations, trust relations make individuals willing to share and expect a future return.
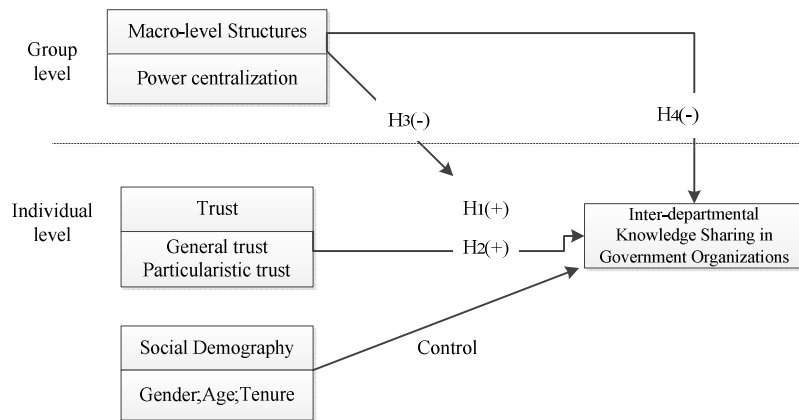
Hypothesis 2 thus follows:

Figure 1   A multi-level model of knowledge sharing in government organizations of China

Hypothesis 2: A person with more particularistic trust ties tends to share his/her knowledge.

The most influential structural factor in the sharing of knowledge is group centrality. Many studies have demonstrated that authoritarian leadership is not a good fit for knowledge workers. On the contrary, it is empowerment that provides civil servants with the motivation to pursue team goals. In other words, a low level of group centrality will bring about more horizontal communication, and thus help promote innovation. A centralized power structure is therefore not considered to be beneficial to the performance of knowledge sharing.

Hypothesis 3: The higher the concentration of power in a group is, the less inclined its individual members will be to share knowledge.

Structural factors not only influence the willingness to share knowledge, but also alter the functions of trust in a group. That is, structure moderates the relationship between individual trust and knowledge sharing behavior. We thus propose the following hypothesis:

Hypothesis 4: A group structure with a high centralization of power will moderate the effect of trust on individual knowledge sharing.

4 Methods and models
4.1 Data collection
We surveyed several government organizations of Sichuan province in China. In the survey, 500 copies of our questionnaire were distributed among 15 departments. Excluding invalid questionnaires, we obtained 413 valid responses, which is an 82.6% return rate.
4.2 Measurements
Prior to the formal survey, we selected 30 civil servants from two departments in the government organizations as samples and conducted a pre-test of the complete questionnaire. Then we used exploratory factor analysis to select at least three items for each variable and create a condensed questionnaire for the final survey. These items content follow the seven-point Likert scale format. Finally, we average together several items to form a signal index of the target variables. For the description of constructs' analysis results in details and the items contents, please refer to Table1.
4.3 Multi-level models
We employed the following multi-level models, model 1 only has individual-level variables，it is clear that model 2 has tested both individual-level variables and group-level variables with the goal of understanding whether the group-level variables in any way moderate the influence of the individual-level variables upon individual knowledge sharing.

Table 1   Variables and item content

Construct		Item Content
Individual level	Knowledge sharing	With whom do you like to consult in your routine work?
		In your job, from whom do you ask for help?
		Who will come to help you when you encounter difficulty?
	General trust	I think that my company encourages me to speak openly
		I think that my colleague exchange information openly
		I think that my department head is honest
		I think that my colleagues talk straight
	Particularistic trust	Overall, I think I trust him/her.
		I think that he/she is concerned about my interests.
		I think that his/her behavior is stable
		I think that he/she is honest.
Group level	Power centralization (informal)	Identify the three or more people you are most familiar with.
		Who would chat about their personal affairs with you?
		If feeling frustrated, to whom would you air your complaints?

Table 2   Multi-level modeling results for inter-departmental knowledge sharing

Variable	Inter-departmental knowledge sharing			
	M1		M2	
Fixed Effect				
Level 1				
Intercept	17.43***	(3.32)	18.45***	(1.66)
Gender	0.08	(2.54)	0.12	(1.56)
Tenure	3.89**	(1.22)	3.88***	(0.92)
Age	3.75*	(1.54)	3.01**	(0.86)
General trust	0.23	(0.25)	0.58	(0.76)
Particularistic trust	0.53**	(0.12)	0.27**	(0.04)
Level 2				
Power centralization			−0.76*	(0.21)
General trust: Intercept as dependent var.				
Power centralization			0.04	(0.06)
Particularistic trust: Intercept as dependent var.				
Power centralization			−0.41**	(0.11)
Random Effect (variance components)				
Group average	45.45***		42.43***	
Gender slope	67.34		54.43	
Tenure slope	21.34**		32.24**	
Age slope	4.76		3.63	
General trust	4.65		3.76	
Particularistic trust	0.23		0.13	
Within group residual	78.98		69.61	
Model deviance	2344.32		2432.45	

Individuals n=413, Groups n=15   *$p < .05$ **$p < .01$ ***$p < .001$

5 Conclusion and discussions

As we can see from table 2, Hypothesis 1 is rejected, but Hypothesis 2 is confirmed, which means that inter-departmental knowledge sharing behavior in government organizations of China is oriented to specific persons, not organizational trust. As stated in the theory concerning Chinese behavioral patterns, Chinese tend to be particularistic and their trust is based on dyad relations, rather than on norms, institutions or identity. Trust, as the most important ingredient in the relational dimension of social capital, influences knowledge sharing behavior in our test, but it is particularistic trust, rather than general trust.

Both Hypotheses 3 and Hypothesis 4 pass the test, which indicates the importance of macro-level

structural factors in micro-level behavioral analysis. Macro-level structural factors not only directly influence individual behavioral outcomes, but also alter the functions of micro-level factors.

This paper confirms that certain social structures in a group will discourage inter-departmental knowledge sharing knowledge sharing in Chinese government organizations. Chinese particularistic thinking encourages civil servants to treat inner and outside groups according to different standards. This way of particularistic thinking is a focus on person-specific rather than general affairs, which produces the "guanxi"-oriented behaviors that's typical of Chinese society. That is why particularistic trust exerts a greater influence on Chinese government organizations than general trust. From the perspective of organization and institution, this paper considers that there exist the following obstacle factors of knowledge sharing in government.

Firstly, there's a lack of institutional guarantee of knowledge sharing. It's necessary to have certain institutional guarantee to make the involuntary knowledge sharing behavior become a voluntary working habit. However, the government organizations in reality haven't set up such an institutional mechanism that is able to provide guarantee for knowledge sharing, which therefore constitutes an obstacle to the realization of knowledge sharing.

Secondly, the technology mechanism of knowledge sharing is imperfect. As the E-Government affair constantly goes deeper, the government organizations have basically had the hardware foundation facilities of knowledge sharing but still lack a complete software support. There's an urgent need of the platforms and software which helps knowledge sharing, a need for people to build a knowledge sharing platform and draw a knowledge map.

Thirdly, a good organizational culture is missing. A good organizational culture plays an important role in regularizing, gathering and stimulating its members' behaviors, which is therefore a big contribution to facilitating the process of knowledge sharing. For the present government organizations, it remains to be improved in this aspect.

Based on the analysis above, this paper holds that there are the following ways to promote the Inter-departmental Knowledge Sharing in Government Organizations:

In the first place, create a high-trust organizational cultural atmosphere. The culture and atmosphere of government organizations is the basis for government to carry out the interdepartmental integration and sharing of government information resources by knowledge-managing, which decides the attitudes of interdepartmental workers towards information and knowledge as well as the attitude of the government towards carrying out the interdepartmental integration and sharing of government information resources. A high-trust government cultural atmosphere can encourage the workers to actively involves in every process of the integration and sharing of information resources and contributes to the activities of knowledge-learning, knowledge-communicating and knowledge-innovating.

In the second place, establish the supervision and encouragement mechanism. A well-designed supervision and encouragement mechanism is able to stimulate the initiative, positivity and creativity of interdepartmental workers. It is necessary for the government to establish a reasonable supervision and encouragement mechanism to arouse the enthusiasm of different departments to carry out the integration and sharing of government information resources. The government may take measures like material incentive, supervision to promote the development and sharing of staff's intellectual resources.

This paper examines only how macro-level factors influence individual knowledge sharing. But another aspect—how individual sharing behaviors can be aggregated into collective creation ability in different social structures—has not been well explored. These questions represent another promising direction for network-related government managerial studies.

References

[1] J. Nahapiet, & S. Ghoshal. Social Capital, Intellectual Capital and the Organizational Advantage, The Academy of Management Review, 1998, 23(2): 242-266.

[2] Coleman, J. C. Social Capital in the Creation of Human Capital. American Journal of Sociology, 94, S95-S120, 1988.

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[3] Tsai, W, Ghoshal, S. Social Capital and Value Creation: The Role of Intra-firm Networks. The Academy of Management Journal, 41(4): 464-478, 1998.

[4] Tsai, W. Social Structure of "Coopertition" within a Multiunit Organization: Coordination, Competition, and Intraorganizational Knowledge Sharing, Organization Science, 13(2): 179-190, 2002.

[5] Sparrowe, R. T., Liden, R. C., Wayne, S. J, Kraimer, M. L. Social Networks and the Performance of Individuals and Groups. The Academy of Management Journal, vol. 44(2): 316-325, 2001.

[6] Cummings, J. N. Work Groups, Structural Diversity, and Knowledge Sharing in a Global Organization. Management Science, 2004, 50(3): 352-364.

[7] Suarez, F. F. Network Effects Revisited: The Role of Strong Ties in Technology Selection. Academy of Management Journal, 2005, 48(4): 710-720.

[8] Reagans, R. Zuckerman, E. W. 2001. Networks, Diversity, and Productivity: The Social Capital of Corporate R&D Teams. Organization Science, 12: 502-517.

[9] Sparrowe, R., Robert, L., Maria, K. Social Networks and the Performance of Individuals and Groups. Academy of Management Journal, 2001, 44(2): 193-201.

[10] Kankanhalli, A., Tan, B. C. Y., Wei, K. K. Contributing Knowledge to Electronic Knowledge Repositories: An Empirical Investigation. MIS Quarterly, 2005, 29(1).

[11] Hoegl, M., Parboteeah, K. P., Munson, C. L. Team-level Antecedents of Individuals' Knowledge Networks. Decision Science, 2003, 34(4): 741-770.