Researching on the Factors Influencing Inter-firm Knowledge Transfer

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Abstract: Knowledge has become the strategic elements of production, it is also the important source of competitive advantage. The key to a firm’s existence and development in an open and dynamic competitive context is acquiring the required knowledge timely and effectively. Knowledge transfer is a crucial step for a firm to obtain external knowledge, therefore, researching on the factors influencing inter-firm knowledge transfer would be helpful for a firm to overcome obstacles and enhance the inter-subject knowledge transfer performance. The author analyzes the impacts of subjective and objective factors on inter-firm knowledge transfer from the perspectives of the attributes of the objects; the transferring intention, ability, learning behavior and transferring pattern of the subjects, in order that some common factors influencing inter-firm knowledge transfer be identified and investigated which would be instructive to the researches on knowledge management in organizations.

Key words: Knowledge, tacit knowledge, knowledge trans

INTRODUCTION

Knowledge transfer usually occurs in the form of dual exchange which involves many dynamic linkings. A lot factors will hinder or slow down the transfer of knowledge between the relevant parties, with the result that the transfer could not proceed well. What’s more, the process of transferring could be accompanied with Knowledge leakage and distortion which leads to the failure of knowledge transfer or a far cry from the effects expected. The factors influencing knowledge transfer among individuals, groups, organizations and networks and the functional mechanism had been investigated thoroughly by academics from home and abroad, with the hope that the black box of knowledge transfer could be opened, as a result, effective ways to improve the performance of knowledge transfer could be identified. Classic studies are as follows: The nature of the knowledge transferred (Von Hippel, 1994); the causality and causal ambiguity of knowledge (Szulanski, 1996), the capacities of both sides involved in knowledge transfer, such as cognitive capacity, absorptive capacity and knowledge retention capacity (Simonin, 1999; Gupta and Govindarajan, 2000; Tsai, 2001); the proximity of the two parties as well as the nature of transferring channels. During the 1980s to 1990s scholars abroad explored the impediments to knowledge transfer from the perspective of organizational capacities, strategic intent, partner selection and trust mechanism respectively, laying a theoretical foundation for the research of the impact of knowledge properties on knowledge transfer. Furthermore, context factors such as organizational learning and organizational support have also been investigated. Existing research demonstrates that there exist diverse factors influencing knowledge transfer and, depending on different context, those factors will vary. Whereas, some regular patterns do exist and can be captured. Studying on the influencing factors will be beneficial to companies in terms of improving knowledge transfer performance, so that they can obtain the required knowledge timely, effectively and at a low cost.

IMPACT OF KNOWLEDGE PROPERTIES ON KNOWLEDGE TRANSFER

Impact of the tacitness of knowledge: According to neoclassical economics, knowledge can be regarded as public goods which ensures that it can be spread among parties costlessly. Therefore, this school argue that there exists no impact of knowledge itself on the process and performance of its transfer. What the owners of knowledge want is merely keeping the knowledge secret, in order that the negative externalities stemmed from knowledge spillover could be avoided. On the other hand, these points have been criticized by some other scholars, who oppose to the hypothesis of publicity of knowledge. Rather, knowledge should be cognized and analyzed based on different types. Some knowledge has the property of publicity, whereas other knowledge such as personal skills and know-how are not easy to spread and diffuse. Accordingly, the influencing factors of
knowledge transfer should be identified and analyzed based on the peculiar pattern and category of knowledge itself.

Uncodified and hard-to-express. Being personal and context-dependent, tacit knowledge are hard to be formalized and formatted, therefore, it's no easy to communicate, retain and transfer them. While explicit knowledge can be expressed through various media, including newspapers, sounds and images. Therefore, those knowledge that can be expressed by media are only a fraction of the whole of the knowledge (Cheng, 2005). Only through perceiving and contacting, can one gradually comprehend the meaning of tacit knowledge which explains the reason why it's hard to transfer. The higher the observability of knowledge, the lower the ambiguity and the more likely the occurrence of high-performance knowledge transfer. To a large extent, the specificity of knowledge impacts whether or not the recipients could easily identify the outcomes stemmed from the use of transferred knowledge. Even if the explicit knowledge have positive effects on senders, receivers cannot be sure the same performance be achieved.

The complexity of knowledge. In the process of knowledge transfer, senders and receivers have to continuously search for and identify the constituent elements of knowledge. If there are a lot constituent elements of the transferred knowledge, plus the complicated relationships among particular elements, it would be hard to assimilate the knowledge thoroughly and swiftly. Besides, not only would the costs involved in the transferring process be increased but the acceptable range be narrowed which hinders the effectiveness of knowledge transfer to a great extent, with the emergence of knowledge fragmentation demonstrated in the phenomena of “Know one side without knowing the other side” or “Know how without knowing why” (Guan, 2006). To sum up, the complexity of knowledge make learning highly ambiguous, impact and even impair the comprehensive understanding of knowledge assets, reduce the transferability of knowledge and the receiver's learning effects.

**Impact of the ambiguity of knowledge:** Ambiguity is used to describe a specific property possessed by knowledge under the condition of “knowledge transfer difficulties”. Ambiguity refers to a certain kind of stickiness from the standpoint of knowledge owners, accounting for some obstacles emerged in knowledge transfer. It's this property that ensures the hard-to-imitate nature of firm's core advantages. So there exists knowledge ambiguity paradox to organizations. Using the combined knowledge of products and processes, Reed and De Fillipi (1990) state that the causal ambiguity of knowledge hampers a firm’s access and imitation of highly valued resources (knowledge). Szulanski (1996) argues that the "irreducible" causal ambiguity of knowledge leads to its stickiness which can be regarded as one of the key factors influencing knowledge transfer. Although the ambiguity influences the transferability, it also strengthens the sustaining of a firm’s competitive advantage, decreases the possibility of imitation by other organizations. Apart from causal ambiguity, the resultant outcome ambiguity also impacts knowledge transfer. When both senders and receivers are uncertain of the usefulness of knowledge in past applications, not to mention the uncertainty of the use of knowledge, the ambiguity and transfer difficulties are becoming more apparent (Priestley, 2003).

Further, the more ambiguous the knowledge, the more reliant the effective transfer on particular context. For example, the transfer of a firm’s core technologies would not happen without the simultaneous transfer of the R&D personnel who possess the relevant knowledge. It’s this context-dependence and embeddness that leads to the difficulties of knowledge transfer (Wang et al., 2010).

**Impact of the embeddness of knowledge:** Compared with the tacitness of knowledge, research on the embeddness of knowledge is later among academics. Some knowledge are embedded in personal conceptual and cognitive capabilities, others embedded knowledge are action-oriented, dependent on individuals physically, embodied in the form of information cognition, characteristics and clues as well as face-to-face discussions. All these knowledge are embedded in concrete contexts and can only be obtained by practice. Some scholars propose that knowledge are embedded in systematic customs, namely, certain repetitive organizational behaviors, such as formal product manufacturing processes. Argote and Ingram (2000) illuminates comprehensively the influences of knowledge embeddedness on knowledge transfer, by proposing the concept of “knowledge reservoir”, namely, knowledge embeddedness. Knowledge in organizations are embedded in three basic elements: people, tools/technologies and tasks/customs, as well as the interactions of the three. Different style of embeddedness demonstrates distinctive characteristics.

**Knowledge embedded in people:** Individuals themselves are able to transfer tacit knowledge as well as explicit one. Besides, people can evaluate, accommodate and reconstruct knowledge so that better applications of knowledge in new context can be realized. Whereas, those
highly embedded knowledge are hard to transfer without similar working contexts and conditions (Almeida and Kogut, 1999). Knowledge embedded in products and tools/technologies. Generally speaking, these knowledge have the attributes of path dependence and specificity. Zander and Kogut (1995) regard these knowledge as codified one which are deemed easier to send and receive compared with the knowledge embedded in other elements.

Knowledge embedded in tasks: These knowledge include the organizational forms, guidelines, procedures, customs, strategic actions etc. Bettenhausen and Murnighan (1985) argue that when the transferred knowledge are embedded in tasks/customs, the receivers are expected to accept the corresponding customs while usually with certain kinds of resistance in practice. One conclusion is that when transferring those tasks/customs-embedded knowledge, it would be relatively easy for the transfer to happen, because receivers are familiar with the the tasks/customs or both sides have homogeneous customs.

IMPACT OF KNOWLEDGE SENDERS ON KNOWLEDGE TRANSFER

Impact of the transfer intention of senders: Knowledge itself is monopolied by the subject, only if the subject has the intention and ability to publicise the knowledge, can it be diffused and circulated effectively. Transfer intention refers to the inclination of the knowledge sender to transfer its own knowledge and it determines the direction of transfer behavior as well as the strength of transfer motivation. Sender’s intention directly affects the quantity and quality of the transferred knowledge. The weaker the intention, the more unwilling the sender in terms of knowledge transfer, with the result that knowledge are hidden or lower degree of sharing. Finally, lot knowledge is settled. On the contrary, the stronger the intention, the easier the knowledge transfer (Wang and Wu, 2011).

Knowledge, particularly the tacit one is one of the main sources of competitive advantage for modern enterprises. The occupation of knowledge implies the maintaining of the competitive advantage. The monopoly status and the power syndrome will both affect the transfer decisions of knowledge senders. Therefore, individuals and firms would do anything but transfer the core knowledge readily. Then, one of the essential conditions of effective knowledge transfer is the transfer intention of senders. Otherwise, knowledge transfer would not happen. It should be noted that it’s easy to transfer those knowledge which are unrelated with a firm’s core competences. The reasons that could explain the unwillingness of knowledge senders include the concerns of the possible loss of the ownership of knowledge, the narrowing of the potential difference and the lack of return coming from the receivers.

Impact of the transfer ability of senders: Transfer ability refers to the ability of representing and transferring knowledge properly, or the ability of sending knowledge successfully to the receivers by the knowledge owners. The transfer ability of knowledge senders directly affects the cost and speed of transfer (Li and Zou, 2003). Specifically, the appropriateness of transferring pattern chosen by senders based on different nature and content of knowledge as well as diverse requirements of receivers would influence the cost and efficiency of knowledge transfer. Hence, whether for a single person or an organization, only having the intention to mobilise knowledge is far from enough, the senders should also possess the corresponding ability so that the knowledge could be delivered to receivers in appropriate form and style. As to some technical know-how and core competences embedded in organizational structure, even the owners themselves can not specify the mechanism and evolving processes owning to their limited coding ability and knowledge set. The coding ability, cognitive competence of his/her tacit knowledge, prior transferring experience and the comprehension of feedback information coming from senders will have influence on knowledge transfer together.

IMPACT OF KNOWLEDGE RECEIVERS ON KNOWLEDGE TRANSFER

Impact of the intention of receivers: The inner intention, the reliability of knowledge source and the decoding as well as communication capability are the prerequisites of knowledge transfer. The impact of extrinsic motivation and intention is not significant during the process of knowledge transfer, or less strong than other factors. As Szulanski (1996) said, although motivation does have impact on knowledge transfer, in practice, its function is weaker than that of others. Rather, the receiver’s inner motivation and intention has significant effect (Ko, 2002). The receiver’s intention is an inner driving factor, reflecting the initiative and purposiveness of receivers. Only when the receiver adopt a positive attitude and strong desire can he/she accomplish knowledge transfer well and internalize the knowledge so they become the knowledge of their own. Conversely, if the receivers just receive the new knowledge negatively or passively, they
will find themselves end with anything but really master the essence and application of knowledge, not to mention the effective acquisition of it (Li, 2004). Study demonstrates that difficulties of knowledge transfer would arise if the receivers lack the relevant intention. With strong intention to receive, receivers would like to actively overcome difficulties emerged in the transferring process and exhibit great patience (Cummings and Teng, 2003).

**Impact of the absorbing ability of receivers:** The knowledge absorptive ability consists of a set of abilities, including the ability to identify, assimilate, apply new knowledge and to use it for business. Among them the key is the application ability which depends on the need for knowledge which is mainly affected by its prior knowledge, R&D intensity etc. Generally, firm’s knowledge acquisition ability is closely related to the level of knowledge owned by itself as well as the connotation of knowledge (prior knowledge) and the knowledge acquisition ability is a function of the prior knowledge. Without knowledge stocks, the efficiency of knowledge reception would be discounted. The existing knowledge stock is proportional to the amount of new knowledge that will be obtained and applied later on. Large knowledge stocks signifies high learning and absorptive abilities (Gersick and Hackman, 1990).

Besides, a firm’s absorptive ability has a close relation with its knowledge obtaining ability. A firm’s ability to identify, assimilate and apply the knowledge of other’s is built on social interaction, cooperative process and relationships among partners. Strong absorptive ability means high judgment of knowledge value which is beneficial to a firm in terms of obtaining information and knowledge from outside. More importantly, the absorptive ability is helpful for a firm to nurture cooperative ability with outside organizations, thereby, the effectiveness of inter-organization learning and cooperation along with the quality of knowledge acquisition could be enhanced. Absorptive ability enable a firm to learn, assimilate, transform and apply the advanced technology of other firms or organizations.

**Impact of the learning of receivers:** As an important means of gaining external information, improving cognitive and behavioral competences and ultimately obtaining competitive advantage and capacity for sustainable development, organizational learning has been recognized and highlighted by many scholars. Accordingly, “learning organizations” has become the focus of attention for scholars and entrepreneurs (Wang, 2010). Organizational learning can provide firms with required knowledge from outside and improve knowledge acquiring ability. During knowledge transfer process, the receiver’s intention, ability, culture, attitude and input of learning impact directly on the performance of knowledge transfer.

Learning ability is the competency of the organization featured by the compatibility between the environment and itself, achieved through the imitation, improvement and creation of knowledge, so that the organization can develop and tap its potential. During the learning process, knowledge receivers need to communicate with senders continuously in order to understand and digest knowledge, in other words, communication and decoding are needed to transform the sender’s knowledge into acceptable and understandable one (Hu and Pan, 2006). After the knowledge has been transferred by senders, receivers need to absorb, digest and transform the outside knowledge into their own knowledge. If receivers need to make learning an organizational convention, peculiar contexts should be simulated in firms so that the transferred knowledge could be applied effectively which put a high demand on receiver’s learning ability.

The firm’s learning style also affects knowledge transfer performance. The intrinsic attribute of the diversification of knowledge determines there is no possibility of obtaining and digesting all knowledge with only a single method. Matching styles/methods of learning can ensure the smooth transfer of knowledge. The means of knowledge learning include learning from experience, interactive learning, reflective learning, learning via conflict, unlearning, learning by doing, doing by learning, learning by training, trial and error learning and learning by imitation. The media of learning include written materials, face-to-face interaction and multimedia. The diversification of learning methods increase the contact between firms and knowledge which decrease the difficulties involved in knowledge transfer. Especially during the process of tacit knowledge transfer, the style of learning by doing and doing by learning will facilitate the its diffusion (Han, 2011). As most tacit knowledge are embedded in actions, processes, customs, responsibilities and emotions, informal and unarticulated technical know-how in particular. Their generation and application require particular contexts. Those wholly humanistic, exclusive knowledge can only be perceived and cognified by receivers through learning by doing or doing by learning.

**IMPACT OF TRANSFER PATTERNS ON KNOWLEDGE TRANSFER**

During the process of knowledge transfer, the forms, approaches, methods and tools adopted by the subjects serve as the belt and bridge between both sides. The
choosing of transfer patterns influences the cost, efficiency, ability and the degree of abundance of both parties. Furthermore, it will also play an intermediary role among the attributes, subjects and contexts which will impact the process and performance directly or indirectly (Su, 2008). Hence, the categories of knowledge transferring style, the abundance of transferring media, the matching degree between the style and the knowledge itself, as well as the mediating effects have become the researching focus of scholars in the area of knowledge management.

With the effect of knowledge on a firm’s competitive advantage becoming increasingly apparent, knowledge protection has been given importance by firms. Scholars begin to focus on the intellectual property risks. Senders will be double careful on the choice of transferring style and determine the range and form of knowledge contact according to the needs of both parties (Ding and Huang, 2010). The receivers usually choose the proper transferring style without affecting the costs. When the transferring styles are matched with the types of knowledge, the receiver’s competences such as identifying, obtaining, digesting and using of knowledge would be enhanced. Scholars also obtain a consensus on the matching between transferring style and the attributes of knowledge. The mismatch between the attributes of knowledge and the style of transfer affects not only the performance of knowledge transfer but increase the costs of transfer, lead to knowledge loss (the timely identifying and applying of the value of knowledge, effective overcome of knowledge stickiness) and affect the confidence, intentions and motivations of both parties.

It is generally believed that tacit knowledge are transferred mainly through interpersonal interaction, face-to-face communication, informal sources and internal embeddedness while explicit knowledge are mainly transferred through coding, visual media, training, text data and formal sources. Those knowledge embedded in individuals can be transferred through employee turnover, whereas those knowledge embedded in teams, organizations and networks are transferred through interaction and common work in working places.

CONCLUSION

The “wave-particle dualism” nature of knowledge provide the possibility of its transfer among different parties. While its tacitness, causal ambiguity and embeddedness hinder its transfer among different firms, increase the transferring difficulties and costs, impact the availability of knowledge and transferring performance. A firm should choose matching media and transferring style so as to overcome the impact of inner attributes on transferring performance. As a transferring subject, who has initiative, a firm should enhance its competence of knowledge transfer and assimilation, demonstrate knowledge properly, increase its own coding ability and knowledge level, maximize the transferring efficiency and speed, so that the perceiving ability can be improved, knowledge base be strengthened and at last, boost the knowledge acquiring and assimilation abilities by way of effective organizational learning.

REFERENCES


