

A Synthesis of Relationship between Trust and Knowledge Transfer-in the View of Organization Cooperation

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Abstract: Based on the organization cooperation , from the perspective of variable correlation and variable properties , this paper describes the research result on relationship between trust and knowledge transfer , in which the elements correlation research is broken down relationship between trust and knowledge transfer , correlation of trust , knowledge transfer and performance relationship , and the interrelationships of trust , knowledge transfer and multiple factors. For trust perspective. There are two structural dimensions of trust: antecedents and mediating variables. Combining the literature at home and abroad in recent years , the existing research results are summed up and the future research directions are proposed.

Key words: knowledge transfer; trust; organization cooperation; relationship research

1 Introduction

In the current competitive environment , knowledge is recognized as a basic organizational assets ^[1]. knowledge and knowledge management in recent years has attracted more and more attentions , the core of knowledge management is consists of two processes: knowledge creation and knowledge transfer. knowledge transfer has become the most critical processes of knowledge management ^[2]. Huemer had pointed out that the current significance of trust in management theory due to its association with knowledge ^[3]. As knowledge and innovation are key competitive advantage of enterprises in the highly competitive commercial environment , which contributed to the organizational trust and knowledge transfer , knowledge creation linked.

For research on knowledge transfer , organizational trust , theorists has been going on for years , but for a comprehensive relationship between inter-organizations trust and knowledge transfer needs to be further studied. J. Ajith Kumar , etc. pointed out that the current dimensions of organizational knowledge transfer research focused on study , knowledge , agents , mechanisms , contextual factors , geography , business context and

other aspects. For research on knowledge transfer between cooperation and innovation organizations , mainly in the academic content knowledge transfer , knowledge transfer factors , knowledge transfer scenarios , knowledge transfer performance. At present , for the dimensions of inter-organizational trust research focused on trust content , structure , influencing factors , effects and so on. While the research on trust and knowledge transfer has been acknowledged by a number of researchers and is well documented , still there is scant literature that connects them together. In this paper , from the perspective of organizations , we explore the relationships of inter-organizational trust and knowledge transfer , and build research framework between trust and knowledge transfer.

2 An overview of trust and knowledge transfer

Trust is considered to be more and more multi-dimensional in the level of individual , organization and inter-organization. Trust has been studied in economics , social psychology , organizational management , marketing and entrepreneurship field. Mayer put forward that trust “is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor” ^[4]. In cooperative innovation , trust is an expectation held by an agent that

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its trading partner will behave in a mutually acceptable manner (including an expectation that neither party will exploit the other’s vulnerabilities) , can be divided into contractual trust , competence trust and goodwill trust^[5].

Argote and Ingram considered that knowledge transfer can be defined as the process through which one unit (e.g. , group , department , or division) is affected by the experience of another ^[6]. J. Ajith Kumar wrote that knowledge transfer was defined as “a process of exchange of explicit or tacit knowledge between two agents , during which one agent purpose fully receives and uses the knowledge provided by another”. “Agent” can refer to an individual , a team , an organizational unit , the organization itself or a cluster of organizations. The exchange process involves two complementary acts: the act of giving or delivering knowledge by one agent (the source) , complemented by the act of receiving and using knowledge by another (the recipient) . Without either , the process of transfer is incomplete ^[7].

The association of trust and knowledge transfer was first used by Anoop Madhok , he suggested that inter-organizational trust can help both partners to establish

long-term rational allocation of resources and the sharing of knowledge ^[8]. Followed large empirical and literature research prove that the trust will affect knowledge transfer and the relationship of them is mutual. On the one hand , trust can promote effective knowledge transfer , trust will increase the number of information exchanged , Positively correlated with knowledge transfer; trust can promote the organizational knowledge transfer , because it increases the willingness partners help each other understand the new external knowledge ^[9]. On the other hand , in the knowledge transfer process , if the sharing knowledge include critical and confidential information , then the process can not only help to build confidence , but also help the development of trust ^[10].

3 The relationship between trust and knowledge transfer research in cooperative innovation organization

Literatures about the relationship between trust and knowledge transfer in cooperative innovation organization can be divided into two perspectives: correlation of trust , knowledge transfer and other factors and variable properties of trust.

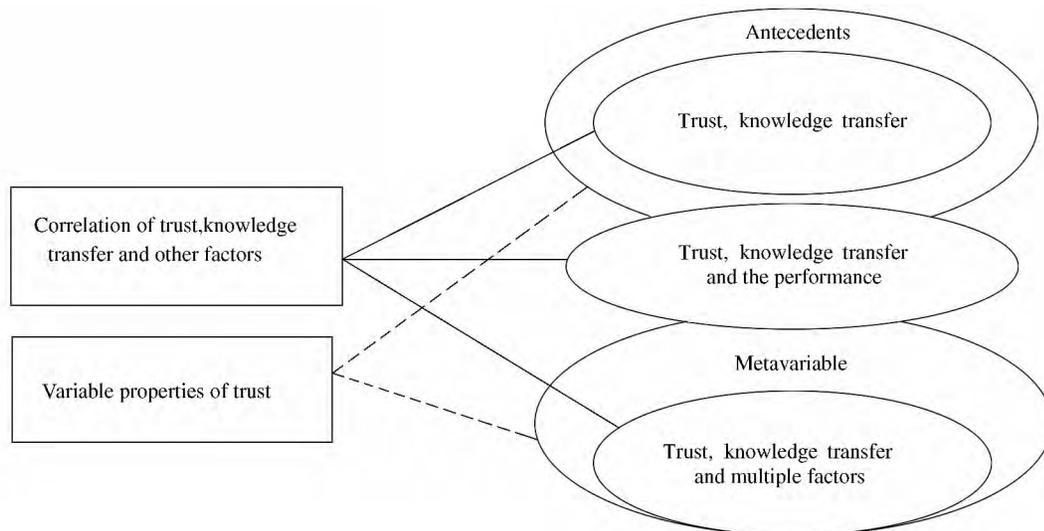


Figure 1 Framework of relationship between trust and knowledge transfer research in cooperative innovation organization

With correlation of trust , knowledge transfer and other factors can be divided into relationship between trust and knowledge transfer , relationship among trust , knowledge transfer and performance , relationship among

trust , knowledge transfer and multiple factors. Table 1 lists the main focus and researchers of three dimensions of relationship between trust and knowledge transfer. Which , for the influence of trust in

knowledge transfer is currently the most widely studied, the time span is large, relationship among trust, knowledge transfer and performance, relationship among trust, knowledge transfer and multiple factors studies have been focused in recent years.

There are two dimensions of trust variable properties perspectives: first, making trust as one of the factors of knowledge transfer, namely antecedent variables, affect inter-organizational knowledge transfer together with other factors; second, making trust as mediating variables between knowledge transfer and its antecedent variables, exploring how other factors affecting knowledge transfer by regulating function of trust. Recent studies tend to make trust as a mediator to ex-

plore relationships and regulation of trust with knowledge transfer, transfer performance and other factors.

There are overlapping parts between the two research perspectives (as shown in Figure 1), in research of relationship between trust and knowledge transfer, trust is an antecedent variable, in research of relationship among trust, knowledge transfer and multiple factors, trust is usually the intermediary variable. Therefore, we take the antecedent variables and mediating variables into the the framework of relationship between trust and knowledge transfer, and relationship among trust, knowledge transfer and multiple factors.

Table 1 Summary of relationship between trust and knowledge transfer

Relationship category	Research focus	Researcher
Relationship between trust and knowledge transfer	Trust promote participants' knowledge transfer activities	Simonin
	Degree of influence trust have on enterprise cluster's knowledge transfer	Wang Jing-ru ^[11]
	Single and combined adjustment effect of interpersonal trust, knowledge on knowledge distance and knowledge transfer	Wang Yong-xing ^[12]
	Trust and knowledge transfer between alliance enterprises	Reagan
	Influence of trust in the university-enterprise knowledge transfer	Michael D. Santoro
Relationship among trust, knowledge transfer and performance	Trust is a key factor of tacit knowledge transfer	Ted Foos
	Effects of Alliance trust and knowledge transfer on alliance performance	Chia-Ling (Eunice) Liu ^[13]
	Effects of Interpersonal trust between supplier and manufacturer, knowledge transfer on new product development performance	Cao Yu-ling, LI Sui-cheng ^[14]
	Relationship between trust and corporate performance while Knowledge acquisition as a metavariabe	Jiang Xu
	Effects of trust on knowledge transfer and outsourcing performance in the process of contract awarding	Tian Ye Du Rong ^[15]
Relationship between trust, knowledge transfer and multiple factors	The relationship of Co-operative institutions border patrol, integration mechanism, trust and knowledge transfer	Zhang Li, Liu Xin-mei
	Organizational trust, organizational structure, organizational culture and knowledge transfer	Wen Bao-Lin ^[16]
	Relationship of organizational trust, knowledge transfer, knowledge innovation and innovation	Anna Sankowska ^[17]
	Influence of perception cost of knowledge transfer and emotional trust on affective commitment and knowledge sharing	Gian Casimir etc ^[18]
	Global virtual teams diversification, mutual trust and knowledge transfer	Praveen Pinjani ^[19]

3.1 Correlation of trust and knowledge transfer

For correlation of inter-organizational trust and knowledge transfer, the existing literatures tend to commence from dimension of knowledge, trust, collaboration of trust and knowledge transfer, and antecedents property of trust.

1) Trust dimension

For trust dimensions, different scholars have different views, Sako divided cooperative innovation trust into contract trust, ability trust and friendship trust. Barney divided the trust into low trust, medium trust and high trust^[20]. According to the forming mechanism of

trust, Parkhe A. divided the trust into process-based trust, feature-based trust and system-based trust^[21]. According to trust generated by different psychological processes, McAllister divided the trust into cognition-based trust and affect-based trust^[22].

Different dimensions of trust can raise their desire to transfer, decrease cost and risk to transfer knowledge, improve expected profit, and advance the result according to affect the psychological processes of both transfer sides. At the same time, however, due to the restriction caused by situational factor, different dimensions of trust affect different risk perception and relational behavior of cooperative partners. Besides, during the organizational knowledge transfer, different dimensions of trust always exist at the same time.

From the perspective of trust dimension, Gao Xian-gyu, Wei Mintang and Li Wei divided the trust into cognition-based trust and affect-based trust. Taking knowledge provider and receiver in consideration, they analyzed the way in which different dimensions of trust cause knowledge transfer. During the analysis of the emergence, development and preservation of technological trust and emotional trust and the knowledge transfer, Jialin Hardwick believed that the existence of them not only decrease risk and uncertainty but also make the network relationship closer^[23]. By dividing trust into high trust and low trust, Qiyuan Zhan and Kevin Zheng Zhou studied influence to knowledge transfer caused by contract and control under the circumstance of high and low trust. Meng Fei and Wei Jianliang divided trust into goodwill-based trust and ability-based trust and studied trust's function between interpersonal relationship and knowledge transfer.

2) Knowledge dimension

There are two major classifications of knowledge dimension: dominant knowledge and recessive knowledge. Most of existing studies of trust and knowledge transfer refer to trust's influence upon recessive knowledge transfer. Roberts stated that trust is an important factor in the process of knowledge transfer because of characteristics of recessive knowledge transfer. She believes that interpersonal relationship will decrease risk and uncertainty between trust and recessive knowledge transfer^[24]. Ted Foos, Gary Schum,

Sandra Rothenberg provides evidence that trust, early involvement, and due diligence influence the extent of meeting technology transfer expectations and tacit knowledge transfer expectations^[25]. J. Scott Holste and Dail Fields studied different affects upon staff's desire to transfer and imply recessive knowledge on the basis of cognition-based trust and affect-based trust. The research indicates that affect-based trust has a clear influence upon the transfer of staff's recessive knowledge and cognition-based trust plays an important role in implying recessive knowledge^[26].

There are also some researches about the difference between trust's influence upon dominant knowledge and recessive knowledge. Michael D. Santoro and Paul E. Bierly, III believe that trust will improve both transfer of dominant recessive knowledge but is in favor of recessive knowledge transfer. As for improvement to dominant knowledge, trust can decrease opportunism tendency of cooperation between schools and enterprises and create a more open situation for knowledge transfer. As for improvement to recessive knowledge, trust not only decreases opportunism tendency but also supplies a rich learning situation and frequently interacting positive atmosphere for schools and enterprises^[27].

3) The cooperation of trust and knowledge transfer

In recent years, researchers tend to treat trust as a dynamic variable quantity. From the definition and functional mechanism of trust, the function of trust is realized and evolved gradually in the dynamic process of cooperation innovation organization. The level and dimension of trust varies according to the dynamic process of cooperation innovation organization.

Ji Hongrong studied trust's influence upon knowledge transfer between virtual enterprise organization and established a trust-knowledge transfer game analysis model. He divided the development of trust into four phases which are initial trust phase, trust development phase, trust maintain phase and trust re-development phase. He believe that the best strategy to realize knowledge transfer, knowledge source and knowledge receptor between virtual enterprise organization is mutual trust^[28]. From the perspective of dynamic trust, Chen Tong and Wu Yong divided R & D outsourcing

trust into two stages: understanding and recognition. They also constructed a knowledge transfer game model between manufactures and research and development institutions. They studied dynamic trust's influence upon knowledge transfer in R & D outsourcing and provided corresponding strategies^[29].

4) Trust as antecedent variable

The study of the relationship between trust and knowledge transfer regards trust as a antecedent variable. From the above literatures, researchers regarded trust, network structure, relational distance, characteristics of knowledge and absorbing capacity as antecedent variables of knowledge transfer and studied their impacts upon knowledge transfer under all the factors (Figure 2). Most of those literatures are quantitative researches and are widely implied in every levels of cooperation innovation organization.

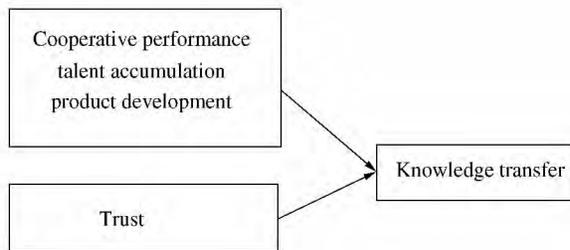


Figure 2 Trust as antecedent variable in knowledge transfer

In conclusion, among researches related to trust and knowledge transfer, existing researches mainly concern influence upon knowledge transfer from different dimension's trust. Most of them elaborate the relation between trust dimension and knowledge transfer on the basis of existing research findings combined with different levels of cooperation without considering situational factor and the attribute of cooperation organization which leads the studies of trust dimension and knowledge transfer to homogenization. Different dimensions of trust of cooperative partners exist at the same time in the relationship of cooperation innovation organization. However, the existing researches do not concern that as a form of trust exists, how other forms of trust affect knowledge transfer between organizations, as well as interaction of different dimensions of trust on knowledge transfer.

From the perspective of knowledge dimension, current

researches analyze trust function's to dominant and recessive knowledge transfer and the dimension of effective trust at certain situations. Research findings show that trust improves both dominant and recessive knowledge transfer but improve recessive knowledge more. Current researchers don't analyze further recessive knowledge with characteristic of organizations due to recessive knowledge has stronger context dependent and knowledge's degree and source can be further divided according to characteristics of organization.

From the perspective of the cooperation of trust and knowledge transfer, researchers find that there will be different styles of trust in different stages of cooperation innovation. Current studies related to dynamic trust are pure qualitative study and isolated which only cover analysis of trust stage and trust level between both sides. And there is few studies concerning knowledge transfer in cooperation with innovation organization.

3.2 Study of the relationship of trust, knowledge transfer and performance

The study of the relationship of trust, knowledge transfer and performance belongs to the research category of the relationship of trust, knowledge transfer and other factors. However, researchers treat them differently because the attributive of trust variable has duplicity. The performance here mainly refers to the performance of cooperation innovation organization or that of new product development but not that of knowledge transfer. There are many literatures about researches of the relationship of trust, knowledge transfer and performance at home which mainly focus on middle levels of cooperation organization such as multinational corporations, supply chain, strategic alliance. All current studies agree that there is a positive correlation between trust, knowledge transfer and organizational performance.

By analyzing Korean enterprises in China, Li Jingxun and Li Longzhen thought that trust advance knowledge transfer between parent company and subsidiary company and has positive function to the performance of subsidiary company. The higher level of trust between multinational subsidiary company and parent company, the more affect subsidiary company will receive

from parent company^[30]. From the perspective of resource dependence to analyze the affect to league performance from league trust and knowledge transfer, Sheng Yongming found that there is a positive correlation between them. Cao Yuling and Li Suicheng mainly studied the affect upon supplier's participation in new product development from the trust and knowledge transfer between supplier and manufacture and came to the conclusion that there is a positive correlation between them. By regarding trust as a factor in outsourcing to study its affect upon knowledge transfer in the process of outsourcing with the help of questionnaires and structural modeling, Du Rong concluded that trust has direct affect upon knowledge transfer.

In the study of the relationship among trust, knowledge transfer and performance, trust can be either antecedent variable or metavariabe. Their relationship can be progressive which means trust boost knowledge transfer and has positive effect upon performance; it can also be paratactic which is to say that trust and knowledge both have positive effect upon performance (Figure 3).

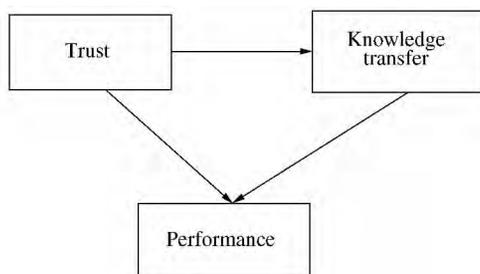


Figure 3 Relationship of trust, knowledge transfer and performance

In summary, among various factors, trust and knowledge transfer's direct function to performance is not notable, so external researchers pay little attention but more in supply chain and multinational companies. Most researchers treat trust as antecedent variable in knowledge transfer and there is few studies regarding it as metavariabe.

3.3 Study of correlation of trust, knowledge transfer and multifactor

The study of correlation of trust, knowledge transfer and other factor is the research hotspot in recent years and the study carries from the following three parts.

1) Research on multifactor correlation

In recent years, most researchers focus on correlation studies among trust, knowledge transfer and multifactor to the affect upon knowledge transfer from the co-function of multifactor. At present, there are mainly correlation studies about trust, knowledge transfer, knowledge innovation, cost of knowledge transfer, variety of team, network dimensions, integration mechanism, joint management, power distance and there will be more studies like these. The selection of these associated factors are mainly to identified and combined from the factors that affect inter-organizational trust and knowledge transfer, such as cooperation organization attributes, situational factors and performance.

Zhang Li and Liu Xinmei analyzed the cooperative mechanism of boundary spanning relationships, the integration mechanism, trust and knowledge transfer and thought that the trust and every sides are just antecedent variables of integration mechanism which couldn't affect directly knowledge transfer of cooperation organization. Gian Casimir, Karen Lee and Mark Loon studied the emotional cost of knowledge transfer cost and affective trust's affect upon affective cognition and knowledge sharing. Empirical analysis concluded that emotional trust plays a regulatory role in emotional recognition and knowledge sharing, and the relationship of knowledge sharing. At the same time, it will decrease the emotional cost of knowledge transfer^[31]. Anna Sankowska made a questionnaire among 202 staff in Polish quoted company to examine the relationship among organizational trust, knowledge transfer, knowledge innovation and creativity. The result indicates that there is a positive correlation among them. The regulatory function from knowledge innovation to trust and creativity is not notable. Knowledge transfer also affect the relationship of trust and knowledge innovation^[32]. Praveen Pinjani and Prashant Palvia used the hierarchical multiple regression method to study the relationship among global virtual team diversity, mutual trust and knowledge transfer. They studied the effect and functional diversity and pluralism on mutual trust and knowledge transfer and further effect of virtual team performance by regarding task interdependence and cooperation technology as regulated

variables. Findings show that there is a much clearer relationship among pluralism, mutual trust and knowledge transfer compared with functional diversification. Mutual trust and knowledge transfer also affects the level of pluralism and team performance^[33]. Widad Guechtouli studied individual's trust for headquarters of the Multi-National Corporation, the consistency level between organizational culture and individual culture value, opening degree of power distance and individual diversity can affect knowledge transfer from headquarters to a body of each subsidiary.

2) Trust's functional mechanism to knowledge transfer
Trust mechanism, on one hand, can encourage partners to resist attractive short-term interests, support long-term cooperation with existing partners and on the other hand reduce the risk of future partners expected because they believe that their own cooperative partners won't act secretly. The existing researches indicate that trust is the fulcrum of the influence factors of knowledge transfer, mainly through the indirect effect of knowledge transfer in the function mechanism of trust.

Dong Fang and Deng Lingbin analyzed the relationship between social knowledge transfer and trust, and believed that through direct and indirect functions trust affects knowledge transfer, which is to say, to directly influence the mental processes and behavior of the recipient, to promote the knowledge transfer by acting on the influence factors of knowledge transfer^[34]. Jao-Hong Cheng studied Taiwan green supply chain and how is the interaction between trust and organizational knowledge sharing among other factors. The article regarded trust as a moderate variable, and found that trust is the fulcrum of the influence factors of knowledge transfer, the influencing factors on the role of trust^[35]. From the dimensions of alliance network, Yang Guang studied the effect of trust on knowledge transfer in strategic alliance and believed that trust can reduce knowledge transfer to accept knowledge of procedures and cost of knowledge protection and knowledge recipient verification, so as to promote the effective transfer of knowledge in Alliance^[36].

Li Gang studied the relationship of trust, knowledge transfer and new product development and established

a conceptual model of trust, knowledge transfer and new product development, and found that contract trust and goodwill trust can directly promote the knowledge transfer among partner, while through interaction with the contractual trust, goodwill trust the ability trust strengthen their positive functions to knowledge transfer^[37].

3) Metavariable attributive of trust

There are two situations when coming to trust as metavariable. On one hand, researchers study how the other antecedents of knowledge transfer influence the cooperative innovation knowledge transfer through trust regulation; another case is that by adjusting the relationship between the knowledge transfer and its antecedent variables, the trust will influence the cooperation performance, talent accumulation, product development and other dependent variables (Figure 4).

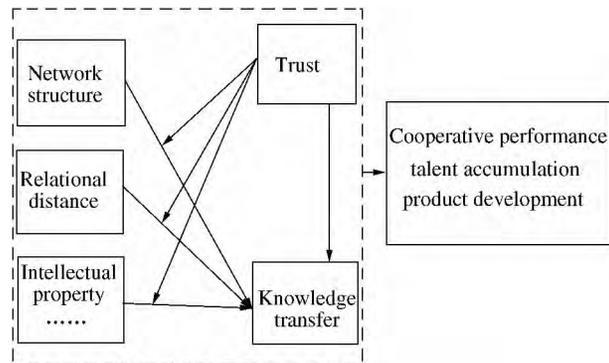


Figure 4 Trust as metavariable in knowledge transfer

Among current studies about trust as metavariable, most of them belong to the former case and the latter is the research direction in the future. Qiyuan Zhang and Kevin Zheng Zhou treated trust as an intermediary variable, and studied in formal and informal mechanisms' effect for knowledge transfer in Chinese emerging markets and make a comparison of two kinds of mechanisms^[38]. Shihao Zhou treated cognitive trust and emotional trust as intermediary variables, and studies different effects on social ties in interpersonal knowledge transfer^[39]. Lei Hongzhen and Hou Na treated trust in supervisor as an intermediary variable, and studied the relationship among supervisor support, trust in supervisor and inter organizational knowledge transfer^[40].

In summary, in the studies on the relationship among trust, knowledge transfer and other factors, the study

of trust's functional mechanism to knowledge transfer, the analysis of the way to function in knowledge transfer is a process of finding metavariable and adjusting variables. However, there is no widely accepted theoretical framework for this functional mechanism which means it is a research question to study further.

Research on the relationship between the multifactor is in sustainable development, present study covers the effects of relationship factors, performance and other aspects of the situation of the organization cooperation factors and knowledge transfer, but not perfect. For the trust of endogenous, exogenous dynamic trust factors, evolution and research on knowledge transfer, cooperation innovation is less, this will be the developmental direction of future research on organizational trust and knowledge transfer.

4 Comment and expectation

This paper studies the relationship between trust and knowledge transfer from the perspective of knowledge transfer factor correlation and trust variable properties. From the research point of view, existing research results focused on the relationship between research and trust variable properties. The research mainly focuses on the following aspects: the influence of trust to the promotion of knowledge transfer; the relationship among trust, knowledge transfer and other factors; less researches have been carried out on the relationship trust, cooperation, knowledge transfer. The present research is mainly qualitative research. The research mainly studied the supply chain, virtual organizations, strategic alliances, innovation networks, etc. It didn't pay much attention to knowledge transfer between schools and enterprises in the role of trust. In research methods, studies about trust and knowledge transfer abroad mostly use interviews, questionnaires and other empirical analysis, while domestic research and game analysis adopt qualitative research methods, while quantitative research is less.

Exploring cooperative relationship between trust and knowledge transfer has practical significance, because trust is the basis for cooperation organization.

Domestic and abroad researches show that the impact of trust on knowledge transfer is multi-faceted and

multi-angle. It can not simply use linear thinking to explore the relationship between them. Thus, the future researches should pay attention to these two aspects.

1) The matching analysis between phase angle dynamic trust and knowledge transfer phase. By studying the perspective of dynamic trust to study different stages of trust on the strength of inter-organizational cooperation and innovation knowledge transfer mechanisms of action and influence. Empirical research methods can be used to study the demonstration of trust and knowledge transfer of various stages of the matching knowledge transfer strategies.

2) From the perspective of trust dimension, we can study the process of knowledge transfer in trust. Trust in the existing literature confirms the role of promoting knowledge transfer as well as different forms of trust, but studies about trust in the organization of innovative cooperation, development and maintenance are very few.

In collaborative innovation, the establishment and maintenance of different dimensions of trust is a dynamic and iterative process. The partners in a cooperative venture will strengthen their trust by meeting their results with the expectations. The results about cooperation are a part of their cooperating history which increase the positive expectations about cooperation. The strengthen cooperation can also decrease the risk in the future. Thus, it is necessary to do deep researches on the building and maintenance of trust in knowledge transfer.

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