



THE IMPACT OF INTER-ORGANIZATIONAL GUANXI,
ORGANIZATIONAL LEARNING ON INNOVATION PERFORM-
ANCE: AN EMPIRICAL STUDY FROM THE CHINESE MARKET

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Abstract

Formal job relation and informal inter-organizational Guanxi are two types of external relations of an organization. But scholars have not distinguished the two types of relationships when discussing the relationship between organizational external relations and innovation performance. There is little evidence to support the impact of inter-organizational Guanxi on innovation performance. The purpose of this study is to analyze the impact of inter-organizational Guanxi on organizational learning and innovation performance. The data of this study were obtained by investigating 170 high-tech manufacturing enterprises in China. This study use hierarchical regression and other statistical analysis methods to make an empirical analysis of the hypothetical. The results show that inter-organizational Guanxi play a positive role in organiza-

tional innovation performance. The stronger the inter-organizational Guanxi is, the higher the performance of organizational innovation is. The mediating effect of organizational learning on the innovation performance link was observed to be positive and significant. Therefore, managers should build strong relations with stakeholders to assimilate, transfer, and adapt new knowledge and thus enhance innovation performance. This study provides evidence for the impact of inter-organizational Guanxi on innovation performance, and demonstrates their significance and positive role in the context of China.

Keyword: Inter-Organizational Guanxi; Social capital; Network relationships; Organizational Learning; Innovation Performance

Introduction

Open innovation has broken the traditional organizational boundaries (West & Bogers, 2014). Therefore, the external-organizational relationship of resource sharing, complementary advantages and collaborative innovation has become an important driving force for enterprises to improve their innovation performance. Scholars explain the impact of external relations on innovation performance. Albort-Morant, Leal-Millán, Cepeda-Carrion, and Henseler (2018) argued that external-organizational relationship change the behavior motivation of network members from narrow pursuit of short-term economic benefits to long-term trust and reciprocity with network members, so external-organizational relationship help to improve innovation performance. Brass, Galaskiewicz, Greve, and Tsai (2004) pointed out that the external-organizational relationship should be

analyzed from the network as a whole, and the measurement indicators include network density, structural holes and network centrality. Akhavan and Hosseini (2016) pointed out that the structure and dimensions of external-organizational relationship has different effects on innovation. Scholars affirm that inter-organizational relationship had an important impact on innovation performance. However, the results of these studies focus on formal job relation, and there is less discussion on inter-organizational Guanxi that play an important role in business activities in the context of Chinese culture.

Unlike Western cultures, Chinese culture attaches more importance to people's position in the network of relationships, and will adopt different attitudes and behaviors towards different people. Inter-organizational Guanxi enable companies in reciprocal networks to better improve business efficiency. Economic sociology holds that there is

not only benefit-based efficiency mechanism and institution-based legitimacy mechanism, but also interpersonal network mechanism in External relationship network . External economic relationship and external personal social relationship are mutually embedded. Inter-organizational Guanxi affect the organization's access to information.

The research of relationship between inter-organizational Guanxi and innovation performance lacks in-depth analysis and empirical test. Based on the social embedded theory and resource dependence theory, the article thought informal inter-organizational guanxi of individual level is an important resource and is close embedded with the formal inter-organizational cooperative relationship of organizational level. This paper analyzes the relationship between inter-organizational Guanxi and organizational innovation performance from the individual level. By introducing the variable of organizational learning, this paper examines the role of organizational learning in the relationship between inter-organizational Guanxi and organizational innovation performance. This paper conducts a systematic and empirical study from the perspective of inter-organizational Guanxi, enriching the theoretical study of enterprise innovation performance.

Theory Basis and Hypothesis

Inter-organizational Guanxi is particular skills and capabilities . It may be an explanation for why the same indus-

try, the same nature of the enterprise's innovation performance is different, based on resource-based theory. Inter-organizational Guanxi is the personal relationship between the key employees, who represent the organization and its partners in the border of the cooperative organization under the inter-organizational economic cooperation. Inter-organizational Guanxi also have an informal contractual role, emphasizing the relative fairness and equivalence of the interaction of emotions and interests, i.e. one party's effort also requires the other party's return, but allows for delays in time or differences in form. Under the background of China, with the intensification of market competition, competitive trading relationships between organizations, external partners and other stakeholders are gradually being replaced by long-term mutually beneficial cooperative relationships. Close cooperative partnerships are becoming an important factor for organizations to enhance innovation performance. Except for the theory of social embeddedness (Granovetter, 1985), other studies have also suggested that private relations are a kind of social capital of organizations. Inter-organizational personal relationships can be a kind of relationship dependence (Friday, 2012) for individuals or organizations to obtain information, opportunities or improve organizational performance.

Inter-organizational Guanxi can bring in knowledge from customers and sales representatives in the external market, which can be a powerful driving

force for new product development, especially for large technology companies (Boscherini, Cavaliere, Chiaroni, Chiesa, & Frattini, 2013). Inter-organizational Guanxi are the most important part of interpersonal relationships between people at the inter-organizational boundary, and are the personal friends of key members of the organization outside the workplace (Paillé, Mejía-Morelos, Marché-Paillé, Chen, & Chen, 2016). When the key members of the organization establish a private relationship, inter-organizational economic cooperation can be promoted and promoted through the personal relationship between individuals. The channel of private relationship communication becomes the channel of information communication between organizations. It reduces the investment of information cost, improves the speed of problem solving, and changes the expected value of enterprise innovation (Tsai, 2009). Therefore, it improves the motive of enterprise innovation, and makes enterprises easier to obtain high innovation performance. Samaddar (2006) pointed out communication can expand cooperation, reduce the time to collect information, deepen the understanding of existing information, and enhance the innovation performance of enterprises. Based on the above analysis, the following hypotheses are put forward in this study.

H1: Inter-organizational Guanxi has a positive impact on innovation performance.

Inter-organizational Guanxi is a

special form of personal social relations. There is a reciprocal and mutually beneficial exchange between the two sides of the relationship. However, this exchange is different from the simple market exchange, in which not only the benefits, but also the feelings and human feelings are exchanged (Sheehan, De Cieri, Cooper, & Brooks, 2016). Inter-organizational Guanxi provide effective motivation mechanism for organizational learning and trust mechanism established by inter-organizational Guanxi which plays a key role in knowledge exchange and organizational learning. Li, Poppo, and Zhou (2010) believe that inter-organizational personal relations regard the establishment of such a private person as a trustworthy person. This trust relationship contributes to the transfer of implicit knowledge between organizations. Dekker and Abbeele (2010) found that the information exchange and interpersonal communication will affect organizational learning. García-Sánchez, García-Morales, and Bolívar-Ramos (2017) pointed out that the relationship between individuals is established and strengthened through the process of social interaction, and the quality of emotion has a long-term impact on the sharing and communication of knowledge in the group. Kimmerle (2010) pointed out that inter-organizational Guanxi are based on a reciprocal norm and expectation to facilitate deep knowledge exchange within the organization. Based on the above analysis, the following hypotheses are put forward in this study.

H2: Inter-organizational Guanxi has a positive impact on organizational learning.

Cai, Chen, and Management (2013) emphasize organizational learning and innovative performance as interrelated factors. Organizational learning implies the knowledge capacity of knowledge structure, which may directly lead to novelty and use .

The organizational learning is defined as all organizational and managerial practices that facilitate the learning process (Jiménez-Jiménez & Sanz-Valle, 2011). In the same line of thought, Garcíamoraes and Gutiérrezgutiérrez (2012) argue that it is the set of management practices that facilitate the learning process, or as a set of mechanisms that increase the ability of an organization to maintain and improve its performance. Researchers believe that the key to successful innovation is to apply knowledge to products and services (Liu, 2017). Organization acquires information resources through the interaction and exchange among members of inter-organizational, and to improve technological innovation performance by learning to operate new business and implementing innovation performance.

H3: Organizational learning has a positive impact on innovation performance.

Method

This study collected data in the form of questionnaire surveys. It carried out statistical analysis for those collected

questionnaires, such as reliability and validity, validation, multiple regression analysis, etc. This research used statistical analysis software SPSS and AMOS. SPSS software was used for the measurement of variable reliability and verification of proposed assumptions, AMOS software was used for confirmation factor analysis and model fitting degree analysis.

Data Collection

The research topic is the impact of inter-organizational Guanxi and organizational learning on innovation performance. Therefore, sample firms need high R&D activities, close external network links and frequent inter-organizational Guanxi.

High technology manufacturing products are tangible products compared with services. They have relatively high innovation identification and a high product update speed. High technology products have a high degree of marketization and the organizational learning plays an important role in the process of their product innovation. Shandong province is the birthplace of Chinese Confucian culture, which is greatly influenced by Confucian culture compared with other provinces and cities in China. Shandong enterprises emphasize private contacts and attach importance to the establishment and maintenance of personal relationships. Therefore, the empirical research of this study is carried out based on high-tech manufacturing industries located in Shandong province.

This study utilized, as its basis, the new high-tech enterprises directory in Shandong which was recognized by Shandong Technology Hall in 2016 (<http://www.sdstc.gov.cn/>). In 2016, Shandong Technology Hall recognized a total of 1153 high-tech enterprises. Five information service companies and consulting firms were separated from this group for our study. The total sampling group number was 1148 as a whole. This study adopts the method of stratified random sampling. The questionnaires are divided into 17 levels according to the administrative division of Shandong province. The sampling proportion of each level is 20%. A total of 275 questionnaires were distributed, with 215 actually recovered. The recovery rate was 78%. In total, there were 45 questionnaires filled out with invalid results or of poor quality. The final number of effective questionnaires was 170, and the effective questionnaire recovery rate was 61.8%.

Measurement of Variables

In order to ensure the reliability and validity of the data in this study, the scale used in this study is derived from a mature scale developed by previous scholars.

Measurement of inter-organizational Guanxi: The measurement of inter-organizational Guanxi uses the research results of Yen, Barnes, and Wang (2011). It measures inter-organizational Guanxi from personal relationship and willingness to personal relationship.

There are nine items in the scale. We are just working relationships and have no personal feelings. We often have the opportunity to contact, such as eating together or taking part in some activities. He often takes care of me in his business ;I never forget to send gift to him in the holidays. he never forget to send gift to me in the holidays. I think we are a community. Our relationship has been tested for a long time. If it were not for our company, I would not contact him. If he does not want to get help from our company, he will not be willing to contact me. We adopt new ideas that are consistent with the market experience of existing products, such as analyzing current customers and competitors; We use market information and ideas that are beneficial to the existing product market, such as analyzing previous project experience, existing competitors, and technologies.

Measurement of innovation performance: This study adopts the research results of Cordero (1990), and it uses six items to measure innovation performance. Respectively they are as shown. "Compared to peers, we often take the lead to put out new products/services in the industry," "Compared with counterparts, our product/service innovation and improvement won good market response," "Our new product/service has very high technology content," "Compared with our peers, we introduce more new production/service operation methods," "In the new product/service development, our input and output efficiency is very high," and "We have a

first-class technology or service process." This study used the Likert 5 point scale to measure these six items. The higher the score, the higher the innovation performance of the enterprise.

Measurement of Organizational learning: The measurement of organizational learning is taken from the scale of Luo, Wan, and Zhao (2004). Organizational learning is measured by four questions, including: We adopt new ideas that are consistent with the market experience of existing products, such as analyzing current customers and competitors. We use the proven ideas to solve market problems. We engage in activities that help to make full use of and integrate existing market experience.

Setting of Control Variables: This paper selects the enterprise nature, enterprise scale, and enterprise establishment years as the control variables while avoiding the influence of irrelevant variables on the correlation of variables in this study. This study divides the nature of enterprises into four categories. They are state-owned enterprises, private enterprises, Sino-foreign joint ventures, and wholly foreign-owned enterprises. The study also utilizes three virtual variables set up by taking state-owned enterprises as the reference objects. The enterprise scale variable is set up based on the number of people in the enterprise, and is divided into five levels. These levels are below 20, 21-100, 101-300, 301-1000, and more than 1001.

According to this scale, the level rank is assigned a value of 1 to 5. The establishment time is a continuous variable that takes a year as the unit. According to the division method of an enterprise's life cycle, the development stage is divided into the introduction period, the growth stage, the maturity stage, and the decline phase. It is assigned a value of 1 to 4 respectively.

Reliability Analysis

This study uses "Cronbach's α coefficient" to verify the reliability of scale. Nunnally (1991) points out that a reliability estimation of Cronbach's α coefficient of above 0.7 is a high reliability value. The internal consistency reliability coefficient of each questionnaire is above 0.7, indicating that the reliability of each scale is within the acceptable range and has good internal consistency.

Validity Analysis

According to the judgment standard of fitting degree index (Gatignon, 2010), this paper performs confirmatory factor analysis for this model. The results show that model validation indexes such as X^2/df value, RMSEA, NFI, CFI basically reach the acceptable level, indicating that the model has a good adaptation degree.

CR value reflects whether the measured item of the latent variable consistently explains that latent variable. The combined validity CR is greater than 0.7 and greater than the standard 0.60 recommended by Fornell and Larcker (1984). This indicates that the scale used

in this study has good internal consistency. AVE value is used to explain how much variation in the potential variable is derived from the measurement error, reflecting the convergent validity of each dimension of the scale. The AVE value of this study is greater than 0.5, which meets the criteria recommended by Fornell and Larcker (1984). The data shows that the scale used in this study has good combination validity and convergent validity.

Regression Analysis Results and Discussion

Main Effect Test: this study uses the hierarchical regression method to verify the influence of inter-organizational Guanxi of Organizational learning as well as the Organizational learning on innovation performance. Model 1 is only put with the control variables, including the nature, scale, time. Model 2 is added with the influence of inter-organizational Guanxi on organizational learning and innovation performance on the basis of model 1. The regression results of inter-organizational Guanxi to Organizational learning show the R^2 value has increased significantly. It is 0.246, and the adjusted R^2 value is 0.129. Also, the F test value is 3.387, through F test ($p=0.03<0.05$), and the regression coefficient is 0.374 ($p=0.02<0.05$). The inter-organizational Guanxi has a positive influence on the organizational learning, which is significantly different from zero. In the regression of innovation performance through organizational learning, the adjusted R^2 has increased

significantly. It is 0.238, while the F test value is 3.249, through F test ($p=0.04<0.05$). The regression coefficient is 0.358 (positive effect), through T test ($p=0.000<0.001$), and the organizational learning has a significant positive impact on innovation performance. The specific results are shown in Table 1.

Conclusion

First, inter-organizational Guanxi has a positive impact on organizational innovation performance: In the period of social transformation, Chinese enterprises regard the external relationship network as an important way to obtain resources. In the transitional economy, the planned allocation of resources is transformed into the market allocation of resources. At the same time, the function of planned allocation of resources is weakened by the change of system, but the market system is not perfect. Therefore, enterprises acquire a high degree of relationship dependence when they acquire resources. Enterprises turn to obtain innovative resources through trust and reciprocity networks (Buchan, Croson, & Dawes, 2002).

Inter-organizational Guanxi make collaborators more willing to participate in innovative activities, which may lead to more innovative collaboration. Helper (1990) study on Inter-organizational Guanxi shows that closely related enterprises can obtain direct feedback when solving problems, and improve their ability to learn and find new solutions to problems. This common solution to the

Table 1. The Inter-Organizational Guanxi and Ognizational Learning on Innovation Performance

Independent variables	Dependent variables			
	Organizational learning		Innovation performance	
Control variables	Model 1	Model 2	Model 1	Model 2
Enterprise nature	.110	.073	.115	.080
Enterprise scale	.301*	.349*	.269	.315*
Time	.055	.104	.122	.168
Independent variables				
Inter-organizational Guanxi		.374*		
Organizational learning				.358**
F	1.750	3.387*	1.802	3.249*
R ²	.117	.246	.120	.238
ΔR^2				
	.118	.129	.120	.118
Adjusted R ²	.050	.173	.053	.165

^a. * p<0.05; ** p<0.01 ; *** p<0.001

problem replaces simple market decisions, enabling all parties to work together to solve problems and innovate.

Second, Inter-organizational Guanxi plays a positive role in organizational learning. Private social capital will bring convenience to organizational learning. Inter-organizational Guanxi makes information transmission more exclusive and tacit. The content of information transmission includes not only strategic information but also implicit knowledge.

The direct effect is the transfer of implicit knowledge and the increase of enterprise knowledge stock. The connection of private relations between organizations enhances mutual trust, improves the confidence and motivation of enterprises to invest in proprietary knowledge, and enhances the effect of organizational learning.

Finally, organizational learning has a significant impact on innovation performance. Organizational learning helps

enterprises to effectively cope with external turbulent environment, to obtain and integrate external resources, and to improve enterprise innovation performance. Organizational learning helps enterprises to effectively cope with external turbulent environment, and to obtain and integrate external resources to improve enterprise innovation performance. It was evident that the learning capability is a key antecedent of innovation and improves organizational performance. The results allow managers, to incorporate indicators of organizational learning capability in their management tools in order to effectively implement the factors or conditions for learning within organizations.

Despite the adopted methodological strictness, this study has some limitations that should be considered when interpreting the results. The model only considers the relationship between inter-organizational Guanxi and innovation performance from the perspective of organizational learning, and does not consider the impact of such situational factors such as the nature of the enterprise, the size of the enterprise, the complexity of the enterprise technology. In the follow-up study, it can be added to the model to further explore the influence of inter-organizational Guanxi on innovation performance under different management situations. Another limitation is the research cross-sectional design and the analysis made at a single point in time. Thus, researchers must interpret carefully the causality between the constructs.

Reference

- Albort-Morant, G., Leal-Millán, A., Cepeda-Carrion, G., & Henseler, J. (2018). Developing green innovation performance by fostering of organizational knowledge and cooperative relations. *Review of Managerial Science*, 12(3), 1-19.
- Boscherini, L., Cavaliere, A., Chiaroni, D., Chiesa, V., & Frattini, F. (2013). The process of organizational change in Open Innovation models: evidence from a sample of high-tech firms. *International Journal of Entrepreneurship & Innovation Management*, 17(17), 177-205.
- Brass, D. J., Galaskiewicz, J., Greve, H. R., & Tsai, W. (2004). Taking Stock of Networks and Organizations: A Multilevel Perspective. *The Academy of Management Journal*, 47(6), 795-817.
- Buchan, N. R., Croson, R. T. A., & Dawes, R. M. (2002). Swift Neighbors and Persistent Strangers: A Cross-Cultural Investigation of Trust and Reciprocity in Social Exchange. *American journal of sociology*, 108(1), 168-206.
- Cai, B. Q., Chen, G. H., & Management, S. O. (2013). Network Relationships, Organization Learning and Innovation Performance in Chain-style Industrial Cluster. *R & D Management*.

- Cordero, R. (1990). The measurement of innovation performance in the firm: An overview ☆ *Research policy*, 19(2), 185-192.
- Dekker, H. C., & Abbeele, A. V. D. (2010). *Organizational Learning and Interfirm Control: The Effects of Partner Search and Prior Exchange Experiences*: INFORMS.
- Fornell, C., & Larcker, D. F. (1984). Misapplications of Simulations in Structural Equation Models: Reply to Acito and Anderson. *Journal of marketing research*, 21(1), 113-117.
- Friday, O. (2012). Embeddedness and Beyond: Do Sociological Theories Meet Economic Realities? *ЭКОНОМИЧЕСКАЯ СОЦИОЛОГИЯ*.
- García-Sánchez, E., García-Morales, V. J., & Bolívar-Ramos, M. T. (2017). The influence of top management support for ICTs on organisational performance through knowledge acquisition, transfer, and utilisation. *Review of Managerial Science*, 11(1), 19-51.
- Garcíamorales, V. J., & Gutiérrezgutiérrez, L. (2012). Transformational leadership influence on organizational performance through organizational learning and innovation. *Journal of Business Research*, 65(7), 1040-1050.
- Gatignon, H. (2010). *Statistical Analysis of Management Data*: Springer New York.
- Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American journal of sociology*, 91(3), 481-510.
- Helper, S. (1990). Comparative Supplier Relations in the U.S. and Japanese Auto Industries: An Exit/Voice Approach. *Business & Economic History*, 19, 153-162.
- Jiménez-Jiménez, D., & Sanz-Valle, R. (2011). Innovation, organizational learning, and performance. *Journal of Business Research*, 64(4), 408-417.
- Kimmerle, J. (2010). Supporting participation in organizational information exchange: psychological recommendations. *Development & Learning in Organizations*, 24(4), 14-16.
- Li, J. J., Poppo, L., & Zhou, K. Z. (2010). Do managerial ties in China always produce value? Competition, uncertainty, and domestic vs. foreign firms. *Strategic Management Journal*, 29(4), 383-400.
- Liu, C. H. (2017). Creating competitive advantage: Linking perspectives of organization learning, innovation behavior and intellectual capital. *International Journal of Hospitality Management*, 66, 13-23.

- Luo, H., Wan, D. F., & Zhao, H. F. (2004). The Measurement of Organizational Learning in Network Environment: a Case Study. *Systems Engineering-Theory & Practice*, 24(7), 46-52.
- Paillé, P., Mejía-Morelos, J. H., Marché-Paillé, A., Chen, C. C., & Chen, Y. (2016). Corporate Greening, Exchange Process Among Co-workers, and Ethics of Care: An Empirical Study on the Determinants of Pro-environmental Behaviors at Coworkers-Level. *Journal of Business Ethics*, 136(3), 655-673.
- Samaddar, S. (2006). Inter-organizational information sharing: The role of supply network configuration and partner goal congruence. *European Journal of Operational Research*, 174(2), 744-765.
- Sheehan, C., De Cieri, H., Cooper, B., & Brooks, R. D. (2016). The Impact of HR Political Skill in the HRM and Organizational Performance Relationship. *Australian Journal of Management*, 41(1).
- Todeva, E., & Knoke, D. (2002). Strategic Alliances and Corporate Social Capital. *Social Science Electronic Publishing*.
- Tsai, K. H. (2009). Collaborative networks and product innovation performance: Toward a contingency perspective. *Research policy*, 38(5), 765-778.
- West, J., & Bogers, M. (2014). Leveraging External Sources of Innovation: A Review of Research on Open Innovation †. *Social Science Electronic Publishing*, 31(4), 814-831.
- Yen, D. A., Barnes, B. R., & Wang, C. L. (2011). The measurement of guanxi: Introducing the GRX scale. *Industrial Marketing Management*, 40(1), 97-108.
- Zeng, S. X., Xie, X. M., & Tam, C. M. (2010). Relationship between cooperation networks and innovation performance of SMEs. *Technovation*, 30(3), 181-194.