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The Impact of Employee Turnover on Knowledge Creation and Firm Performance:

A Possible Extension of the SECI Model in the Chinese Context

(知識創造と企業パフォーマンスに対する離職のインパクト
ー中国における SECI モデルの拡張可能性ー)

by

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Chapter 1

Introduction

1.1 Background

In the competitive environment, all members' knowledge of innovation can lead to organizations' success (Ho, 2009). With this in mind, companies are increasingly focused on how to manage this intangible asset (Ferraresi, Quandt, Santos, & Frega, 2012), and knowledge transfer and knowledge creation are the basis of firms' competitive advantage (Argote & Ingram, 2000). In order to keep a competitive advantage, companies should take external sources (e.g., consumers, competitors, and suppliers) into account (Song, Almeida, & Wu, 2003). Individuals acquire the knowledge through education, training, and experience (Bogdanowicz & Bailey, 2002), and they are the ones who will come up with new ideas (Dong, Bartol, Zhang, & Li, 2016). Generally, knowledge can be transferred by moving members from one unit to another within a company (Argote & Ingram, 2000; Lindblom & Tikkanen, 2010) so that their unique, hard to imitate tacit knowledge can also be spread among various units and departments (Droege & Hoobler, 2003). In short, interfirm employee mobility is a potential channel for knowledge transfer (Parrotta & Pozzoli, 2012).

Effective knowledge transfer is influenced by many factors, including language and culture differences (Liu, Gao, Lu, & Wei, 2015), absorptive capacity (Rusly, Corner, & Sun, 2012), trust (Sankowska, 2013), the motivation of senders and receivers (Alwis & Hartmann, 2008), organizational structures (Goh, 2002), networks (Inkpen & Tsang, 2005), leadership (von Krogh,

Nonaka, & Rechsteiner, 2012), and transfer ability (Minbaeva & Michailova, 2004). Previous studies in this area have focused on a variety of different types of knowledge transfer, such as international knowledge transfer, cross-project knowledge transfer and the transfer of knowledge between or among units. For example, in China, returnee entrepreneurs with special human capital and social capital facilitate not only knowledge transfer but also serve as a bridge between other countries and their home country, thus stimulating innovation (Filatotchev, Liu, Lu, & Wright, 2011). There is evidence that, when a subsidiary possesses the capability to absorb new knowledge, the knowledge received from expatriates leads to good performance (Chang, Gong, & Peng, 2012). These studies highlight that knowledge transfer conveys benefits to the company within which it takes place. Consequently, this study focuses on knowledge transfer caused by employee turnover and discusses how these transferences of knowledge affect them.

The employee turnover process represents a change both for the leaver and the newcomer in the dynamic state that transfers knowledge between companies (WeiBo, Kaur, & Zhi, 2010). Thus, when employees leave an organization they take with them the tacit knowledge they accumulated there, such as subject-related expertise, and knowledge about work practices (Daghfous, Belkhodja, & Angell, 2013). Subsequently, as newcomers to another organization, this knowledge accumulates in a new setting (Droege & Hoobler, 2003), and the prior, related knowledge helps these newcomers to absorb new organizational knowledge (Kang & Sauk Hau, 2014). In the scope of the knowledge creation process, new knowledge always begins at the individual level (Nonaka, 1991). Then, knowledge is created and shared through human

interactions (Song, Yoon, & Yoon, 2011). When more individuals are involved in the knowledge creation process, organizations will gain more fresh ideas (Bell DeTienne, Dyer, Hoopes, & Harris, 2004). Therefore, by hiring new talent, a company can acquire their embedded knowledge (Nonaka, von Krogh, & Voelpel, 2006). It is not only tacit knowledge, but also explicit knowledge, that is transferred when employees move to a new organization (Argote & Ingram, 2000). Their experiences and individual abilities have an effect on their current job (Taylor & Greve, 2006; Yang, 2007), and the organization will expand its knowledge base (Bogdanowicz & Bailey, 2002). Therefore, one worthwhile goal for any organization is to preserve as much knowledge as possible during its employees' tenure (Droege & Hoobler, 2003). During the problem-solving process, individuals with different career experiences can help teams to use multiple strands of knowledge (Taylor & Greve, 2006). The implication is that employee turnover entails an individual leaving his or her job, engaging in finding a new jobs, and then adapting to new circumstances (Holtom, Mitchell, Lee, & Eberly, 2008). When a new employee enters a new organization, the organization helps him or her to connect to the right expertise accurately and in a timely manner (Borgatti & Cross, 2003; Kang & Kim, 2013). Further, as a means of emphasizing teamwork and cohesion, new employees are expected to learn new and the relevant skills quickly to help the organization to be successful (Mohr, Young, & Burgess Jr, 2012). Thus, these new employees contribute to the knowledge diffusion that results in enhancing productivity (Parrotta & Pozzoli, 2012) and extending knowledge (Song et al., 2003). In this way, the organization can reduce the distance between people and provide opportunities for their employees to learn from others (Argote,

Mcevily, & Reagans, 2003). Likewise, training new employees and sharing knowledge helps a company to remain competitive in unpredictable environments (Allal-Chérif & Makhoulf, 2016). Capturing the knowledge of new employees and disseminating their experience to others should be an important focus; in light of these phenomena, it is possible to infer that new employees are typically the ones who transfer knowledge and are therefore a key element in promoting companies' performance.

1.2 Aim and Significance of the Study

Within companies, employees create, transfer, and use knowledge (DeTienne et al., 2004) and this is the core role for successful knowledge management. This study aims to explore whether new employees can benefit a company through such knowledge transfers. Specifically, the study focuses on new employees having experience applicable to a new company, and investigates how new employees facilitate the knowledge creation process to improve their new company's performance. The present study mainly focuses on organizations with high employee turnover rates in order to consider the role of the movement of such human capital among organizations.

This study adopts Nonaka's (1995) contention that an organization cannot create knowledge by itself. Instead, individuals' tacit knowledge is the basis of organizational knowledge creation. As a consequence, for innovative, knowledge-creating companies, making personal knowledge available to others is a central activity (Alwis & Hartmann, 2008). When a skilled knowledge worker begins to work for another organization, knowledge is transferred during the

process. Nonaka's (1995) knowledge creation theory sheds light on knowledge conversion and focuses on the individual's tacit knowledge transformation into organizational knowledge. When firms use the knowledge creation effectively, they tend to achieve positive performance outcomes (Tsai & Li, 2007). Through the knowledge creation process, individuals share both tacit and explicit knowledge with others, thus, enhancing the knowledge capacity to solve problems (Nonaka et al., 2006).

Many studies focus upon the ways in which employee turnover is deleterious for companies (Desouza & Awazu, 2006; Huffman, Casper, & Payne, 2014; Mohr et al., 2012; Park & Shaw, 2013; Watrous, Huffman, & Pritchard, 2006) and offer suggestions for how to prevent knowledge transfer to competitors (Argote & Ingram, 2000; Vanhaverbeke, Gilsing, & Duysters, 2012). The issue of knowledge transfer from the perspective of new employees represents a gap in the literature, since few studies to date focused on the concept as it relates to them. Therefore, this study provides a new understanding of what drives innovation and knowledge creation in the Chinese business environment. More specifically, the study endeavors to propose a model for identifying the relationships between employee turnover and knowledge creation and firm performance. In this way, from a managerial perspective, the study demonstrates how employee turnover can benefit a company.

1.3 Overview of the Study

This dissertation includes six chapters, as showed in Figure 1. Based on the above introduction and the significance of the study, Chapter 2 mainly focuses on the previous studies related to this field, as well as knowledge creation theory, employee turnover, firm performance, and knowledge sharing. Chapter 2 also outlines knowledge creation and employee turnover in the Chinese context.

In order to test the relationship between knowledge creation, employee turnover, firm performance and knowledge sharing, the current study has two stages. First, interviews were conducted. Chapter 3 introduces the interview procedure and participants, and uses content analysis to analyze the interviews.

Chapter 4 presents the proposed theoretical model, including hypotheses about the mediating role of knowledge creation and the moderating role of knowledge sharing. The chapter also introduces the data collection process, measures used, and the demographic characteristics of the sample. The theoretical model is tested using Structural Equation Modelling (SEM).

Chapter 5 presents a summary that combines and discusses the results of the qualitative interviews and the SEM model.

Chapter 6 discusses the contribution and implications of the study. It presents the theoretical implications of the effects of employee turnover on the knowledge creation process and discusses the practical implications in the Chinese context. Limitations and possible future research avenues are also discussed in the chapter.

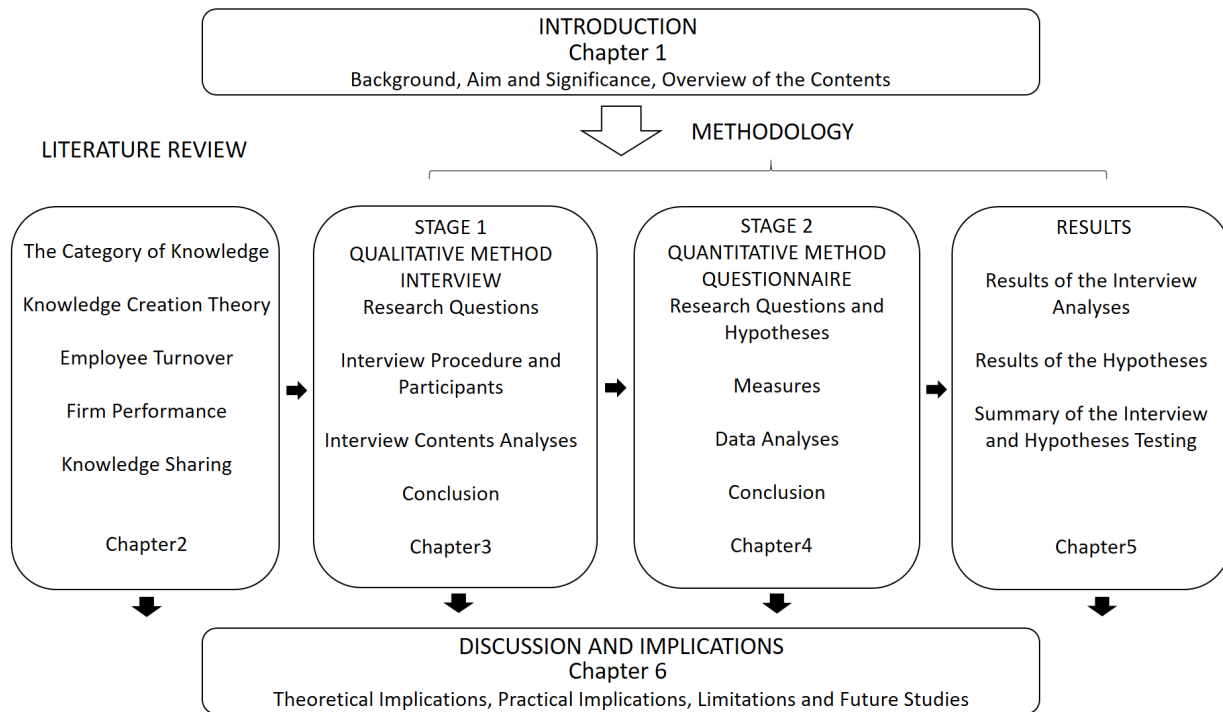


Figure 1. Dissertation structure

Chapter 2

Literature Review

2.1 The Categories of Knowledge

Organizational knowledge is the key resource for innovations that distinguishes the one organization from another (Del Giudice & Maggioni, 2014; Liyanage, Elhag, Ballal, & Li, 2009; Yang, Fang, & Lin, 2010); it is also the asset in building both individuals' and firms' capabilities (Rasmussen & Nielsen, 2011). Knowledge has several unique characteristics: the dynamic, context-specific, humanistic, and relational (Nonaka, Toyama, & Konno, 2000), all of which guarantee a firm's knowledge creation (Merat & Bo, 2013), and help it to realize and maintain improvements (Nair, Ramalingam, & Ravi, 2015).

One common dimension that distinguishes knowledge is whether is it individual or collective (Zander & Kogut, 1995). Knowledge can also be described as explicit or tacit (Nonaka & Takeuchi, 1995). According to Matusik and Hill (1998), knowledge categories can be divided into the following four dimensions: private - public, component - architectural, individual - collective, and tacit - explicit (Figure 2). Private and public knowledge are the two main categories of organizational knowledge. Both component and architectural knowledge comprise private knowledge, and public knowledge includes only component knowledge. Organizations' abilities to learn from each other depend on the relationships between these kinds of knowledge (James, Guile, & Unwin, 2013).

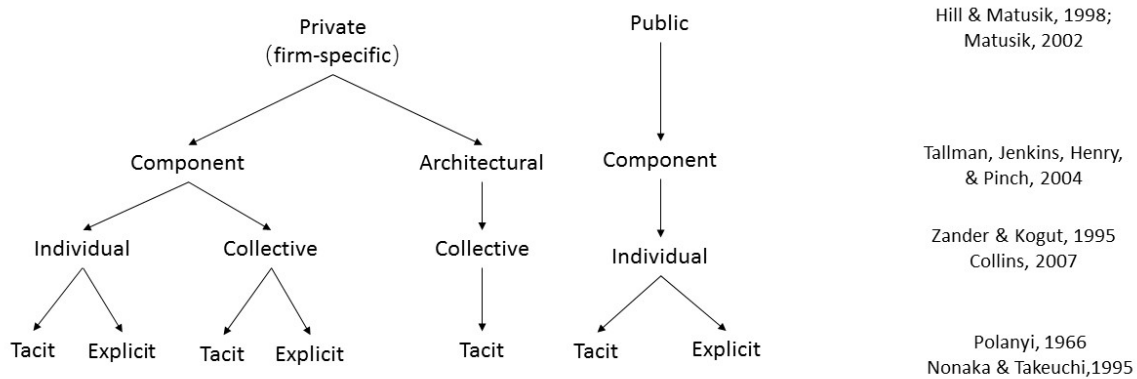


Figure 2. The categories of knowledge (adapted from Hill & Matusik, 1998, p. 684)

Private knowledge and public knowledge

Private knowledge is specific and distinct to an organization and helps it to gain a competitive advantage. On the contrary, public knowledge exists in the external environment and belongs in the public domain (Hill & Matusik, 1998; Loebbecke, van Fenema, & Powell, 2016). In the context of product development effectiveness, both private and public knowledge are significant and positive (Matusik, 2002).

The concept of private knowledge defines it as rare, inimitable, and valuable (Yang et al., 2010). Such knowledge consists of, for example, trade secrets, the firm's routines, processes, or documentation (Hill & Matusik, 1998; Matusik, 2002); and copyrights or "secret" procedures (Bogdanowicz & Bailey, 2002).

Public knowledge refers to the knowledge that is not unique to an organization, but is instead readily available (Hill & Matusik, 1998), property-based, and discrete (Loebbecke, Fenema, & Powell, 2016). Public knowledge is a kind of public property (Yang et al., 2010) and is nonexclusive (Jiang, Li, Gao, Bao, & Jiang, 2013); it can be acquired through networks, locational proximity, and alliances (Matusik, 2002).

Yang and colleagues (2010) developed the organizational knowledge creation strategies model for use at the organization level. It is based on the conversion between private knowledge and public knowledge and it consists of exploration, institutional entrepreneurship, combination, and exploitation.

Component knowledge and architectural knowledge

Component knowledge refers to specific knowledge and parts of an organizational system, such as skills or technologies (Pinch, Henry, Jenkins, & Tallman, 2003). These can be simple or complex, explicit or tacit, and they can help the organization to generate a competitive advantage (James et al., 2013). Component knowledge can be held by one person or a subgroup of the organization and may contain both private and public elements. Private component knowledge can benefit an organization as basis for a competitive advantage (Matusik & Hill, 1998).

Different from component knowledge, architectural knowledge is held by an entire organization. It is tacit, difficult to transfer between organizations, and private to the organization (Matusik & Hill, 1998). In a supply chain, architectural knowledge helps employees to understand

how different part of knowledge can be combined (Daghfous et al., 2013). Some descriptions of component knowledge and architectural knowledge are shown in Table 1.

Table 1

Component and Architectural Knowledge

Component knowledge (Stocks and flows of knowledge)	Architectural knowledge (Primarily stocks of knowledge)
Describes an identifiable element of a body of knowledge	Relates to an understanding of a system of knowledge or organization
Relates to exogenous conditions or laws	Path dependent and endogenous to the system in which it is embedded
Relatively transparent	Nontransparent and causally ambiguous
Runs from highly technical to highly systemic	Tacit, systemic, and embedded in the organization
Relatively mobile among organizations with similar stocks of knowledge	Relatively immobile between organizations at the level of knowledge
(Tallman, Jenkins, Henry, & Pinch, 2004. p.263)	

Individual knowledge and collective knowledge

Zander and Kogut (1995) developed another dimension of the categories of knowledge: individual and collective knowledge. Individual knowledge can be manifested in individual skills, whereas there are three types of collective knowledge: shared knowledge, complementary knowledge, and artifact-embedded knowledge (Hecker, 2012). For instance, the knowledge of how to ride a bicycle only relates to individual knowledge, but negotiating traffic, which requires information on social rules and conventions, relates to collective knowledge (Collins, 2007). For knowledge transfer, the individual factor refers to the willingness to share knowledge, while the

collective factor encompasses broad individual knowledge within a firm (Alwis & Hartmann, 2008).

Tacit knowledge and explicit knowledge

Knowledge can be explicit or tacit (Polanyi, 1966). Explicit knowledge is codified, easy to transfer, and easy to share with others. Both formal and systematic language can be expressed explicitly. Explicit knowledge is transmitted to the group members without anyone to articulate it (Argote & Ingram, 2000), and is documented with certain types (Droege & Hoobler, 2003). These types include manuals, specifications, or a computer programs (Nonaka, 1991; Nonaka & Takeuchi, 1995; Nonaka, Toyama, & Nagata, 2000) scientific formulae (Alwis & Hartmann, 2008); facts, figures, and instructions (Mahr & Lievens, 2012); and detailed engineering specifications for product manufacturing (Loebbecke et al., 2016).

Compared with explicit knowledge, tacit knowledge is harder to describe and communicate (Nonaka & Konno, 1998; Peet, 2012; Yang, 2007) or readily acknowledge (Bogdanowicz & Bailey, 2002), since it is embedded in individuals (Argote & Ingram, 2000) and associated with experience (Loebbecke et al., 2016; Martins & Meyer, 2012), competitive advantage (Wipawayangkool & Teng, 2014), and feeling and thinking in a specific context (Popadiuk & Choo, 2006). It consists of beliefs, ideas, subjective insights, and values (Nonaka, 1991; Nonaka & Takeuchi, 1995; Nonaka et al., 2000). Tacit knowledge can not only be held by individuals, but also by collectives (Matusik & Hill, 1998). It is knowledge that includes intangible resources

beyond the knowledge an organization has documented (Droege & Hoobler, 2003). Examples of tacit knowledge are companies' politics, cultures, and norms (Joe, Yoong, & Patel, 2013), and skills and know-how (Blumenberg, Wagner, & Beimborn, 2009). Tacit knowledge is action-oriented (Crane & Bontis, 2014). It is also difficult to learn, but can often be learned through observation (Blumenberg et al., 2009). Therefore, compared to explicit knowledge, tacit knowledge is much more valuable. Organizations should focus on the transfer and use of tacit knowledge (Venkitachalam & Busch, 2012). Moreover, tacit knowledge is related to better perceptions and intuition-driven judgments, so it typically will save firms both time and money and improve their decision-making abilities (Kumar & Chakrabarti, 2012).

A vast number of studies have been conducted on tacit knowledge, for example, Martins and Meyer (2012) explored the factors that influence tacit knowledge retention. Crane and Bontis (2014) focus on three different dimensions of research on tacit knowledge: 1) *knowledge management* which regards tacit knowledge as vital to an organization's competitive advantage; 2) *cognitive psychology*, which see tacit knowledge as an influencing action through implicit learning, and 3) *discursive psychology* which focuses on the theory and methodology of studying discourse. Wang and Wang (2012) found that tacit knowledge sharing has a significant influence innovation quality and operational performance.

Table 2

Examples of Tacit Knowledge and Explicit Knowledge

Tacit Knowledge	Explicit Knowledge
Beliefs, ideas, subjective insights, perspective, values, attitude (Nonaka, 1991; Nonaka & Takeuchi, 1995; Nonaka et al., 2000) Company politics, culture, and norms (Joe, Yoong, & Patel, 2013) Skills and know-how (Blumenberg, Wagner, & Beimborn, 2009) Experience (Loebbecke et al., 2016; Martins & Meyer, 2012) Feeling, thinking in a specific context (Popadiuk & Choo, 2006)	Manuals, specifications, or a computer program (Nonaka, 1991; Nonaka & Takeuchi, 1995; Nonaka et al., 2000) Scientific formulae (Seidler-de Alwis & Hartmann, 2008) Facts, figures, and instructions (Mahr & Lievens, 2012), Detailed engineering specifications for product manufacturing (Loebbecke et al., 2016).

It is important to keep in mind that tacit knowledge and explicit knowledge are not totally different: tacit knowledge is the basis of all knowledge, and most explicit knowledge has some tacit aspects (Ikujiro Nonaka, Kodama, Hirose, & Kohlbacher, 2014). The present study follows dimensions of the tacit and explicit knowledge to talk about knowledge transfer.

2.2 The Knowledge Creation Theory

Many scholars have discussed knowledge creation from the epistemological perspective based on different types of knowledge: objective and intuitive (Chandrasekaran & Linderman, 2015), know-how and know-why (Ferdows, 2006), tacit and explicit (Nonaka & Takeuchi, 1995), knowledge and knowing (Cook & Brown, 1999), and private and public (Yang, Fang, & Lin, 2010). Moreover, the individual-based model of knowledge creation has emerged on the basis of trust,

authority, and hierarchy (Nonaka & Takeuchi, 1995). Likewise, the community-based model of knowledge creation shows us that the groups can create knowledge in a virtual environments (Lee & Cole, 2003). At the individual level knowledge is created through the conversion between tacit knowledge and explicit knowledge (Nonaka & Takeuchi, 1995); at the organizational level, an organization's knowledge is created in light of private and public knowledge (Yang et al., 2010).

2.2.1 Introduction of Knowledge Creation Theory

Knowledge creation theory, an idea that Nonaka and Takeuchi (1995) have promoted, is based on Japanese companies and has been widely accepted in the knowledge management field (Nonaka et al., 2000; Choi & Lee, 2002; Li et al., 2009). Further, the theory has become one of the most important issues in business (Kao, Wu, & Su, 2011). The long-term employment of this approach in Japanese companies promotes shared experience and values (Lee & Cole, 2003). As the most complete and integrative proposal (Begoña Lloria & Peris-Ortiz, 2014) in this field, knowledge creation theory has been used in many context, such as developing knowledge management strategies (Choi & Lee, 2002; Shahzad, Bajwa, Siddiqi, Ahmed, & Sultani, 2016), human resources and leadership (DeTienne et al., 2004; Yang, 2007), new product development and innovation (Richtnér, Åhlström, & Goffin, 2014; Schulze & Hoegl, 2008), and social networks (Janhonen & Johanson, 2011).

Prior empirical studies of the knowledge creation theory have been conducted in different context. In the context of Taiwan, Kao and Wu (2016) found that, in the manufacturing and service

industries, the goal-free mode positively related to knowledge creation. Also in Taiwanese context, Tsai and Li (2007) found that knowledge creation mediates the relationship between a firm's performance and its new venture strategy. Based on a comparison of differences and similarities in Japanese and Russian cultural contexts, Andreeva and Ikhilchik (2011) argued that in order to apply knowledge creation theory, the Russian managers should facilitate similar conditions and tools as those found in Japan.

The two fundamental elements of the knowledge creation theory are the categories of knowledge and knowledge conversion (see Figure 3).

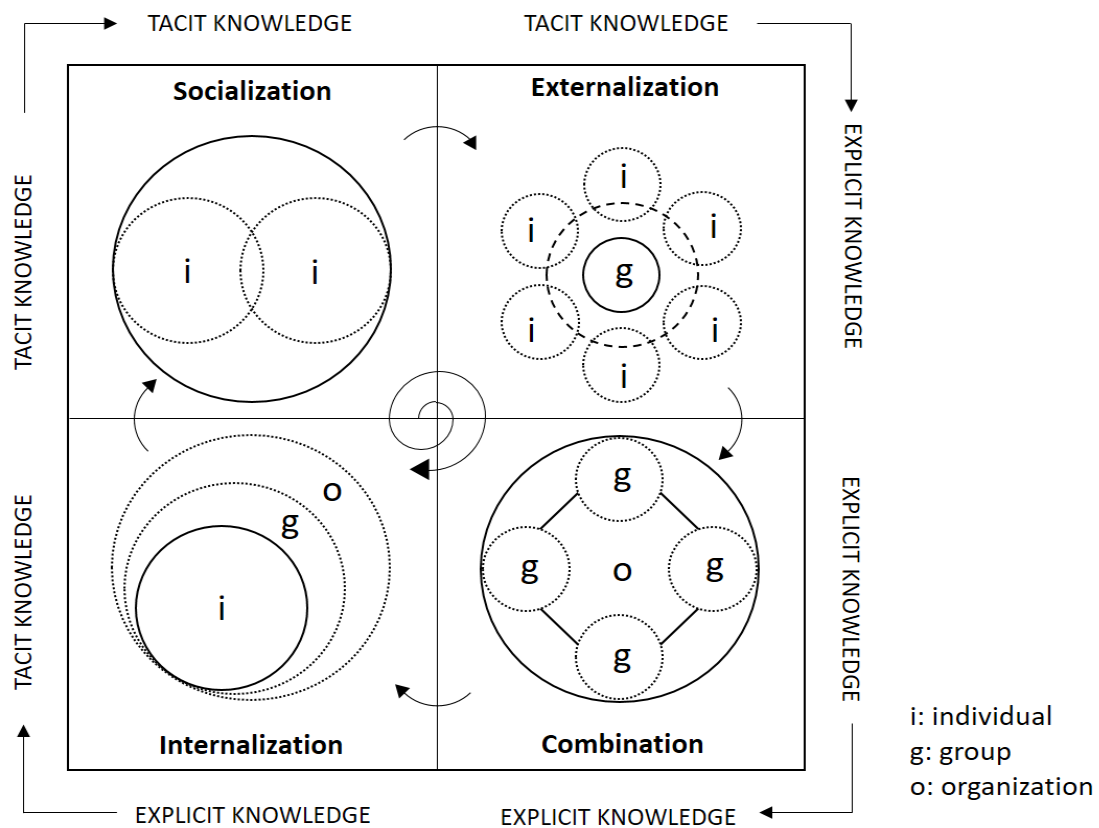


Figure 3. Spiral evolution of knowledge conversion and self-transcending process (Nonaka & Konno, 1998. p. 43)

The interaction between tacit and explicit knowledge is comprised of a four-stage knowledge conversion process. Figure 3 shows the four steps of the knowledge creation process: socialization, externalization, combination, and internalization (SECI). When experiences associated with these four stages (a series of self-transcendental processes) are internalized into individuals' tacit knowledge bases in the form of shared mental models or technical know-how, they then become valuable assets (Nonaka & Takeuchi, 1995; Nonaka et al., 2000).

Socialization refers to a process through which individuals share experiences and then create tacit knowledge (Nonaka & Takeuchi, 1995). Experience and interpersonal interaction are the key points for acquiring tacit knowledge (Arling & Chun, 2011) and it is challenging to transfer tacit knowledge without such shared experiences (Nonaka & Takeuchi, 1995; Nonaka et al., 2000). Through imitation, observation, practice (Nonaka, 1991), and hands-on experience (Nonaka et al., 2000) the tacit knowledge can be transferred. Further, Akhavan and colleagues (2014) found that socialization based on social relationships and interactions among people are strongly affected by ethics.

Externalization focuses on the conversion from tacit knowledge to explicit knowledge by following an organization's vision, using metaphors, analogies, concepts, hypotheses, or models to create new knowledge (Nonaka & Takeuchi, 1995; Nonaka et al., 2000). In the successful business context, franchising the conversion of franchisees' tacit knowledge into explicit knowledge and making it available to others is very important for knowledge management practices (Lindblom & Tikkanen, 2010). Lee and Kelkar (2013) found that the information and

communication technologies are useful for facilitating externalization. Researchers have also determined that externalization is an effective way to prevent knowledge loss when employees leave an organization (Droege & Hoobler, 2003).

Combination is a process whereby a firm's explicit knowledge is transformed into explicit knowledge, systemizing concepts into a knowledge system, and rearranging the explicit knowledge from a holistic, organizational perspective (Song et al., 2011); for instance, this approach may be used to create a performance report or organize knowledge into a database. Combining this with the social network theory, the external knowledge provided by the networks can then be mediated by knowledge combination and result in enhanced knowledge creation and the promotion of product innovation (Shu & Xu, 2012). With the rapid change of the world's technologies, people's lifestyles and work habits are changing (Akhavan, Ramezan, Moghaddam, & Mehralian, 2014). These technologies not only help when editing explicit knowledge but also help in disseminating it.

Internalization is a process of embodying explicit knowledge into tacit knowledge. This is an individual process (Kimmerle, Cress, & Held, 2010). By reading sources of explicit knowledge, such as manuals, employees internalize data into new tacit knowledge (Nonaka & Takeuchi, 1995; Nonaka et al., 2000). Therefore, internalization is a learning process and very critical to the entire knowledge creation process (Wipawayangkool & Teng, 2014). During this process, the leaders' provisions for cross-collection and requisite redundancy are very important (Song et al., 2011).

In prior empirical studies of the knowledge creation process, the researchers have found when an organization focuses on different factors, different knowledge creation process should be emphasized. Lin, Huang, and Sheng (2014) argue that in various industries, externalization and combination dedicated to helping organizations reach innovation, internalization for improving the customer satisfaction. Based on a study among manufacturing organizations Lawson and colleagues (2009) showed that socialization plays an important role during the product development process. The perceived effectiveness of individual-level knowledge management is influenced by internalization and externalization, and by the perceived effectiveness of the group and organizational levels are impacted by socialization and combination (Sabherwal & Becerra-Fernandez, 2003).

2.2.2 Conditions and “Ba” for Knowledge Creation

“*Ba*” as a shared context for interaction, enables conditions for knowledge creation. Knowledge conversion is accompanied by specific ba, including physical circumstances (e.g., office), virtual circumstances (e.g., social media, e-mail), and spiritual circumstance (e.g., shared experiences). Without specific ba, the knowledge turns itself into information (Nonaka & Konno, 1998).

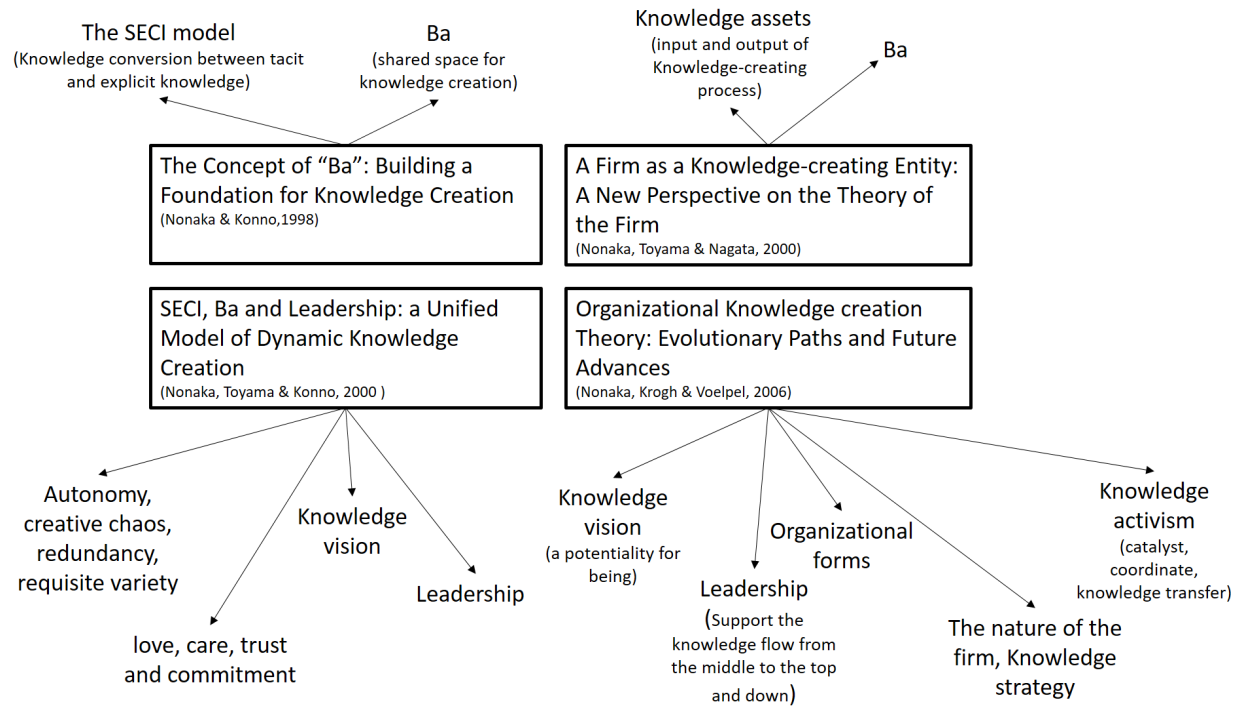


Figure 4. Elements of knowledge creation. (Nonaka et al., 2006; Nonaka & Konno, 1998; Nonaka, Toyama, & Konno, 2000; Nonaka, Toyama, & Nagata, 2000)

The originating ba is the basis for socialization, individual's shared experiences, emotions, and ideas that are shared face to face. Externalization is supported by interacting with ba. Through dialogue and conversation, skills and experiences are converted into concepts. Cyber ba facilitates combinations that happen not only in physical places, but also in virtual contexts. Individuals' internalization is realized by exercising ba. Through training, individuals internalize their explicit knowledge into tacit knowledge (Nonaka et al., 2006; Nonaka, Toyama, & Konno, 2000; Nonaka, Toyama, & Nagata, 2000). Knowledge assets are the basis of all knowledge-creating process. Firm-specific assets are the outputs, inputs and moderating factors of

this process (Nonaka, Toyama, & Konno, 2000). As shown in Figure 4, the key elements of knowledge creation theory are SECI, ba, knowledge assets, and leadership. Furthermore, knowledge activism, knowledge vision, knowledge strategy, love, care and other similar concepts also have an influence on knowledge.

Many studies have discussed other factors that enable knowledge creation. Chou and Wang (2003) pointed out that the composite effect of organizational learning mechanisms, distributed data application and organizational information mechanism are positively related to knowledge creation. By reviewing the literature, we can see that Choo and Alvarenga Neto (2010) discussed the conditions for knowledge creation: social relationships and interactions, epistemic diversity and common knowledge, information systems and information management, business vision and managerial support. Stenmark (2003) outlined seven enabling conditions in the web-based context: the no-preconceptions principle, autonomy, serendipity, diverse stimuli, rich information provision, internal communication, and motivation. In addition, the intention to be involved in the knowledge-creation process renders an individual likely to perform actual activities (Karim, Razi, & Mohamed, 2012).

2.3 Knowledge Creation Theory in China

The SECI theory advocated by Nonaka and colleagues (1995; 1998; 2000) is considered the most influential approach in the knowledge management field. Since its initial application in China in 1990s, searches, and citations of the SECI theory in the China National Knowledge

Infrastructure database have risen annually. Research by Chinese scholars on the SECI theory can be summarized in terms of the following two aspects: the introduction, perfection, and extension of the SECI model in light of its flaws, and empirical studies and the application of the SECI model to the management structure of enterprises (Chen & Liang, 2014).

2.3.1 Introduction, Perfection, and the Extension of the SECI Model

It is necessary to analyze the internal knowledge flows of a company to learn how it maintains its competitive edge (Wang & Xuan, 2001; Zhang, 2007). Not only is the process of knowledge creation introduced as a result, but analyses of specific suggestions and measures for promoting knowledge conversion can also be conducted.

Scholars have aimed at perfecting and revamping the SECI from different perspectives. It is a widely accepted belief that the SECI model is not very capable of explaining the process of knowledge creation. The absence of considerations of external circumstances is one case in point and the spiral process of the four phases for knowledge creation is another. As such, some scholars have attempted to integrate the SECI model with other theories. For instance, Fan and Guo (2008) argue that there are two flaws in the SECI model. First, tacit knowledge and explicit knowledge are inappropriately defined. Second, “knowledge creation” does not necessarily fall into four phases in a spiral manner. Thus, tacit and explicit knowledge are defined separately with classifications; meanwhile, financing innovation ba and sharing transference ba are presented to realize the innovation and transformation of knowledge.

The idea behind the IDE-SECI model is that the SECI model is incompatible with reality due to its exclusion of enterprise's external knowledge of enterprises on the one hand and the unidirectional process that begins with socialization and ends with internalization on the other (Geng, 2003). External knowledge should be categorized into explicit external knowledge of the organization and individual and tacit external knowledge of the organization and its component individuals. The SE-IE-CI model illustrates the innovation process and the principles used by of Japanese enterprises of nearly 20 years ago (Yuan & Peter, 2013). In the circumstances of Web 2.0, social networks and collective wisdom theory are combined with an organization 's internal and external circumstances to complete a contrastive analysis of SECI from the three perspectives of the knowledge conversion process, knowledge capital and knowledge transference. In this way, the SECI model suffices to map out how organizations boost their competitive edge via knowledge management and place adequate emphasis on the external organizational information and network technology.

Based on bionics, Xiong and He (2004) developed a knowledge fermentation model that is analogous to the components involved in biological fermentation. Similarly, components in knowledge accumulation include a knowledge gene, knowledge origin, knowledge enzyme, knowledge accumulation circumstance, and knowledge renewal. The four kinds of fermentation ba are derived from the four phases in the SECI model and analyses of influencing factors for each of the ba models are made accordingly, thus improving the operability of the SECI model in real-world circumstances.

Chu and Tang (2006) maintain the psychological traits of personal insight about the profound change of tacit knowledge in the SECI model are neglected in the process of organizational learning. Therefore, the new model incorporates the concept of quantum theory as a metaphor for vividly depicting the internal learning mechanisms of organizational learning. Establishing a model from the perspective of cognitive psychology is a breakthrough in management endeavors.

2.3.2 Empirical Studies and the Applications of Knowledge Creation Theory

Zhang (2012) proposes three new angles, knowledge management, organizational circumstance, and organization innovation, and elucidates the interrelations among them after an analysis of the SECI model. Through an empirical analysis based on the interactive mechanism of tacit knowledge and explicit knowledge, Yu (2011) suggests that the SECI model can serve as the driving force for upgrading the competitiveness of the Chinese manufacturing industry. Han and Ji (2006) analyze the relationship among the four angles of knowledge creation and the effects of individual/collective knowledge creation, formulating a relationship model for them and the effects of knowledge creation in the SECI model.

In recent years, some scholars have shifted their attention to the application of the knowledge creation to organizational innovation (Chen, Pan, & Wu, 2009; Xu, 2011). After analyzing the current situation of an enterprise, they applied SECI theory to management

transformation, discussed the relationship between organizational innovation, and organizational performance, and explored the effects of knowledge creation for the performance.

2.4 Employee Turnover

Employee turnover is an important issue for any organization. In order to avoid the negative effects of employee turnover, some scholars have studied the factors related to turnover intention, such as job satisfaction (Huffman et al., 2014; Jordan & Troth, 2011), job engagement (Arokiasamy, 2013), organizational commitment (Wen, Wisessuwan, & Authayarat, 2014), and internal social support (Yao & Cui, 2010). From the organizational and institutional perspective, more training leads to a high level of employee turnover (Zheng & Lamond, 2010). Among environmental, enterprise, and individual factors, individual factors have been shown to affect the highest mean of intention to leave; these include salary, benefits and potential career growth (Yang, Tubsree, & Sakulkoo, 2012). Further, in order to retain firms' critical skills, capabilities, experience, and knowledge, it is crucial that we investigate how they can retain and avoid critical knowledge losses during the employee downsizing processes (Schmitt, Borzillo, & Probst, 2012). Each of the studies mentioned here have focused on how to reduce knowledge losses because of employee turnover. However, the present study also considers the utilization of knowledge brought in by new employees as a part of the employee turnover process.

2.4.1 Concepts and Effects of Employee Turnover

Employee turnover can be divided into voluntary turnover and involuntary turnover. It can also be discerned as avoidable and unavoidable turnover (Arokiasamy, 2013). Based on the real situation of the companies in China, He and colleagues (2006) focused on individual turnover and group turnover to discuss the motivation behind employee turnover. Frequently, managers refer to “turnover” as the entire process associated with filling a vacancy: each time a position is vacated, either voluntarily or involuntarily, a new employee must be hired and trained (WeiBo et al., 2010). Consequently, employee turnover is not only related to those employees who leave a company, it is also related to the new employee who joins the company.

The effects of employee turnover have been a significant concern in many different respects. Employee turnover can have many negative consequences, for example, knowledge loss (Daghfous et al., 2013; Desouza & Awazu, 2006; Huffman et al., 2014), damages to the performance (Park & Shaw, 2013; Watrous et al., 2006), or a lowering of productivity and poor quality (B. Jiang, Baker, & Frazier, 2009). However, there also some positive effects related to employee turnover, such as like organizational changes (Jain & Jeppe Jeppesen, 2013; Song et al., 2003), benefit collaboration (Ransbotham & Kane, 2011), and a faster diffusing of knowledge across a companies (Dalton & Todor, 1979). With this in mind, the present study followed the positive view and searched for the effects of knowledge transfer during the employee turnover process.

2.4.2 Employee Turnover in China

According to the survey published by the HR research center (2012, 2013, 2014, 2015), in recent years the employee turnover rates in China have been 16.7% (2012), 16.3% (2013), 17.4% (2014), and 17.7% (2015). Individual turnover and group turnover are commonplace in China. Employees' intentions to leave not only bring tangible and intangible benefit losses, but also benefit more powerful competitors (Yang et al., 2014). Based on an analysis of 91 cases of group turnover in China, it is clear that, after an employee leaves a company, 87.9% of the group turnover employees will come work for the same company at the same time, or one after another; 79.1% of the sampled the employees moved on to the same business. Of these 91 cases, 78% were concentrated in the developed areas of China, so higher group turnover is correlated with higher development levels (He et al., 2006).

Taking this phenomenon into account, the knowledge creation process falls under the influence of employee turnover. When a company suffers an employee turnover, the employee leaves and a new employee replaces him or her. Especially if the new employee has worked in the same business before, the new employee can bring more useful knowledge to the company. The present study concludes that, during the communication process, new employees share their knowledge, which can benefit the knowledge creation process. A company with a high turnover rate will need to must meet two requirements: first, it must determine how to retain knowledge before an employee turnover occurs; second, it must learn how to encourage a new employee to share his or her knowledge.

2.5 Firm Performance

Firm performance is a key element of survival (Singh, Darwish, & Potočník, 2016). Previous studies have stressed the importance of firm performance and explored its relationship with other factors. Firm performance depends on pre-existing organizational agility (Cegarra-Navarro, Soto-Acosta, & Wensley, 2015), and different leadership paradigms result in different firm performances (Jing & Avery, 2016). Moreover, it has been shown that firm performance has a strong and positive correlation with ethics (Akhavan et al., 2014).

Because of the complexity of performance evaluation (Kao & Wu, 2016b), the literature on measuring firm's performance suggests different dimensions, such as, subjective and objective, or finance and non-finance. The measurements used for objective and finance dimensions are return on assets (ROA), and return on equity (ROE) (Martín-Rojas, García-Morales, & Mihi-Ramírez, 2011; Ramírez, Morales, & Aranda, 2012; Villasalero, 2013; Zack, McKaen, & Singh, 2009), and return on investment (ROI) (Chang et al., 2012), growth (Chen, 2012; Judge & Douglas, 1998). Zack and colleagues (2009) measured financial performance in terms of profitability and ROE, and found that product leadership, customer intimacy, and operational excellence are positively and significantly related to financial performance.

However, for some companies, the objective measurement of performance is really difficult to obtain (Bradley, McMullen, Artz, & Simiyu, 2012; Kunze, Boehm, & Bruch, 2013; Kyrgidou & Spyropoulou, 2013). Therefore, to rate a firm performance, considerations such as market share, sales revenue, innovation, and profitability are used (Singh et al., 2016). Some

researchers use both subjective and objective measurements in their studies to measure firm's performance (Cegarra-Navarro et al., 2015; Hult et al., 2008; Judge & Douglas, 1998; Quinn & Rohrbaugh, 1983). Nair and colleagues (2015) argued that, in the automobile industry, knowledge creation significantly affects both financial and non-financial performance. Accordingly, the subject measurements are used in this study to examine the interactions among knowledge creation, employee turnover, and firm performance.

2.6 Knowledge Sharing

Knowledge-intensive firms regard knowledge as their most important asset (Geiger & Schreyögg, 2012). Sharing knowledge can help enhance innovation capability (Sáenz, Aramburu, & Blanco, 2011), and affect the perceived intrinsic knowledge quality (Yoo, 2014). In the context of collaborative product development the successful knowledge sharing requires such things as a high level of trust (Bstieler, 2006) and mutual respect (Wee & Chua, 2013). Moreover, it has been shown that empowering leadership is positively related to knowledge sharing (Srivastava, Bartol, & Locke, 2006), and employees' willingness (Atapattu & Jayakody, 2014), emotions such as pride and empathy (Hooff, Schouten, & Simonovski, 2012), and organizational commitment and openness to experiences (Cabrera, Collins, & Salgado, 2006) also influence sharing knowledge. Furthermore, those employees who value social relationships tend to share knowledge more readily than others to (Casimir, Lee, & Loon, 2012), and with a high level of trust propensity, A knowledge-centered culture also promotes knowledge sharing (Peralta & Saldanha, 2014). Among

the many facilitators of knowledge sharing, researchers need to be sensitive to their different effects in specific contexts (Seba, Rowley, & Delbridge, 2012).

Knowledge sharing does not only take place among individuals; it can also take place among project teams (Mueller, 2012), firms (Tallman, Jenkins, Henry, & Pinch, 2004), from parent corporations to subsidiaries (Boh, Nguyen, & Xu, 2013), or between buyers and suppliers (Kotabe, Martin, & Domoto, 2003; Lawson et al., 2009). Since, over time, knowledge sharing will become an important factor for the firm's performance, organizations should facilitate it (Daghfous et al., 2013).

This study defines knowledge sharing as the objective of all companies, and hold that the process has three steps: 1) value sharing for sharing ideas, 2) action sharing, such as share knowledge of practical work, and 3) custom sharing, that is knowledge sharing through the practical work and then formation of some standard so that everyone in the company can use the knowledge. The three types of knowledge sharing were extracted and confirmed from the interviews that are a part of the present study. They are used later as the moderating variable in the quantitative study.

Chapter 3

Stage 1: Qualitative Method Interviews¹

This study applied a qualitative method. Qualitative methods can help us to understand non-obvious issues that cannot be understood with a questionnaire alone (Merat & Bo, 2013). Moreover, the approach makes it possible to get closer to interviewees by deeply understanding the research questions (Maykut & Morehouse, 1994).

3.1 Research Questions

If new employees have experience, their new employer usually asks the new employee to communicate with the other employees. The new employees convey the knowledge they possess, thus making the knowledge explicit. With this in mind, this study modified the SECI model (Figure 5). The SECI model always moves from socialization to internalization in sequence. In the modified model, this study argues that the knowledge process can start from externalization. A new employee can bring external explicate knowledge to the company. The only aspect that needs to be considered in the modified model is related to ethics. Employees are often bound by ethics agreements addressing secret information, so that, when they leave a company, they cannot take all of their explicit knowledge and share it with a new employer. In practice, this might not always unfold as it should. Sometimes, employees bring explicit knowledge to their new company, and

¹ This chapter cited Song, J., Tsujimoto, A., & Ito, N. (2015). Knowledge Loss or Driving the Knowledge Creation Process? The Knowledge Creation Process under the Influence of Employee Turnover in China. *Proceedings International Conference on Business and Information*, 1505-1519

the knowledge is shared with their new colleagues, affecting the knowledge creation process. The knowledge creation process, then, starts with internalization.

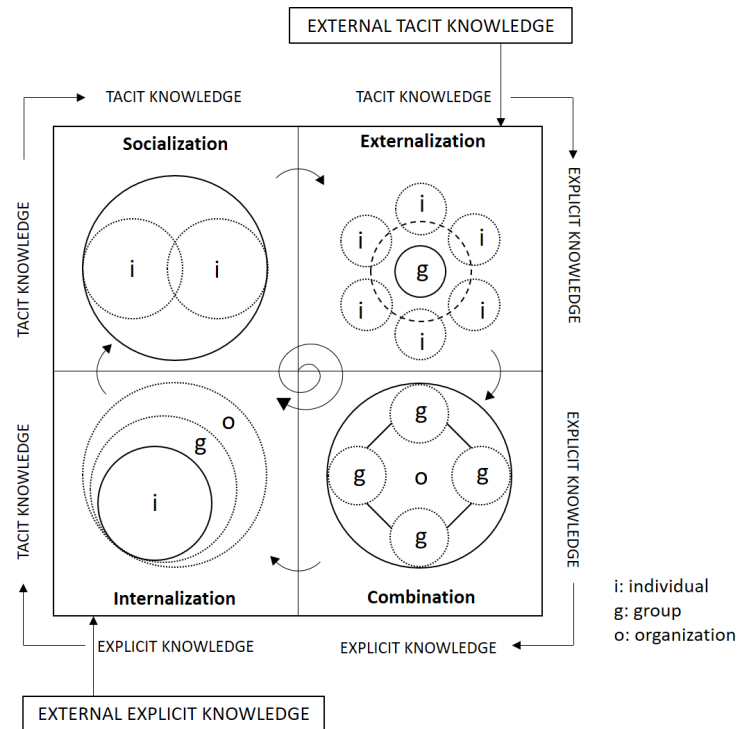
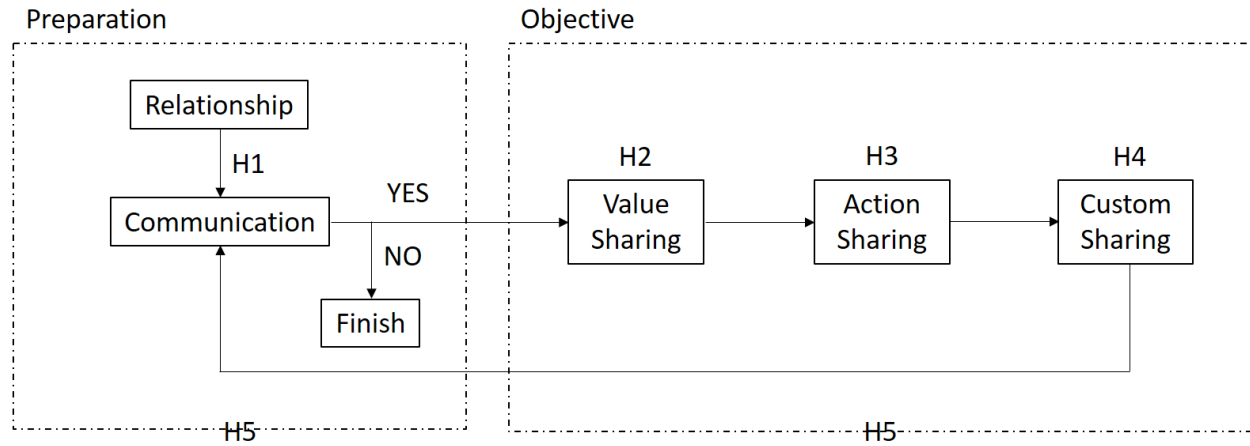


Figure 5. A modified SECI process

This study developed a turnover effectiveness model (Figure 6) to explain the effect of turnover on knowledge conversion, a process composed of two parts. The first part is the preparation for the communication with new employees based on certain relationships. The other part is the objective of the manager. In a certain relationship, for example, colleagues who work in research and development (R&D) together may face problems during the process. In order to solve these problems, they must communicate with one another and discuss how to solve problems. Based on these analyses, the research question is as follows:

RQ: How does the effect of employee turnover influence the knowledge creation process?



Measurement	Corporate Culture Friendly Relationship Training Talking Communicating	Idea Exchanging Meeting and Brain-storming Discussion	Remodify the Draft Redesign the Model Reassemble Experiment	Database Report Standard Manual	Knowledge Creation Management (SECI)
Point	1	1	2	2	2

Figure 6. The turnover effectiveness model

According to the SECI process theory, externalization is the process of articulating tacit knowledge into explicit knowledge. When tacit knowledge is made explicit, knowledge is crystallized, thus allowing it to be shared by others, and it becomes the basis of new knowledge. Internalization is the learning process of transferring explicit knowledge into tacit knowledge. Through internalization, explicit knowledge is created and shared throughout an organization and converted by individuals into tacit knowledge (Nonaka et al., 2000). This study focuses on communication and acknowledges that the new employees can affect both externalization and internalization. Thus, the hypotheses are as follows:

Hypothesis 1. New employees bring more chances for communication than before.

H1a. Employee turnover benefits the externalization.

H1b. Employee turnover benefits the internalization.

If new employees can communicate successfully, the sharing process begins. This process aims at sharing employees' experience and knowledge to augment the organization's significant intangible assets (Yang & Wan, 2004). In this study, the sharing process is defined as a three-part one. First comes value sharing, which includes ideas and knowledge. Second is action sharing, which includes, for instance, solving problems in practice. The final one is custom sharing, which happens when knowledge and experience have been summarized into explicit knowledge, like a manual or standard for the company, and everyone can share and use it. If employees can exchange ideas or experiences successfully, the sharing process will begin with value sharing before giving way to action sharing. Finally, the new knowledge becomes standard, and employees always solve problems by using the same method, making the knowledge explicit, this process is custom sharing.

Throughout this process, communication has been continuous, thus forming the sharing circle, but sometimes the communication fails. Without agreements among employees, the process comes to an end. When individuals who hold different levels and kinds of knowledge begin to combine their ideas, they create new potential knowledge (Smith, Collins, & Clark, 2005). The remaining hypotheses are as follows:

Hypothesis 2. New employees promote value sharing.

Hypothesis 3. New employees promote action sharing.

Hypothesis 4. New employees promote custom sharing.

Hypothesis 5. In time of frequent employee turnover, managers pay more attention to the knowledge creation process.

3.2 Interview Procedure and Participants

In order to clarify the relationship between employee turnover and knowledge creation, a qualitative research approach is employed in this paper focusing on middle managers. The limited understanding of staff turnover accountability underscores the appropriateness of applying this exploratory and qualitative methodology, which is an interactive method of collecting data that allows researchers to gain a deeper understanding of the research subjects (Guilding, Lamminmaki, & McManus, 2014). One objective of this study is to conceptualize the effectiveness of employee turnover, and the role of a firm's middle managers is the link between the top level of management and the first-line employees (Wen et al., 2014). Middle managers know the company well, so the study focuses on them. A snowball sampling technique has been used in this study (Biernacki & Waldorf, 1981), whereby three managers in the automobile industry were contacted by phone and asked to refer other possible interviewees. Ten middle managers from car companies were chosen for the study, and all interviews were conducted by phone for an average of 32 minutes per call. In the end, seven valid responses were obtained. The study also employs data gathered from the interviewees' corporate websites. Each company chosen has experienced a different employee turnover rate; some had low turnover rates, while others had high turnover rates.

As previously mentioned, all interviewees work in the automobile industry, which is knowledge-intensive and engineering-oriented (Nair et al., 2015). The reason why car companies were chosen is that they have developed quickly in recent years in China and every company is facing keen competition. Compared with foreign investment enterprises, independent research firms need more creativity so that they can survive in the market. The R&D departments of car companies communicate a great deal because, during the R&D process, they encounter a wide range of challenges in need of solutions, so sharing and communicating is imperative for their survival.

Table 3

Information about Companies in the Study

Company	Number of Employees	Turnover Rate	Registered Capital	Annual <u>sales</u>	Core Business
A	30,000	16% (2014, interviewee's department)	4.1 billion (CNY)	25.6 billion (CNY) (2013)	Automobile R&D and production
B	2000	15% (2014, interviewee's department)	5.6 billion (CNY)	1.067 billion (CNY) (2013)	Heavy truck R&D and production
C	80,000	0% (2014, interviewee's department)	19 million (USD)	82 billion (CNY)	Automobile R&D and production
D	400–500	7% (2014, interviewee's department)	-----	400 million (EUR) (2013)	Automobile engineering, in terms of processes/ products
E	18,000	-----	-----	150 billion (CNY) (2012)	Automobile R&D and production
F	480	10% (2013, the whole company)	158.3 million (CNY)	More than 200 million (CNY) (2013)	Automobile parts R&D and production

(The calculation of turnover rate: $[a/(b+c)] \times 100\%$

Where:

- a = number of employees who left during the year
- b = number of employees at the beginning of the year
- c = number of employees who come during the year)

The information of registered capital and account sold come from the company's homepage and the website of Baidu Baike.

Company A is an independent R&D company. Aimed at improving economic performance, this company has been restructured frequently in recent years. Compared to other companies in the auto industry, the employee turnover rate at Company A is higher than average. Depending on the position in question, the employee turnover rate is highest among front-line workers, followed by R&D workers and executives. We focused on the R&D department and chose five interviewees. Three of them had worked for Company A for more than three years and had already left the

company and are now working for other car companies. This study only considers data from one department, which has 75 employees, 12 of them left the company in 2014.

The rest of the interviewees were from Company F, which is a joint venture between a Chinese firm and a foreign one. The foreign company provides the technology, and Company F produces automobile parts. The employee turnover rate at this company is very low. The Company F employs nearly 500 workers, and the turnover rate was just 10% in 2014. Based on the developed technology and high market performance, the engineers' turnover rate is low. According to our interviewees, in the past six years, none of the engineers working at Company F has left the company.

Employee turnover rate is an important part of our research. In China, employee turnover rates are not publically accessible; as such, some of the information we have used here has come from interviewees. This information was not available for Company E.

Each interview was comprised of three parts. The first part collected basic information about the interviewees and their job descriptions. The second part addressed the company's knowledge creation process. The third part measured the company's employee turnover and knowledge creation processes. In addition, the interviewees were asked to comment on both the positive and negative aspects of employee turnover in their firm.

Table 4

Information about Interviewees

Interviewee	Age	Gender	Position	Main Job	Company	Turnover Experience
1	30	Male	Engineer	R&D	Company A	None (working for 4 years)
2	28	Male	Engineer	R&D	Company B	Company A (3 years) - Company B (0.5 year)
3	31	Male	Engineer	R&D	Company A	None (working for 4 years)
4	34	Male	Engineer	R&D	Company C	Company A (3 years) - Company C (0.5 years)
5	29	Male	Engineer	R&D	Company D	Company A (3 years) - Company D (2 years) - Company E
6	33	Male	Engineer in charge of product development	R&D	Company F	None (working for 6 years)
7	29	Male	HR specialist	HR	Company F	None (working for 5 years)

3.3 Interview Content Analyses

Company A has a high employee turnover rate. Three of interviewees went from Company A to another company. When they did this, the knowledge they possessed influenced their new company's knowledge creation process. If the new job was related to their prior experience, they were able to learn new things quickly and fit into the environment easily. By contrast, Company F is very stable. Because a foreign company provides all the technology, the main job of the Chinese employees is to follow the company standards to produce and assemble products.

The interviewees from Company A think that new employees with experience can bring great benefits to the firm's R&D. At Company A, it is typical to have one month to prepare before employee turnover. If the handover is executed well, the turnover does not affect the knowledge

creation process. The company has an effective measure for retaining knowledge during the R&D process, so any employee who leaves the company will not be a loss to it. The interviewees from Company F think that employee turnover is harmful for their firm. In the past six years, they had several new engineers who had worked in different fields prior to joining the firm. Interviewee 6 thinks that new employees without experience cannot make a contribution to knowledge creation during the R&D process. But both interviewees from Company F (Interviewees 6 and 7) think that, if they can employ a new worker who has prior related experience, it will benefit the company.

Table 5

The Coding Sheets

Communication	Value sharing	Action sharing	Custom sharing	Knowledge creation management
Sharing atmosphere; Friendly relationship; Training; Talking; Communicating	Idea exchanging meeting and Brain-storming discussion	Remodify the draft; Redesign the model; Reassemble experiment	Database; Report; Standard; Manual	<i>Socialization:</i> Shared experience-spend time together; Apprenticeships, hands-on experiences
				<i>Externalization:</i> the use of metaphors, analogies, and models in dialogues for concept creation
				<i>Combination:</i> knowledge system, report, database
				<i>Internalization:</i> learning by doing, product concepts or the manufacturing procedures to be actualized through action and practice

Communication

The interviewees were asked to talk about the communication among employees during the employee turnover process, and especially communications during their work. The automobile R&D process is very complicated. Depending on the different period of the R&D process, employees can expect to face different problems. Based on the interviews, this study determined that the communication process has two aspects: an externalization process and an internalization process.

The Externalization Process

The companies studied here pay attention to their new employees and encourage them to share their experiences with other employees. For example, they encourage employees to hold meetings in order to exchange knowledge with other employees. The management aims to convert the new employees' tacit knowledge into explicit knowledge, so that the externalization process begins. Therefore, the work environment is very important. The companies have created R&D environments for their employees designed to enhance their work and to give them a place discuss ideas with their colleagues.

The Internalization Process

There is not much direct communication about the explicit knowledge that new employees bring with them. Hypothesis H1b, "Employee turnover benefits internalization," was not supported by all interviewees. "When an employee leaves the company, they just are able to take the

knowledge in their head away,” Interviewee 4 said. Therefore, new employees usually bring only tacit knowledge to their new company.

According to the results of our interviews, knowledge sharing includes value sharing, action sharing, and custom sharing. In the R&D process, communication occurs because a problem has been found. When workers want to solve the problem, they talk and discuss, share knowledge, and practice together; then, they make the tacit knowledge explicit and share it with other employees. This is a complex process. The interviewees all described these objectives together, as shown in Table 6.

Table 6

The Interview Content Analyses

Company	Preparation (communication) (×1)	Objective			Knowledge Creation Management(×2)
		Value sharing (×1)	Action sharing (×2)	Custom sharing (×2)	
A	<i>Frequent communication based on the process of improving a car or develop a new one. Atmosphere for sharing communication. Communication during the designing process of the model of car's body. Friendly relationship between manager and employees.</i>	<i>Frequency of meeting for knowledge sharing when they design the body of the car. Brain-storming discussion when they design a new scheme of how to solve the problem.</i>	<i>Encourage the new employee to put their own knowledge to practical work . Using the new ideas to practical work to redesign and improve the model. remodify the draft to improve the project, and analyze the feasibility.</i>	<i>When they have a good scheme or a good method, after the discussion, get the permission to upload the method to the database of the project. Accumulate and summarize the knowledge into paper materials, like manual or report.</i>	<i>S: Apprenticeship. E: Encourage communicating. Sharing the knowledge they have. C: Pay attention to do the conclusion report and upload the knowledge to the project database. I: Learning by doing and providing an atmosphere promoting sharing of ideas .</i>
B	<i>Communicate with other employees realize difference between the new company and the former company.</i>	<i>If the front-line can't assemble the car, the R&D will get feedback from the front-line, discussion of good solutions or new methods of how to change the design to assemble the car successfully.</i>	<i>Create a new structure which can reassemble easily.</i>	<i>Document method: report, conclusion. which everyone in this project can read freely.</i>	<i>E: Encourage the new employee to share experience with other employees.</i>
C	<i>Based on the problem to communicate.</i>	<i>Discussing when they meet the problem during their experiment.</i>	<i>following the result of discussion to remodify the draft. Redesign experiment to test the ideas and change the draft.</i>	<i>Experiment standard.</i>	<i>S: Apprenticeship. Pay attention to practical work and discussion.</i>
D	<i>Communicate not very frequently</i>	<i>We don't need share our knowledge by meeting or discussion now. The work is simple and repetitive.</i>	<i>There is no change and no creation of my job now.</i>	<i>No improvement</i>	<i>No encourage measures to the creation.</i>
F	<i>Based on the problem to communicate</i>	<i>The new employees who worked in different businesses before learning and find problems.</i>	<i>After absorbing the knowledge, make it to the producing</i>	<i>Improving the standard.</i>	<i>No basic creation</i>

Based on the interview data, this study evaluated each company using the following scale: very good, as denoted by 30% grey color (2 points); good, noted in 50% grey color (1 point); and no evaluation, no color (0 points). The total sum of the points are shown in Table 9.

Through communication, employees can devise new methods for solving the problems and practice together. Interviewee 1 mentioned, “It’s very difficult to be creative if the employees always deal with the work in the same way. The new employee can bring new knowledge, new solutions, and new ideas.” The most common way of value sharing is by hosting a meeting. Interviewee 1 said “For me, one-third of the day, I’m attending meetings; for our department leader, the meeting time is two-thirds of the day.”

According to the interviews, the employees are willing to share their knowledge and expertise. Interviewee 2 reported, “A thorough study on some problems in previous work experience is very useful when the new company has not encountered such a situation before. The new employee can share the knowledge on solving the problem.” Interviewee 3 also reported, “Here we have a colleague who came from other company. He is very good at designing the body of the car. When we encounter problems that we have never seen before, we ask him. He likes to share his experience with others.”

Interviewee 5 stressed the importance of maintaining a relaxed atmosphere and encouraging the employees to practice their ideas. In such an environment, the employees can share knowledge.

3.4 Conclusion

In this stage of the project, we conducted interviews to get a deep understanding of employee turnover and knowledge creation. Many authors have already proven the negative effects of employee turnover. Turnover can have negative effects on a firm's performance (Glebbe & Bax. 2004), lead to a loss of assets (Yang et al., 2014), increase the cost of labor and possibly reducing employee morale (Wen et al., 2014). Each of the seven interviewees agreed with the notion that a new employee who has previously worked in the same industry can add to the knowledge creation process. Employee turnover rate is an important aspect of in research; however, it is difficult to gather exact data on this concept from each interviewees' employer.

Chapter 4

Stage 2: Quantitative Method Questionnaire²

4.1 Research Questions and Hypotheses

By specifying the context in China, following the results of the interview research, the purpose of this part is to examine the possible mediating effect of knowledge creation on the relationship between new employee knowledge transfer and firm performance. Many previous studies treated employee turnover as a dependent variable (Glebbeek & Bax, 2004); however, placing employee turnover in the independent variable position is very important (Watrous et al., 2006). Since the actual knowledge transfer mechanism from new employee to firm performance has rarely been examined, this study chooses employee turnover as the independent variable.

4.1.1 The Effects of Employee Turnover on Performance

The problem of employee turnover is assumed to be its cost to organizations (Huffman et al., 2014). Desouza and Awazu (2006) argued that employees take knowledge out the organization when they leave. If the organization suffers from a high employee turnover rate, avoiding the knowledge loss has become a management imperative. Generally, employee turnover is assumed to have a negative effect on organizational performance (Mohr et al., 2012; Park & Shaw, 2013),

² This chapter cites Song, J., & Ito, N. Relationships between employee turnover, knowledge creation and firm performance, *International Journal of Marketing and Social Policy* (forthcoming)

and different types of employee turnover may cause different effects (Watrous et al., 2006). By examining the relationship between employee turnover rates and organizational performance, Park and Shaw (2013), conducting a meta-analysis, reported that voluntary and reduction-in-force turnover are associated with more negative impacts than involuntary turnover; the strength of this relationship significantly varies across different average levels of total and voluntary turnover rates. Moreover, based on their analysis for the organization, in terms of the employee turnover rate, lower is better; any type of employee turnover under any contextual conditions will damage the organization's performance. However, Holtom et al. (2008) argued that the effect of involuntary turnover is considered to be positively related to organizational performance because it is under the control of the organizational managers. For the unit-level performance, both voluntary turnover and involuntary turnover show a negative effect (Kacmar, Andrews, Rooy, Steilberg, & Cerrone, 2006). Watrous et al. (2006) investigated fifty work units in multiple organizations in eight countries and found employee turnover at different levels in the organization. Consequently, the result of their analysis indicates a greater negative effect on performance improvement from work unit turnover than that resulting from the employee turnover in overall management.

Several studies from different perspectives discuss the negative effects of employee turnover. In terms of knowledge-based theory, operational disruptions will occur when new employees attempt to gain the tacit knowledge in order to perform their jobs. From both human capital and social capital perspectives, employee turnover may be especially problematic for organizations employing knowledge workers (Mohr et al., 2012). As a result, rather than

negatively impacting the organization by exhausting knowledge capital, employee turnover cripples the organization by varying the social structure (Shaw, Duffy, Johnson, & Lockhart, 2005).

Accordingly, employee turnover is probably inevitable. The company needs external source to obtain new knowledge (Díaz-Díaz & Saá-Pérez, 2014; Durst, Edvardsson, & Bruns, 2013). A common event in the organization is hiring new employees, which affects anyone who is in the organization (Gallagher & Sias, 2009). Successful individual performance and successful knowledge transfer both depend on the individual's ability, motivation and opportunity to perform (Argote et al., 2003). The ability to solve problems, the motivation to share knowledge through social relationships and to seek the opportunity to solve problems could impact the knowledge transfer in the organization (Chang et al., 2012). During the knowledge transfer process, the experience can affect this ability and provide the opportunity to transfer knowledge (Argote et al., 2003). Therefore, the shared knowledge in the company affects organizational performance (Janhonen & Johanson, 2011).

The knowledge dwelling within the new employee can benefit the company provided that the managers understand how to transfer their experience and knowledge effectively. In such cases, this knowledge may help foster firm performance. In light of this, the first hypothesis is proposed:

Hypothesis 1. The new employee's knowledge transfer is positively related to firm performance.

4.1.2 The New Employee and Knowledge Creation

Knowledge creation theories explore the interrelationships between explicit and tacit knowledge (Li, Huang, & Tsai, 2009), which can be considered a consistent procedure through which one conquers the individual boundaries forced by data and past learning by obtaining a new perspective of the world and the new knowledge (I Nonaka et al., 2006) to achieve such goals as designing a new product, improving management and developing manufacturing processes (S. Kao & Wu, 2016). Not only knowledge creation but also knowledge transfer is contained in the knowledge creation model (Choi & Lee, 2002; Li et al., 2009). During the knowledge creation process in the organization, generating superior knowledge can help the firm in the competitive environment (Ramírez et al., 2012). Knowledge creation consists of three elements, first the knowledge conversion occurs between tacit knowledge and explicit knowledge. And the conversion occurs in different contexts, or *ba*, in Japanese (Ikujiro Nonaka, Toyama, & Konno, 2000). The third aspect is the knowledge assets, which Nonaka et al. (2000) refer to as the inputs, outputs, and moderators of the knowledge creation process.

When experience through socialization, externalization, and combination are internalized into the tacit knowledge bases of individuals in the form of shared mental models or technical know-how, they become valuable assets (Ikujiro Nonaka & Takeuchi, 1995; Ikujiro Nonaka, Toyama, & Konno, 2000).

The tacit dimensions of individual knowledge are not publicly available and cannot be easily imitated (Argote & Ingram, 2000) unless the people with the knowledge are hired (Alwis &

Hartmann, 2008). Therefore, organizations with high employee turnover often seek to preserve knowledge to prevent knowledge loss when an employee leaves the organization. In this case, how tacit knowledge can be transformed into explicit knowledge is the main concern. Gallagher and Sias (2009) argued that new employees always have some implications for organizations like changing the nature of the job itself, and affecting the organizational culture and climate and altering social relations to a certain degree. The diversity of knowledge is necessary for the organization because individuals who hold different levels and kinds of knowledge exchange new potential knowledge with others and new ideas will be created (Smith et al., 2005). In a simulation process, the employee with previous experience can perform better than participants with little experience. However, this tacit knowledge is hard to articulate (Argote & Ingram, 2000). Moreover, if the employee attempts to transfer their knowledge, this can result in new knowledge (Argote et al., 2003).

Therefore, the study described here aims to explore the effect of the new employee's knowledge transfer in terms of different aspects of knowledge creation. The second hypothesis is as follows:

Hypothesis 2. The new employee's knowledge transfer is positively related to knowledge creation.

4.1.3 Knowledge Creation and Firm Performance

Many studies have revealed that knowledge creation maintains sustained innovation capability in companies (Li et al., 2009; Ikujiro Nonaka & Takeuchi, 1995; Walsh, Bhatt, & Bartunek, 2009). High-quality innovation also influences firm performance as the key factor (Z. Wang & Wang, 2012). A constant creation of knowledge will make a business more successful and help avoid reductions in performance (Choi & Lee, 2002). When firms draw upon the SECI process to realize knowledge creation, they are more likely to achieve efficiency, growth, profit (Li et al., 2009) and competitive advantage (Huang, Davison, & Gu, 2011; Ramírez et al., 2012). Therefore, the primary motivation for companies to strive to manage knowledge more effectively is improved corporate performance (Tseng, 2010).

Based on previous studies, when a company focuses on the knowledge creation process, it makes the company more competitive, and a positive relationship will exist between knowledge creation and firm performance. Hence, we hypothesize as follows:

Hypothesis 3. The knowledge creation process is positively related to firm performance.

4.1.4 The Mediating Role of Knowledge Creation

In the previous studies, the knowledge creation process as the mediating role explained the relationship between firm performance and entrepreneurial orientation (Li et al., 2009) as well as the relationship between gold-driven mode and knowledge creation performance (Kao & Wu, 2016) and also mediate the relationship between new venture strategies and performance (Tsai &

Li, 2007). As previously noted, hypothesis 2 proposes that the new employee's knowledge is positively related to the knowledge creation process, and hypothesis 3 states that the knowledge creation process is positively related to the firm performance. The relationship between employee turnover and firm performance tends to be indirect. And the knowledge creation process mediates the relationship between the independent variable, employee turnover, and the dependent variable, firm performance. Employee turnover promotes knowledge transfer between companies, and such knowledge brought by the new employee is shared by the members of the organization resulting in enhanced firm performance. Accordingly, this study developed the following hypothesis:

Hypothesis 4. The knowledge creation process mediates the relationship between the new employee's knowledge transfer and firm performance.

4.1.5 Knowledge Sharing as the Moderator

Effective management of knowledge for the organization can only take place when employees are willing to sharing their knowledge (Z. Wang & Wang, 2012). Knowledge sharing and organization learning would lead to better performance of the firm (Law & Ngai, 2008). Tacit knowledge sharing is based on experience (Ikujiro Nonaka & Takeuchi, 1995). Explicit knowledge sharing is more common because it is more easily captured and transmitted (Z. Wang & Wang, 2012). Knowledge sharing exists at the individual and organizational levels. At the individual level – knowledge sharing between colleagues – conversations take place in which individuals help each other to get something done better, more quickly or more efficiently. For an organization,

knowledge sharing is based on the experience-based knowledge that exists within the organization and making it useable to others (H.-F. H.-F. Lin, 2007). Knowledge sharing contributes to innovation and firm performance by sharing the experience of other employees or adopting new practice methods (Law & Ngai, 2008).

In China, there is a preference for sharing knowledge in an interpersonal context rather than sharing explicit knowledge (Burrows, Drummond, & Martinsons, 2005). In terms of an individual's value and experience, special knowledge is created and shared with other members (I Nonaka et al., 2006). The fifth and sixth hypotheses are formulated as follows:

Hypothesis 5: The relationship between a new employee's knowledge transfer and knowledge creation is stronger when knowledge sharing is greater.

Hypothesis 6: The relationship between knowledge creation and firm performance is stronger when knowledge sharing is greater.

As showing in figure 7, referring to Hypotheses, this study draws up a conceptional framework.

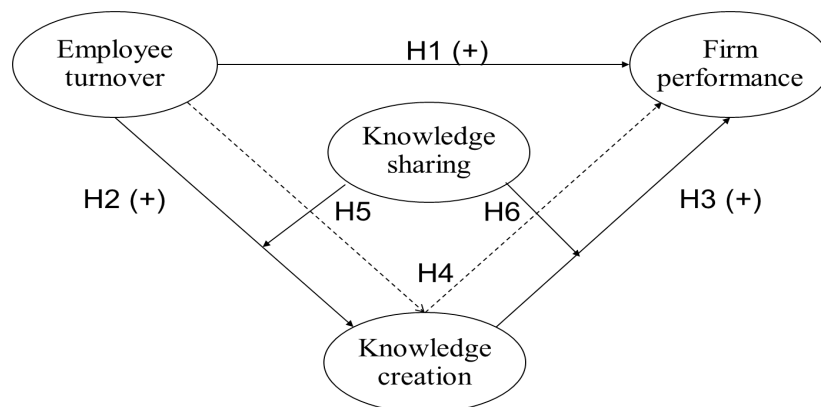


Figure 7. The hypothesized model

4.2 Data Collection

A questionnaire survey approach is employed in this study and six-point Likert-style responses ranging from 1 strongly disagree to 6 strongly agree. The respondents are managers in a company familiar with knowledge creation, employee turnover and firm performance in mainland China.

Table 7

Demographic Information

Measure	Items	Freq.	Percent
Gender	Female	68	37.99%
	Male	111	62.01%
Industry	IT	51	28.49%
	Manufacturing	58	32.40%
	Finance	21	11.73%
	Others	49	27.37%
Org size	0-500	83	46.37%
	500-2000	28	15.64%
	2000-10000	31	17.31%
	10000-20000	11	6.15%
	>20000	26	14.53%

A total of 220 questionnaires were collected in 2016. As a result, 179 valid responses were used for the quantitative analysis. Table 7 shows the demographic information of the samples.

4.3 Measures

The ability-motivation-opportunity framework (Chang et al., 2012) was used to measure employee turnover as well as ability to transfer knowledge, motivation to transfer knowledge, and opportunity seeking. Ability to transfer knowledge includes one item: The ability to solve

difficulties. The motivation to transfer knowledge has five items: Not being afraid of losing a competitive advantage due to the transfer of knowledge, the willingness to solve difficulties, coping with cultural differences, devoting time to overcoming difficulties, and making persistent efforts to solve difficulties in the knowledge transfer process. Opportunity seeking includes one item: Utilizing social relationships to solve difficulties.

The knowledge creation measures were based on the previous research. Knowledge creation is comprised of four components: socialization, externalization, combination and internalization (Li et al., 2009; Ikujiro Nonaka & Takeuchi, 1995; Ikujiro Nonaka, Toyama, & Konno, 2000; Sabherwal & Becerra-Fernandez, 2003). Socialization has three items: Cooperative projects across directorates, the use of apprentices and mentors to transfer knowledge, and brainstorming retreats or camps. Externalization has five items: A problem-solving system based on a technology like case-based reasoning, groupware and other collaboration learning tools, pointers from experts, modeling based on analogies and metaphors, and capturing and transferring experts' knowledge. Combination has three items: Web pages, databases, repositories of information, best practices, and lessons learned. Internalization has three items: On-the-job training, learning by doing, learning by observation.

Due to difficult to collect the data of tangible performance in the company (S. Kao & Wu, 2016). The current study applied the subjective measurement which based on previous work (Choi & Lee, 2002; Deshpande, Farley, & Webster, 1993). In this model, firm performance includes success, market share, speed of growth, profit, and innovation.

An objective for the company is to foster knowledge sharing (Wipawayangkool & Teng, 2014). Therefore, in this study, knowledge sharing represents one objective of the company. Three items in a firm influence this. Custom sharing has a high impact, action sharing a mid-range impact, and value sharing a weak impact.

4.4 Data Analyses

This study used and revised the scales from previous studies. Table 8 lists the questions, the validity of constructs, the reliability of the items and factor loading. Reliability assesses the degree of consistency between multiple measurements of a variable (Hair, Black, Babin, & Anderson, 2010). The generally agreed upon Cronbach's alpha should exceed 0.70 (Robinson et al. 1991). The Cronbach's alpha in Appendix A ranges from 0.808 to 0.912, showing that the internal consistency of all factors is acceptable. The average variance extracted (AVE) can be used to assess discriminant validity (Fornell & Larcker, 1981). All constructs were greater than 0.5 indicating the measure has adequate convergent validity (Bagozzi & Yi, 1988). The structural equation model (SEM) was used to test the hypotheses.

Table 8

Scale Descriptions and Reliability Statistics

Scales and associated indicators	Scale anchor points	Standardized factor loadings
	Strongly disagree (1) – Strongly agree (6)	
Employee turnover (Mean = 4.35, S.D. = 0.97)		Cronbach α : 0.912; AVE: 0.608
The problem-solving ability of new employees in the transmission of knowledge (expertise, skills and experience)		0.74
New employees do not fear losing competitive edge in transmitting experience and knowledge to the senior employees		0.59
New employees take the initiative to solve difficulties in transmitting experience and knowledge to the senior employee		0.84
New employees take the initiative to deal with cultural differences in transmitting experience and knowledge to the senior employees		0.68
New employees are willing to spend time solving difficulties in transmitting experience and knowledge to the senior employees		0.88
New employees are willing to make persistent efforts in transmitting experience and knowledge to the senior employees		0.89
New employees take the initiative to seek opportunities of solving difficulties through social relationship in transmitting experience and knowledge to the senior employees		0.79
Knowledge creation (Mean = 4.25 S.D. = 0.81)		Cronbach α : 0.808 AVE: 0.698
Socialization		0.82
My firm usually adopts cooperative projects across directorates		0.77
My firm usually uses apprentices and mentors to transfer knowledge		0.51
My firm usually adopts brainstorming retreats or camps		0.55
Externalization		0.94
My firm usually adopts a problem-solving system based on a technology like case-based reasoning		0.70
My firm usually adopts groupware and other learn collaboration tools		0.77
My firm usually adopts pointers to expertise		0.79
My firm usually adopts modeling based on analogies and metaphors		0.68
My firm usually captures and transfers experts' knowledge		0.69
Combination		0.75
My firm usually uses web pages		0.54
My firm usually uses databases		0.65
My firm usually adopts repositories of information, best practices, and lessons learned		0.87
Internalization		0.82
My firm usually adopts on-the-job training		0.65
My firm usually adopts learning by doing		0.58
My firm usually adopts learning by observation		0.69
Firm performance (Mean = 3.90 S.D. = 1.10)		Cronbach α : 0.918 AVE: 0.693
Compared with key competitors, my firm is more successful		0.82
Compared with key competitors, my firm has greater market share		0.83
Compared with key competitors, my firm is growing faster		0.86
Compared with key competitors, my firm is more profitable		0.84
Compared with key competitors, my firm is more innovative		0.81
Knowledge sharing (Mean = 4.18 S.D. = 1.10)		Cronbach α : 0.893 AVE: 0.739
My firm aims at improving sharing ideas with the new employees		0.85
My firm aims at improving sharing knowledge in practical work with the new employees		0.92
My firm aims at improving standards change by using the knowledge from the new employees		0.81

4.5 Conclusion

This part discusses the importance of knowledge transfer from new employees and explores the relationships between employee turnover, knowledge creation, and firm performance. The current study has presented a theoretical model and an empirical test to support the hypotheses in the context of companies in China. The findings of this study differ from those of previous studies (Shaw et al., 2005; Watrous et al., 2006). First, it discusses the employee turnover effect on the company from the new employee's perspective. Second, it uses empirical methods to explore the relationship between employee turnover, knowledge creation, and firm performance. Consequently, earlier studies tended to focus on employees who leave the company in order to avoid employee turnover and its negative effects. This study takes the positive effect of employee turnover into account.

During the employee turnover process, the new employee's knowledge can benefit the company through the knowledge creation process. Therefore, this study offers practical implications for managers. They should consider how to use the experiential knowledge of individuals to benefit the company. In the case of Chinese companies, however, some additional factors may be important to consider. In particular, interpersonal relationships, or *guanxi* (Huang et al., 2011), and saving face (Burrows et al., 2005) represent important lifelong aspects of the individual's social life and have a strong impact on knowledge sharing. To achieve successful knowledge transfer, managers must overcome impediments associated with such phenomena. The ability and the motivation of the new employee's knowledge transfer are very important. They

must possess experiential knowledge while also being willing to cope with cultural differences and devote time to persistent efforts to solve difficulties in the knowledge transfer process. In addition, the opportunity relates to social relations and if the new employee can use such relations in which their past working experience results in the transfer of knowledge, it will be very helpful for the organization to keep these competencies. Overall, managers must pay attention to the new employee's experiential knowledge and through the knowledge creation process they can achieve enhanced firm performance.

Chapter 5

Results³

5.1 Results of the Interview Analyses

In order to take the situation in China into account, this study made two changes to the original SECI model. First, this study added external tacit knowledge to externalization in the SECI model. Second, this study added external explicit knowledge to internalization aspect of the SECI model.

The findings indicate that that knowledge creation process is complex and does not always begin with socialization and move to internalization. Instead, the process can start from externalization or internalization. This suggests that, in order to foster knowledge, managers need to encourage new employees to communicate with others and to share their knowledge. Hypothesis 1 provides two routes for this process. One is the assumption that employee turnover affects externalization and then promotes value sharing; the other is that employee turnover affects internalization and then promotes action sharing.

According to the interviewees, communication during problem-solving efforts can lead to the easy sharing of knowledge. Therefore, from an externalization point of view, new employees can express their knowledge as other employees absorb it and use it for R&D. This provides a good start for devising creative solutions.

³ This chapter cites Song & Ito, 2017; Song, Tsujimoto, & Ito, 2015

If an employee's work is related to the core knowledge of R&D, then there may be a confidentiality agreement that prohibits him or her from taking any explicit knowledge away from the first firm. According to our interviews, the fact is that many companies do not have strict rules or other methods to prevent explicit knowledge from being taken during the employee turnover process. Instead, employees can take their explicit knowledge with them. Whether they will share this explicit knowledge with their new colleagues or not depends on the employees themselves.

The reason why employees can work in the same industry after leaving their initial position is that many companies do not have strong confidentiality or exclusivity agreements. Although employees may have signed such an agreement, they can still work in the same industry after leaving a firm.

Table 9

Coding Results of the Interview Content

Company	Evaluation	Employee Turnover Effectiveness Result	Turnover Rate	Knowledge Creation Management Result
A	Very good (5)	12	16%(2014, interviewee's department)	4
B	Very good (2) Good (3)	8	15%(2014, interviewee's department)	1
C	Very good (3) Good (2)	10	-----	1
D	Good (1) No evaluation (4)	1	7% (2014, interviewee's department)	0
F	Very good (1) Good (3) No evaluation (1)	7	10% (2013, the whole company)	0

The results in Table 9 show that Company A has the highest turnover rate; the result of employee turnover effectiveness is 12, and the result of knowledge creation management is 4. These results indicate that, with a high turnover rate and good knowledge creation management, Company A has more creativity than other companies. Given its high turnover rate, new employees will bring more chances for communication and the value sharing, action sharing, and custom sharing will be promoted more quickly than average.

5.2 Results of the Hypotheses for Stage 2

Table 10 presents the mean, standard deviation, and correlation matrix of the variables. In order to test the hypothesized relationships of the research model, this study employed Amos.

Table 10

Descriptive Statistics and Correlation Matrix

	Mean	Standard Deviation	Employee Turnover	Knowledge Creation	Firm Performance	Knowledge Sharing
Employee Turnover	4.3464	0.97184	1			
Knowledge Creation	4.2489	0.81285	0.446**	1		
Firm Performance	3.8961	1.10389	0.306**	0.436**	1	
Knowledge Sharing	4.1769	1.10740	0.436**	0.596**	0.493**	1

Note. ** – is significant at the 0.01 level (2-tailed). n = 179

A suitable model fit was presented (Figure 8) – X^2/df is the ratio of X^2 to the degrees of freedom (Jöreskog, 1978), and $X^2/df = 1.672$, and since the ratio is less than 3 this suggests good model fit (Bollen, 1989). The value of the goodness-of-fit index (GFI) is 0.819 – a *GFI* exceeding

0.9 is considered good and above 0.8 moderate (Bentler & Bonett, 1980). Finally, the comparative fit index (CFI) is 0.929 – above a value of 0.9 indicates good model fit (Kline, 2005). The root mean square error of approximation ($RMSEA = 0.061$) of less than 0.08 also implies a good fit (Browne & Cudeck, 1993).

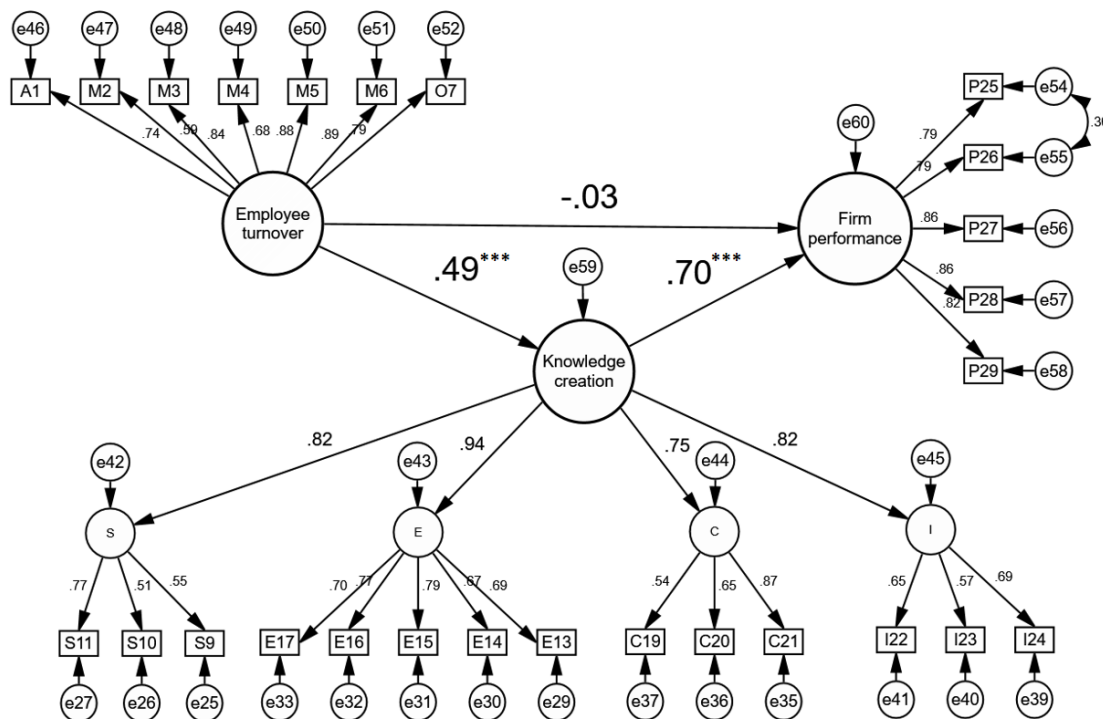


Figure 8. Structural model

Note. S = socialization; E = externalization; C = combination; I = internalization.

($n = 179$, $X^2/df = 1.672 < 3$, $CFI = 0.929$, $GFI = 0.819$, $RMSEA = 0.061$, $***$ – is significant at the 0.001 level)

These results provide support for the first three hypotheses. Hypothesis 1 proposed a positive relationship between the new employee's knowledge transfer and corporate performance,

and the results support this ($\beta = 0.33, p < 0.001$). Hypothesis 2 proposed a positive relationship between the new employee's knowledge transfer and the knowledge creation process. The results also support this hypothesis ($\beta = 0.49, p < 0.001$). Hypothesis 3 proposed that the knowledge creation process is positively related to firm performance. The results also indicate support for this hypothesis ($\beta = 0.70, p < 0.001$). Hypothesis 4 predicted a mediating relationship between employee turnover and firm performance. First, employee turnover demonstrated a significant direct impact in influencing firm performance. Second, knowledge creation significantly influenced the dependent variable, firm performance. The result for total mediation was supported by the structural model as shown in Fig 2. The path between employee turnover and firm performance is almost zero ($\beta = -.013, p > 0.05$) with knowledge creation as the mediator. Therefore, the knowledge creation process does mediate the relationship between the new employee's knowledge transfer and firm performance. The moderator for both paths is not significant ($p > 0.05$), and so hypothesis 5 and hypothesis 6 are not supported.

Chapter 6

Discussion and Implications

The main purpose of this study was to explore whether new employees' experiences can benefit a company's knowledge creation and lead to enhanced firm performance. The interviews and the questionnaire were both conducted in the Chinese context, and the results show that knowledge creation theory is not completely applicable to this case. In Nonaka's knowledge creation theory, the knowledge creation process, from socialization to internalization, is a sequential one that is amplified from the individual to the team and later the whole organization (Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995). However, Massingham (2014) found that the SECI model fails as a knowledge creation toolkit, because it does not work in practice. Moreover, Zhu (2004) reported that, due to the differences in cultures and institutional forces, the knowledge conversion process in other countries may occur in a different order, or even simultaneously. Because of the cultural embeddedness of sharing tacit knowledge, and the process of knowledge creation based on typical Japanese culture, replicating these elements is not easy in a non-Japanese context (Glisby & Holden, 2003). This study supports these views.

This study developed a new conceptual model that based on the original SECI model. In the new model, employee turnover indirectly influences a firm's performance by influencing knowledge creation. Without knowledge creation, the employee turnover process significantly influences a firm's performance ($\beta = 0.33$, $p < 0.001$). However, when knowledge creation was added to the model, there is no direct effect from employee turnover on firm performance. The

conventions of knowledge creation are revealed to be a key mechanism by which a company with a high turnover rate can achieve high performance. If the managers take into account that new employees' prior knowledge influences the knowledge creation process, they can actively manage the sharing, transferring, and storage of prior knowledge, in order to make utmost use of valuable knowledge.

The employee turnover rate affects knowledge creation ($\beta = 0.49$, $p < 0.001$), and knowledge creation affects firms' performance ($\beta = 0.70$, $p < 0.001$). These results show that new employees promote knowledge creation, yet the process is most important for firm performance. Moreover, the consideration of knowledge creation results in better business value. This study tested how each step of the knowledge creation process affects a firm's performance and found that each has a unique impact as follows: socialization to firm performance ($\beta = 0.54$, $p < 0.001$), externalization to firm performance ($\beta = 0.67$, $p < 0.001$), combination to firm performance ($\beta = 0.50$, $p < 0.001$), and internalization to firm performance ($\beta = 0.44$, $p < 0.001$). In this study, the four steps of the SECI model have been found to have the same effects on firm performance; however, each step offers a different effect when the company focuses on varied objectives, as they will also focus on different steps of the SECI. For example, internalization can help achieve customer satisfaction and externalization, the combination of which helps the company reach innovation (Lin, Huang, & Sheng, 2014). In different context with different objective, each step of the SECI may have the different effect.

6.1 Theoretical Implications: Effects of Employee Turnover on Knowledge Creation Process

The current study has focused on organizations with high employee turnover rates. Often, skilled knowledge workers change jobs and join different organizations from time to time, which leads to knowledge being transferred during this process. Nonaka's (1995) knowledge creation theory sheds light on knowledge conversion and focuses on the transformation of an individual's tacit knowledge into organizational knowledge. Through the knowledge creation process, this new knowledge helps his or her new company. These results demonstrate the importance of the knowledge creation process. Contrary to expectations, the moderate effect of knowledge sharing that was promoted in the qualitative stage was not significant (H5, H6). Moreover, there is no evidence showing that knowledge sharing moderates the relationship between employee turnover and firm performance. There is also no evidence of a relationship between knowledge creation and firm performance.

This research makes several theoretical contributions to the literature. First, the study shows that knowledge creation in a Chinese context is not a sequential process. In regard to the use of a new employee's knowledge, the knowledge creation process is very important for facilitating this process. This study helps us to understand that both firm performance and knowledge creation are influenced by new employees' knowledge, which is made available to a firm via employee turnover.

Second, the key theoretical implication of this study is that it contributes to knowledge creation research by establishing that knowledge creation fully mediates the impact of employee

turnover on firm performance. Knowledge creation as a mediator is consistent with previous studies, such as those by Lin and colleagues (2009), Kao and Wu (2016), and Tsai and Li (2007). In the context of Chinese companies, managers are likely to encourage new employees to communicate with others, which results in improved firm performance. Moreover, the experiences that new employees bring with them influence the knowledge creation process and have a particularly positive impact on the management of their new firm. Companies with high employee turnover rates are likely to pay close attention to their new employees' experience and to the overall management of the firm.

Third, this study also contributes to the literature by combining the domains of employee turnover and knowledge creation. Building on the knowledge creation theory, this study investigated how new employees bring new knowledge that benefits the knowledge creation process by promoting dynamic, active interactions among the organization's members. Therefore, the conceptual discussion and the empirical evidence from this study show companies can benefit from knowledge creation and employee turnover.

Finally, the study contributes to general research in this field by applying both qualitative and quantitative methods to get answers for the research question. It first used a qualitative approach to explore the phenomenon; then, based on these findings, we used quantitative research (Creswell, 2013). Semi-structured interviews allowed for the emergence of new patterns that were not clarified in previous studies (Liu et al., 2015). The research results made it possible to answer the original research question more profoundly than previous studies had.

6.2 Practical Implications: The Knowledge Creation in Chinese Context

Although many empirical studies to date have been conducted on knowledge creation, employee turnover and firm performance, there are few studies that have explored their mutual relationships. The present study reveals that employee turnover promotes knowledge transfer; this finding has major implications for managers.

The results of the present study show that companies with high turnover rates manage knowledge creation better and foster better communication for solving problems. Hypothesis 1, examined in Stage 2, posits that there is a positive relationship between a new employee's knowledge transfer and corporate performance. This result of this hypothesis is in contrast with many studies focusing on the negative effects of employee turnover (Desouza & Awazu, 2006; Park & Shaw, 2013; Watrous et al., 2006). Thus, this study provides a holistic view of understanding employee turnover in China. Managers should assess their new employees' valuable tacit knowledge (Wipawayangkool & Teng, 2014), as doing so will promote communication among employees, generate new ideas, and bring advantage to the firm. Also, managers should pay attention to knowledge retention. When an employee leaves the company, it inflicts damage to the informal network structure and leads to a loss of tacit knowledge (Schmitt et al., 2012). Therefore, managers need to find ways to retain knowledge before an employee leaves. This requires the development of a knowledge retention strategy that encourages that sharing of tacit and explicit knowledge among employees.

The results of Hypothesis 4, addressed in Stage 2, show that new employees' knowledge is positively related to the knowledge creation process, and knowledge creation is positively related to firm performance. To enhance a new employee's involvement in knowledge creation, the managers should nurture enabling conditions and encourage new employees to learn, create knowledge, and share their knowledge with their new coworkers. In addition, it is possible to create opportunities to exchange knowledge through job design and employee training, in order to promote knowledge sharing (Gagné, 2009). Since knowledge creation is a strong driver of firms' performance, the improved ability to understand factors in the knowledge creation process will assist managers in being more successful.

6.3 Limitations and Future Studies

Like other studies, this study has some limitations; many of them can be addressed by future research. First, regarding the qualitative research, the limitations are related to the degree of subjectivity by researchers when conducting interviews and the analyses of the interviews. There are also limitations related to the sample size, as it does not allow generalizations to be made for the wider population (Gilding et al., 2014). For this reason, this study used the second stage research questionnaire for additional data collection.

Another limitation is that the interviews were conducted in just one industry. The interviews were conducted by phone, but in a future study, face-to-face interviews might provide additional information, such as facial expressions that cannot be perceived on the telephone. Also,

some interviewees were very sensitive to our interview questions; in a face-to-face situation, it might be easier to create a trusting environment. Also, longer face-to-face interviews would provide opportunities to conduct more in-depth analyses of the interview data. Knowledge creation and employee turnover are both complex processes, so deeper analyses should be conducted in the future.

Third, as Nonaka (1995) suggested, knowledge conversion is based on the interaction between tacit and explicit knowledge. This study evaluated new employees' knowledge transfer from the perspectives of ability, motivation, and opportunity. While these three variables cannot completely explain a new employee's knowledge transfer, this study was able to gain a partial understanding of the implications of employee turnover. However, the notion of knowledge creation used here originally came from a Japanese context, and many factors influenced this process. In the Chinese context, this study takes employee turnover into account, but adds the difficulty and complexity of realizing knowledge creation. In the future, tacit and explicit knowledge perspectives could be used to gain a further understanding of how a new employee's knowledge transfer influences knowledge creation and firm performance. One potentially useful way of discussing the conditions of knowledge creation in a Chinese context would be to conduct other surveys.

Fourth, this study did not include interviews in and surveys of all industry categories. The interviews were based on the automobile industry, and the questionnaire covered only a limited number of industries. Therefore, the results of this study may not be generalized to all industries.

The generalization of the findings to more industries would be possible if future studies can test this research model in other industries. Also, future studies would help in the generalization of the findings for different geographical regions of China.

Fifth, The Chinese context has been changing rapidly in recent years, and China's culture and environment differ from that of Japan, where the theoretical ideas of this study were developed (Burrows et al., 2005; Walsh et al., 2009). The current study has focused on the entire knowledge creation process and found that it can facilitate new employees' tacit and explicit knowledge sharing. It is possible that each component of the knowledge creation process exhibits different effects on firm performance in different organizational settings, such as in state-owned enterprises, the domestic private sector, wholly foreign-owned enterprises, and international joint ventures (Walsh et al., 2009). In the future, these impacts should be studied in relation to different aspects of knowledge creation and different types of organizations.

Sixth, future studies might focus on tracking employee turnover, and thus explore the reasons behind the turnover employees. Then, it would be possible to study the impact of employee turnover on both social capital and knowledge transfer. Kang and Kim (2013) found that the embedded resources dimension of social capital affects knowledge transfer inside a company, and external ties also provide divergent knowledge (Borgatti & Cross, 2003), it would be interesting to study whether internal or external ties affect knowledge transfer in the Chinese context. This is another interesting future research avenue.

Finally, it has been shown that new technologies, such as social media, facilitate knowledge sharing (Menolli, Cunha, Reinehr, & Malucelli, 2015). Also, technology affects employees' tacit knowledge sharing (Wipawayangkool & Teng, 2014). In future studies, it will be important to focus on how organizations can use new technologies to promote knowledge creation and to uncover the role of employee turnover in this context.

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