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Abstract

Purpose – *Several studies have explored the relationships among the multiple dimensions of knowledge governance mechanisms (KGMs) and knowledge sharing. However, knowledge governance issues and knowledge transfer processes remain under-researched. The empirical results of the relationships among KGMs, motivations to share knowledge and knowledge sharing behavior remain inconsistent. This paper aims at re-examining the mediating effects of knowledge sharing motivations and knowledge sharing opportunities on the relationship between KGMs and knowledge sharing behavior of repatriates at multinational corporations.*

Design/methodology/approach – *Survey data were collected from 140 repatriates from 66 multinational companies that operated in five different geographic locations. Structural equation modelling was used to assess the research model.*

Findings – *The empirical results indicate the mediating roles of knowledge sharing motivation and opportunity in the relationship between KGMs and the knowledge sharing behavior of repatriates. Two sets of KGMs – formal and informal mechanisms – have significant influence on knowledge sharing motivation and opportunity.*

Research limitations/implications – *This investigation focuses on the functions of KGMs that facilitate the knowledge sharing behavior of repatriates. The contextual effects of task-level, firm-level, and external environmental characteristics on knowledge sharing may need further studies to substantiate.*

Originality/value – *This study argues that even when employees are encouraged and rewarded by extrinsic and intrinsic motivations to share knowledge, effective knowledge sharing would not necessarily be guaranteed. This paper offers a conceptual framework where knowledge sharing motivations and opportunities simultaneously play the mediating roles in a successful knowledge sharing. The framework associates KGMs with knowledge sharing behavior and echoes the growing acknowledgement of the need for additional research on micro-foundations of knowledge sharing to complement the macro research.*

Keywords *Knowledge governance mechanisms, Knowledge sharing behavior, Knowledge sharing motivation, Knowledge sharing opportunity, Repatriate*

Paper type *Research paper*

1. Introduction

Knowledge governance is associated with the adoption of governance mechanisms for the processes of capturing, storing, sharing, creating and using knowledge (Boh, 2007; Davenport and Prusak, 1998; Foss *et al.*, 2010; Yang, 2011). Foss *et al.* (2010) defines ''knowledge governance'' as organizational design exercises aimed at influencing knowledge processes to create value. Knowledge sharing, the act of making knowledge available to others within an organization (Ipe, 2003), plays a critical role in knowledge governance. Due to the largely personal and tacit nature of knowledge, the process of knowledge sharing requires that employees who possess knowledge be positive about sharing behavior (Husted *et al.*, 2012). Tsai (2002) explicitly treats knowledge sharing as a

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crucial antecedent to knowledge creation. Knowledge sharing concerns the factors that motivate individuals in an organization to share the knowledge they have acquired or created with other employees (Bock *et al.*, 2005). Knowledge governance mechanisms (KGMs) can promote or discourage the transfer of knowledge.

Several studies have explored the relationships among the multiple dimensions of KGMs and knowledge sharing, enhancing our understanding of knowledge management. However, Foss *et al.* (2010) mention that the relationship between knowledge governance issues and knowledge transfer processes remains under-researched. Although scholars are focusing their research on the relationships among KGMs, motivations to share knowledge and knowledge sharing processes, their empirical results remain inconsistent.

Most investigations confirm that KGMs do facilitate knowledge sharing (Crowne, 2009; Furuya *et al.*, 2009; Liu and Liu, 2011), but other studies do not agree with these results. For example, Björkman *et al.* (2004) indicate that management compensation systems and the employment of expatriates do not impact knowledge transfer from the subsidiaries of multinational corporation (MNC) to other parts of the organization. Several empirical studies report that the presence of motivations had negative or insignificant impacts on knowledge sharing intentions, attitudes, or behaviors (Bock and Kim, 2002; Bock *et al.*, 2005; Lin, 2007; Wasko and Faraj, 2005). Quigley *et al.* (2007) indicate that the direct effects of social norms and incentives on knowledge senders' sharing behaviors are insignificant. Golden and Raghuram (2010) report that the use of electronic tools and face-to-face interactions do not affect knowledge sharing among teleworkers. Therefore, there is a need to re-examine the relationships between KGMs and knowledge sharing.

Motivational disposition and the existence of transmission channels in a knowledge source unit are two factors that influence knowledge transfer (Minbaeva, 2007). Most previous studies on knowledge sharing focus on the role of knowledge sharing motivation (Cabrera and Cabrera, 2005; Hall, 2001; Lazarova and Tarique, 2005; Martín-Cruz *et al.*, 2009; Minbaeva *et al.*, 2003) and ignore the role of knowledge sharing opportunities (Chang *et al.*, 2012; Ipe, 2003). By reducing the physical or psychological distance between people, organizations provide employees with opportunities to share knowledge. Therefore, it is likely that knowledge sharing behaviors are influenced not only by personal motivation but also by knowledge sharing opportunities. Effective knowledge management results provide individuals with opportunities to transfer knowledge (Argote *et al.*, 2003). Although some studies have shown that, in addition to motivation, KGMs also need to create opportunities for knowledge senders to share knowledge (Argote *et al.*, 2003; Chang *et al.*, 2012; Ipe, 2003), there is limited empirical evidence available about the joint effects and roles of motivation and opportunity on knowledge sharing.

Companies increasingly recognize knowledge sharing as an important element in gaining a competitive advantage (Wang and Noe, 2010), especially MNCs that face intense global competition (Lyu and Runyan, 2010; Michailova and Minbaeva, 2012; Minbaeva *et al.*, 2012). Knowledge sharing is operationalized in MNCs as either forward or reverse sharing, where forward denotes sharing by parent companies with foreign subsidiaries and reverse denotes sharing by subsidiaries with headquarters (Lyu and Runyan, 2010). Expatriates/repatriates can help to establish and expand an MNC's international business because they possess first-hand knowledge of particular cultural contexts, including information about specific markets and customers (Lazarova and Caligiuri, 2001; Oddou *et al.*, 2009), and they can facilitate the transfer of knowledge and applications from domestic to foreign units within MNCs.

Repatriates can be defined as employees who complete their international assignments and return to subsequent positions at their parent companies. Despite evidence emphasizing the importance of repatriation (Lazarova and Caligiuri, 2001), it has received much less attention than expatriates in the continuation of knowledge sharing after repatriation (Kraimer *et al.*, 2009; Reiche, 2012). As Oddou *et al.* (2009) mention, ''we know little about either the variables that affect repatriate transfer or how the process itself occurs.'' There are insufficient theoretical and empirical studies by management scholars regarding repatriate knowledge transferring issues.

Repatriates usually disappoint in the underutilization of their newly acquired skills and competencies (Wittig-Berman and Beutell, 2009). The repatriate's perception of underutilization, back in the parent company, had a direct effect on leaving the company (Baruch *et al.*, 2002). Repatriates with valuable skills or knowledge related to an MNC's global operations must be retained if companies are to obtain the benefits of their international assignments. The acquisition of international knowledge and skills, therefore, would arguably depend on an MNC's policies and practices related to knowledge management. When effective, such KGMs can help enhance repatriate satisfaction and commitment, reducing the repatriate's perception of underutilization. Unfortunately, there is little empirical evidence exploring the impacts of KGMs in international companies on repatriates' knowledge sharing.

This study argues that the motivation to share knowledge is insufficient for repatriates. KGMs not only promote the motivation to share knowledge but also establish knowledge sharing opportunities. Knowledge sharing motivations and opportunities complement each other and jointly provide a complete explanation of successful knowledge transfer. The goal of this study is to extend the motivational perspective and to frame a model to simultaneously delineate and test knowledge sharing motivations and opportunities as mediators between KGMs and knowledge sharing behaviors within MNCs. This study can contribute to a better understanding of intra-organizational knowledge sharing, especially in international businesses.

2. Theory and hypothesis

Previous studies from different points of view have identified several factors that influence intra-organizational knowledge transfer. From an agency theory perspective, due to the potential asymmetry between the goals of companies and their employees the latter may not act in the best interests of their employers. Agency theorists generally agree that a combination of outcome-based incentives and behavioral control mechanisms should be employed (Björkman *et al.*, 2004). From a social exchange perspective, anticipated reciprocal relationships capture employees' desires to maintain ongoing relationships with others, specifically regarding knowledge provision and reception (Bock *et al.*, 2005). Social networks and shared goals also significantly contribute to an individual's volition to share knowledge (Chow and Chan, 2008). These theories emphasize the effects of external or internal incentives and the importance of opportunities to promote knowledge sharing.

Knowledge management theory suggests that successful knowledge transfer depends on ability, motivation, and opportunity, which are important for the creation and transfer of knowledge (Argote *et al.*, 2003). Prieto Pastor *et al.* (2010) empirically examine the relationships between HR practices that impact employees' abilities, motivations, opportunities, and knowledge sharing. Their results show that HR practices that motivate and give employees opportunities to transfer knowledge significantly affect knowledge sharing, but HR practices that focus on employees' abilities have insignificant effects on knowledge sharing. Based on the abundant international experience and knowledge of repatriates, this study focuses on the impacts of KGMs that influence motivations and opportunities on repatriate knowledge sharing behaviors.

2.1 Motivation-driven and opportunity-driven knowledge sharing

Knowledge does not transfer easily unless the knowledge transfer agents (expatriates or repatriates) have sufficient motivations and opportunities to transfer knowledge (Chang *et al.*, 2012). From a motivation-driven perspective, the motivation of experts to help others is positively associated with knowledge sharing behavior (Wang and Noe, 2010). Studies based on agency theory (Björkman *et al.*, 2004), social exchange theory (Bock and Kim, 2002; Bock *et al.*, 2005; Tzafrir, 2005), social network and social capital perspectives (Tsai, 2002; Tsai and Ghoshal, 1998; Wasko and Faraj, 2005), and expectancy-value frameworks (Liu and Liu, 2011; Wang and Noe, 2010) have identified the effects of certain extrinsic and intrinsic motivations on knowledge sharing willingness. Perceived benefits, rewards, costs, inter-personal trust, reputations, shared norms, social structures and justice are the main factors that drive individuals to share knowledge. To share knowledge, repatriates must be

motivated to transfer their knowledge (Lazarova and Tarique, 2005). Motivation is the core proposition of these theories for increasing the perceived benefits of knowledge contribution and enhancing knowledge sharing.

It is not only knowledge sharing motivation but also knowledge sharing opportunities that enhance the likelihood that repatriates will share their overseas knowledge and work experience. Berends *et al.* (2006) note that the identification of opportunities by employees limits knowledge sharing in organizations. Research has shown that social relationships between knowledge sources and recipients facilitate knowledge sharing (Tsai and Ghoshal, 1998). Social relationships provide repatriates with interaction opportunities for knowledge sharing and reduce ''cost'' elements such as perceived risk and loss of value. In addition, individuals will be more likely to share knowledge when they perceive that there are convenient channels for knowledge sharing. Individuals may be less likely to share knowledge if they perceive that it requires much effort. The lack of opportunities to share is an organizational barrier to knowledge sharing (Gagné, 2009).

Ipe (2003) categorizes knowledge sharing opportunities as formal and informal. A formal knowledge sharing opportunity is a planned learning opportunity. Purposeful learning channels, developed by an organization for knowledge transfer, can be enhanced by company newsletters, trade magazines and trade association reports (Rulke *et al.*, 2000; Rulke and Zaheer, 2000). These documents can be designed not only to explicitly acquire and disseminate knowledge by creating a context within which to share knowledge but also to provide individuals with the tools that are necessary to do so (Bartol and Srivastava, 2002; Rulke and Zaheer, 2000). MNCs design opportunities for repatriates to work closely with other employees and encourage knowledge sharing through work teams (Cabrera and Cabrera, 2005; Mäkelä and Brewster, 2009).

Informal opportunities help repatriates interact with other people and develop respect and friendships, which influence their behavior (Nahapiet and Ghoshal, 1998). Rulke and Zaheer (2000) refer to informal learning opportunities that enhance knowledge sharing and learning through personal relationships and social networks as relational learning channels. Relational knowledge sharing opportunities facilitate the development of friendships, trust, respect, and teamwork (Ipe, 2003; Noorderhaven and Harzing, 2009). When a repatriate participates in an informal network or social community within an MNC, knowledge sharing can be easier, especially for tacit knowledge. Therefore, it is more likely that repatriates will share their overseas experiences when their MNCs offer purposeful relational opportunities to do so.

Knowledge is owned at the individual level (Okhuysen and Eisenhardt, 2002). Individual employees should be the starting point for understanding the issue of knowledge sharing (Mäkelä and Brewster, 2009). Certain factors at the individual level (such as lack of trust, fear of loss of power and superiority, and lack of a social network) and the organizational level (such as lack of an appropriate reward system and lack of sharing opportunities) are major factors that impede knowledge senders from sharing their knowledge (Minbaeva, 2007; Gagné, 2009). MNCs design and utilize KGMs to motivate repatriates or to provide repatriates with opportunities to transfer knowledge about their overseas experiences. To be effective for knowledge transfer by repatriates, motivations and opportunities must exist simultaneously. Motivations and opportunities can simultaneously serve as mediators in the relationships between KGMs and knowledge sharing behaviors.

2.2 The impact of formal KGMs on knowledge sharing motivations

Knowledge value implies that individuals can use knowledge to obtain status, power, and rewards (Gagné, 2009). Because of self-interest, individuals can violate professional norms for sharing knowledge (Hass and Park, 2010). Employees differ in their motivations to engage in knowledge sharing, but organizational design variables and HRM policies can influence certain motivations (Foss, 2009). People are motivated to share knowledge because they receive rewards for it (Boer *et al.*, 2011). Both intrinsic and extrinsic rewards are important to increase employees' willingness to share their knowledge with other workmates, especially tacit knowledge, which is more complex to transfer (Martín-Pérez *et al.*, 2012). The routing of information by organization members to other members is

positively related to the rewards they expect to receive from sharing information (Ipe, 2003). MNCs may implement certain mechanisms that influence the positive attitudes of repatriates toward knowledge sharing by providing incentives that motivate or elicit knowledge sharing.

Formal KGMs, such as performance evaluations, incentives and other reward systems, promotions, bonuses, performance-based pay, and training, are developed by MNCs to support the development of a knowledge sharing culture (Gagné, 2009; Wang and Noe, 2010). Formal KGMs provide excellent opportunities for organizations to communicate and create norms (Gagné, 2009), improve perceived job security (Oddou *et al.*, 2009), and enhance the knowledge sharing willingness of repatriates. Most of the previous empirical results confirm that knowledge sharing can be a criterion for performance evaluation and rewards that encourage repatriates to share their knowledge (Björkman *et al.*, 2004; Dyer and Nobeoka, 2000; Minbaeva *et al.*, 2003). We thus hypothesize the following:

H1. Formal KGMs have positive effects on knowledge sharing motivation.

2.3 The effect of formal KGMs on knowledge sharing opportunity

Formal KGMs can facilitate knowledge sharing opportunities in the following ways. First, formal KGMs can promote team building through extensive communication. Formal interventions through management meetings, internal conferences and forums, and intranet-based systems are designed to create more structured group discussions and enhance the communication of personally held information (Okhuysen and Eisenhardt, 2002). For example, repatriates can be required to write detailed reports and/or give extensive presentations, and a database of these reports and presentations can be created and continually updated (Lazarova and Tarique, 2005). Nadler and Tushman (1987) identify liaison positions, task forces, and permanent committees as some of the key formal structural mechanisms for integrating multiple units of an organization. Repatriates can also be assigned to serve as official liaisons between the subsidiaries that hosted them and their corporate headquarters or as members of active learning teams (Lazarova and Tarique, 2005). As a result of formal KGMs, employees spend more time in inter-unit teams and task forces (Noorderhaven and Harzing, 2009), which enhances team building.

Second, formal KGMs can promote teamwork through performance evaluations and compensation. The work unit is the *locus* of both interaction patterns and intra-group social influence processes for repatriates (Oddou *et al.*, 2009). For example, researchers have found that team-oriented incentive structures can facilitate cooperation (Bartol and Srivastava, 2002; Bryant, 2005; Quigley *et al.*, 2007). In particular, a peer mentoring team can be more effective when it creates a more formal and developmental relationship between workers with more and less experience who need to share information (Bryant, 2005). A worker may choose to share knowledge because they share a problem with other employees (Berends *et al.*, 2006). To encourage repatriates to share their experience, an organization needs to take advantage of governance mechanisms to promote team building activities as knowledge sharing opportunities. Therefore, MNCs' formal KGMs will facilitate the establishment of knowledge sharing opportunities. Based on the foregoing, we predict the following:

H2. Formal KGMs have positive effects on knowledge sharing opportunities.

2.4 The impact of informal KGMs on knowledge sharing motivations

Social motivation factors, such as social norms, teamwork and trust, are derived from informal KGMs and may drive the willingness of employees to share knowledge (Quigley *et al.*, 2007). Knowledge sharing is a social process. Knowledge sharing norms that are facilitated by informal KGMs also provide social pressure regarding whether to perform knowledge sharing (Gagné, 2009) and can be created through socialization processes (Cabrera and Cabrera, 2005). Repatriates are newcomers who must undergo re-socialization because, during their work overseas, they and their sociopolitical environments have changed (Jassawalla and Sashittal, 2009). Repatriates will undergo socialization processes to learn the attitudes and behaviors of the existing members of their new work units (Oddou *et al.*, 2009). When repatriates accept their organization's goals and

values via the socialization process and enhance their desire to remain in their organization, their willingness to share their knowledge can increase (Oddou *et al.*, 2009).

Knowledge sharing can be regarded as a form of social exchange behavior. Knowledge providers may evaluate the value of knowledge sharing based on the social exchange relationship between the communicators. Informal KGMs may help develop the ability of employees to make good personal impressions on others. To maintain relationships with their colleagues, repatriates will demonstrate a high degree of willingness to share knowledge. Greater interpersonal familiarity and personal affinity also can be expected to increase the openness of communication between interacting parties (Gupta and Govindarajan, 2000). Thus, informal KGMs facilitate social rewards, such as recognition, reputation or group membership, which can be an incentive for people to share knowledge (Boer *et al.*, 2011; Wasko and Faraj, 2005).

Social ties among individuals within social networks shape an environment that is conducive to knowledge sharing and facilitate knowledge sharing motivation (Cabrera and Cabrera, 2005; Wang and Noe, 2010). Bock and Kim (2002) indicate that the improvement of working relationships is positively related to knowledge sharing motivation. The strength of the relationship between knowledge sender and recipient is associated with the extent of their knowledge sharing willingness. The personal tie would be close when knowledge is shared mainly through person-to-person contacts (Boh, 2007). Thus, we hypothesize the following:

H3. Informal KGMs have positive effects on knowledge sharing motivation.

2.5 The effect of informal KGMs on knowledge sharing opportunities

Some informal KGMs, such as water coolers and cafeterias lounge areas, eating lunch together, communities, and athletic teams, can be seen as socialization efforts that are designed to bring people together in informal settings, increase the frequency of interactions among workers, and provide opportunities to build relationships and social capital with colleagues (Cabrera and Cabrera, 2005). Reciprocal relations can be expressed after brief initial contacts or speed dating (Curşen *et al.*, 2010). Informal KGMs build interpersonal familiarity, personal affinity, and convergence in cognitive maps among repatriates and other personnel (Dyer and Nobeoka, 2000; Gupta and Govindarajan, 2000). Interpersonal ties provide an opportunity for the flow of information and resources (Björkman *et al.*, 2004). Intensive social interactions provide opportunities for the social construction of knowledge in learning dialogues (Noorderhaven and Harzing, 2009).

Informal KGMs are primary means for establishing interpersonal relationships such as respect, friendship, trust and norms (Cabrera and Cabrera, 2005; Yamao *et al.*, 2009). Trust is the relinquishing of one's personal control or power to another person with the expectation and hope that the other party will honor a duty or social contract inherent in the relationship (Caldwell and Hansen, 2010). Trust affects a person's belief in the positive motives of others, information sharing, and close coordination (Golden and Raghuram, 2010). For example, mentoring can provide an opportunity for a mentor and a repatriate to improve their mutual trust (Bryant, 2005). By establishing social relationships, repatriates reduce their distrust of colleagues and create opportunities for knowledge sharing. Distrust is a main reason employees conceal their knowledge (Connelly *et al.*, 2012). In the reciprocity process, employees become more disposed to reciprocate because they have more trust in others (Tzafrir, 2005). These informal KGMs facilitate social interactions among individuals to enhance knowledge sharing opportunities. We therefore suggest the following hypothesis:

H4. Informal KGMs have positive effects on knowledge sharing opportunities.

2.6 The impact of knowledge sharing motivation on knowledge sharing behavior

The intention of a person to engage in a specific behavior is determined by their attitude towards that behavior (Cabrera and Cabrera, 2005). Many authors have emphasized the role of motivation when studying knowledge sharing processes (Bock *et al.*, 2005; Minbaeva *et al.*, 2003; Quigley *et al.*, 2007). Motivation is a critical factor for the success of knowledge sharing (Lazarova and Tarique, 2005). Consistent with previous studies, we argue that

knowledge sharing motivation may play a mediating role in explaining the relationship between KGMs and the repatriates' knowledge sharing behavior. Repatriates' knowledge sharing behavior will be influenced by their motivation to share knowledge. Thus, we propose the following hypothesis:

H5. Knowledge sharing motivation has a positive effect on knowledge sharing.

2.7 The effect of knowledge sharing opportunity on knowledge sharing behavior

Work teams give employees the opportunity to work closely with others and encourage knowledge sharing, especially when rewards are based on team results. Lazarova and Tarique (2005) propose that tacit knowledge can be transferred best through personal transfer mechanisms such as global teams. When there are mechanisms for collaboration, such as teams and norms, knowledge transfer behavior is facilitated (Gooderham *et al.*, 2011). Thus, we propose that purposeful knowledge sharing opportunities have a positive influence on knowledge sharing behavior.

Mutual trust between knowledge senders and recipients, which may be characterized by openness, honesty, and respect, makes it more likely for knowledge sharing to occur through open communication (Golden and Raghuram, 2010). Trust has been confirmed as an important factor that facilitates knowledge sharing (Oddou *et al.*, 2009). Relational knowledge sharing opportunities facilitate face-to-face communication, which allows for the building of trust that, in turn, is critical for knowledge sharing behavior.

The initial offer of knowledge to a newcomer in an organization entails a friendly relationship, and the individual who has received the knowledge feels an obligation to reciprocate. Thus, it is not only extrinsic benefits but also intrinsic benefits from social associations that should be considered as key determinants of knowledge sharing (Bock and Kim, 2002). The likelihood of knowledge transfer across units is greater when a close relationship exists between the sender and the recipient (Gooderham *et al.*, 2011; Ipe, 2003). Interactions with other people through relational knowledge sharing opportunities help repatriates to develop respect and friendship with knowledge recipients and influence their knowledge sharing behavior (Ipe, 2003; Nahapiet and Ghoshal, 1998). Relational knowledge sharing opportunities result in repatriates having the belief that their mutual relationships with others can be improved through their knowledge sharing behaviors (Bock *et al.*, 2005). Therefore, we expect the following:

H6. Knowledge sharing opportunities have positive effects on knowledge sharing behaviors.

3. Methods

3.1 Research sample and data collection

In this work, MNCs were selected from the *2007 Directory of Foreign Investment List* published by the Ministry of Economic Affairs of Taiwan. This investigation excluded those companies that began their overseas operations after 2000 because it is less likely that MNCs established relatively recently have repatriates, and new subsidiaries can suffer from the liability of newness, which limits their capabilities to transfer knowledge from subsidiaries to MNCs (Rabbiosi and Santangelo, 2013). A repatriate was defined as an individual who had returned from an assignment in a host-country subsidiary or branch office that lasted for over six months. Data collection was divided into two stages. In the first stage, we contacted the HR department in each company to ensure that they had repatriates who had finished their assignments, and we requested their cooperation with this study. The HR departments at 351 MNCs agreed to support this study.

In the second stage, we sent questionnaires with cover letters and self-addressed return envelopes to the 351 HR departments that had agreed to administer our questionnaires to their repatriates. Two stages of follow-up were performed by telephone, fax, and email during the data collection process to increase the response rate. The first follow-up stage was carried out two weeks after the questionnaires were delivered. The second follow-up

stage was carried out two weeks after the first follow-up stage was finished for cases that had not responded. A total of 145 questionnaires were returned, and 140 were usable, i.e. completely filled in. The participants were from 66 multinational companies that operated in five different geographic locations.

3.2 Non-response bias and common method variance test

Following Armstrong and Overton's (1977) procedure, we performed a t-test by comparing early and late respondents in terms of capital and accumulated foreign investment to test for non-response bias. Data were collected from the *Market Observation Post System in Taiwan* for the first quarter of 2006. The *t*-test results were insignificant in terms of capital ($t = 1.325$, $p > 0.1$) and accumulated foreign investment ($t = 0.465$, $p > 0.1$), suggesting that the non-response bias is insignificant.

In this study, we asked subjects to subjectively evaluate all constructs, including their knowledge sharing behavior. To check for the potentially common method bias, we took the following steps. First, we utilized the Harman's one-factor method, as suggested by Minbaeva *et al.* (2003) and Podsakoff and Organ (1986), and all the questionnaire items were combined in a factor analysis. An unrotated factor analysis extracted five factors with eigenvalues greater than one. The first factor explained 39.65 percent of the variance – under the crucial 50 percent level – suggesting that the common method bias was not a problem (Hair *et al.*, 1998). Second, we conducted a confirmatory factor analysis (CFA) that assigned all variables to a single latent variable as the null model. The results indicated that the single-factor model did not provide a good fit to the data (χ^2=868.84, df = 119, χ^2/df=7.30, GFI = 0.52, AGFI = 0.38, CFI = 0.49, RMSEA = 0.213). Third, we compared the measurement model corresponding to the theoretically derived factor structure of measurement instruments that contained five latent variables. The χ^2 difference test also demonstrated a significant difference between the null model (single-factor model) and the five-factor model ($\Delta\chi$=645.21, $p < 0.001$). The evidence from the above tests showed that the common method bias did not seriously distort the analytical results.

3.3 Measurements

Our research dimensions included formal KGMs, informal KGMs, knowledge sharing motivation, knowledge sharing opportunity, and knowledge sharing behavior. This survey applies a seven-point scale to measure each item.

KGM scales included formal and informal KGMs. Formal KGMs measure the strength of formal mechanisms used by the MNCs in terms of knowledge sharing. We constructed the measures based on the antecedents of formal mechanisms, which included knowledge sharing as performance evaluation and reward criteria, internal training, and company newsletters or journals (Björkman *et al.*, 2004; Rulke and Zaheer, 2000; Turner and Makhija, 2006). Informal KGMs measure the strength of informal mechanisms designed and used by the MNCs in terms of knowledge sharing. The development of this measure was based on the work of Davenport and Prusak (1998), Gomez and Sanchez (2005), Turner and Makhija (2006) and Wenger *et al.* (2002). The items were athletic teams, water cooler areas, cafeterias, and lounge areas.

Knowledge sharing motivation is one's attitude and positive felling about voluntarily contributing and sharing their knowledge (Bock and Kim, 2002; Liu and Liu, 2011). Four items were adapted form Hall (2001) and Hendriks (1999) to measure the extent of the willingness and motivation of repatriates to share overseas knowledge and experience with others.

Knowledge sharing opportunity scales including purposeful sharing opportunities and relational sharing opportunities. Opportunities to share knowledge in an organization can be purposive and relational in nature (Ipe, 2003). Purposeful sharing opportunities are designed to explicitly acquire and disseminate knowledge (Ipe, 2003) as well as facilitate purposeful learning that emphasizes team building with co-workers (Björkman *et al.*, 2004; Rulke *et al.*, 2000). Relational knowledge sharing opportunities facilitate face-to-face communication as well as the evaluation of the relationships among repatriates and other members of MNCs (for example, mutual trust, respect, and attachment). Four items were

created for the measurement of knowledge sharing opportunity from the concepts of Cabrera and Cabrera (2005) and Ipe (2003).

Knowledge sharing behavior measures the extent to which the repatriates shared overseas knowledge and experience with others. Three items adapted form Bock and Kim (2002) and Bryant (2005) were used to measure repatriates' knowledge sharing behavior. Respondents were asked to indicate the level of knowledge transfer they have shared with the colleagues in his/her department or other departments.

3.4 Reliability and validity

The Cronbach's αs of the five constructs shown in Table I all exceed 0.8, indicating good reliabilities. To evaluate the construct validity of the measures, we conducted CFA using LISREL 8.70 with the maximum likelihood method (Jöreskog and Sörbom, 2004). The CFA results demonstrated that our five-factor measurement model had a satisfactory fit ($\chi^2 = 155.11$ ($p < 0.05$), df = 94, χ^2/df = 1.65, GFI = 0.88, NFI = 0.93, CFI = 0.97, RMSEA = 0.068). Although the GFI value was slightly below the recommended threshold

Table I The values of SMC, CR and AVE from CFA for main research variables

Measure items	*Means (SD)*	*Estimates (SE)*	t-*value*	*SMC*	*CR*	*AVE*	*Cronbach's α*
Formal KGMs							
Knowledge sharing is an index of performance evaluation and rewards (X_1)	4.75 (1.54)	1.15 (0.13)	8.91***	0.59	0.89	0.69	0.90
Repatriates are invited as instructors in internal training (X_2)	4.51 (1.48)	1.26 (0.08)	10.24***	0.69			
There are company newsletter or journal to encourage knowledge sharing (X_3)	4.41 (1.46)	1.21 (0.12)	10.11***	0.67			
Informal KGMs							
There are water-cooler, coffee lounge for colleagues to make friendship (X_4)	4.72 (1.61)	1.48 (0.16)	9.03***	0.56	0.87	0.70	0.86
There are leisure activities for colleagues to make friendship (X_5)	4.72 (1.60)	1.24 (0.17)	7.51***	0.87			
There are athletic team or birthday party for colleagues to make friendship (X_6)	4.83 (1.76)	1.17 (0.18)	6.56***	0.66			
Knowledge sharing motivation							
Willing to share my experience in an easily understand manner (Y_1)	5.56 (1.00)	0.77 (0.08)	9.30***	0.64	0.85	0.60	0.85
Willing to be recorded of my overseas experience (Y_2)	5.32 (1.22)	1.01 (0.10)	10.16***	0.53			
Willing to demo my over sea experience in verbal or personally show (Y_3)	5.13 (1.32)	0.92 (0.12)	7.99***	0.51			
Willing to take the initiative acts to share my overseas experience (Y_4)	5.62 (1.13)	0.96 (0.09)	10.48***	0.68			
Knowledge sharing opportunity							
There are many opportunities for repatriates to form a good work team with other co-workers (Y_5)	4.50 (1.33)	1.08 (0.11)	9.63***	0.68			
There are many opportunities for repatriates to get together with other co-workers in leisure time (Y_6)	4.92 (1.30)	1.11 (0.11)	10.61***	0.72	0.92	0.78	0.91
Repatriates can form good relationship, mutual trust, and respect with other co-workers (Y_7)	5.09 (1.16)	1.06 (0.09)	11.96***	0.85			
There are close attachments between repatriates and other co-workers (Y_8)	5.02 (1.28)	1.16 (0.10)	16.10***	0.78			
Knowledge sharing behavior							
I usually tells others about my oversea experience initiative (Y_9)	5.25 (1.28)	1.11 (0.10)	11.47***	0.73	0.85	0.65	0.85
I usually share my oversea knowledge and experience when I participate in meeting or discussion (Y_{10})	5.33 (1.11)	0.97 (0.08)	11.51***	0.70			
I usually offer opportunities for less experienced colleagues to learn my oversea experience (Y_{11})	5.38 (1.04)	3.11 (0.20)	5.21***	0.53			

Notes: Significant at: *$p<0.05$, **$p < 0.01$ and ***$p < 0.001$; $n = 140$

of 0.90, the values of both NFI and CFI exceeded 0.90. These findings indicate that the measurement model has a good model-to-data fit. Furthermore, the ratio of χ^2 to the degrees of freedom was 1.14 (any value below 2 for this ratio indicates a good fit). Table I presents the values of the composite reliability (CR), the squared multiple correlation (SMC), and the average variance extracted (AVE). The CR values of our study ranged from 0.80 to 0.92, with all variables above 0.70; the SMC values ranged from 0.51 to 0.85 and were all above 0.40; and the AVE values ranged from 0.6 to 0.78. These results indicate that our measures had good internal consistency and convergent validity (Bagozzi and Yi, 1988).

To assess discriminant validity, Fornell and Larcker (1981) suggested that the square root of AVE should be greater than the correlation coefficient in the corresponding columns and rows. Table II shows the means, standard deviations, and correlation coefficients of the study variables. This table reveals that the square root of each AVE exceeds the correlation coefficient in the corresponding columns and rows, indicating that these measures have good discriminant validity.

4. Results and discussion

Our theoretical model and hypothetical relationships were tested using LISREL 8.70. The results revealed that our theoretical model gave an adequate fit to the data (χ^2=158.14, df = 97, χ^2/df=1.63, GFI = 0.88, AGFI = 0.83, NFI = 0.93, TLI = 0.97, CFI = 0.97, RMSEA = 0.067). Figure 1 shows the parameter estimates for the structure equation model.

Empirical findings indicate that formal KGMs have a positive and significant effect on knowledge sharing motivation (*H1*: $\gamma(1,1) = 0.29$, $t = 2.84$, $p < 0.01$). If organizations build formal KGMs, repatriates will be highly willing to share their overseas experience. These mechanisms could include issuing a company newsletter or journal to encourage knowledge sharing, invite repatriates as teachers in internal training, and creating a close connection between performance evaluation, reward system and knowledge sharing. The results also confirm hypothesis *H3*: informal KGMs have a positive influence on knowledge sharing motivation (*H3*: $\gamma(1,2) = 0.30$, $t = 2.97$, $p < .01$). When coffee lounge and leisure activities are available for employees to make friends easily, repatriates will be highly willing to share their overseas experience.

H2 and *H4*, which predict that formal KGMs and informal KGMs have positive effects on knowledge sharing opportunity, were also supported ($\gamma(2,1) = 0.39$, $t = 3.79$, $p < 0.001$; $\gamma(2,2) = 0.29$, $t = 2.71$, $p < 0.01$). Hence, the use of formal or informal KGMs significantly strengthens the opportunity for repatriates to create mutual trust and respect with their coworkers. The results obtained in the empirical analysis show that formal KGMs are more important mechanisms for knowledge sharing opportunity.

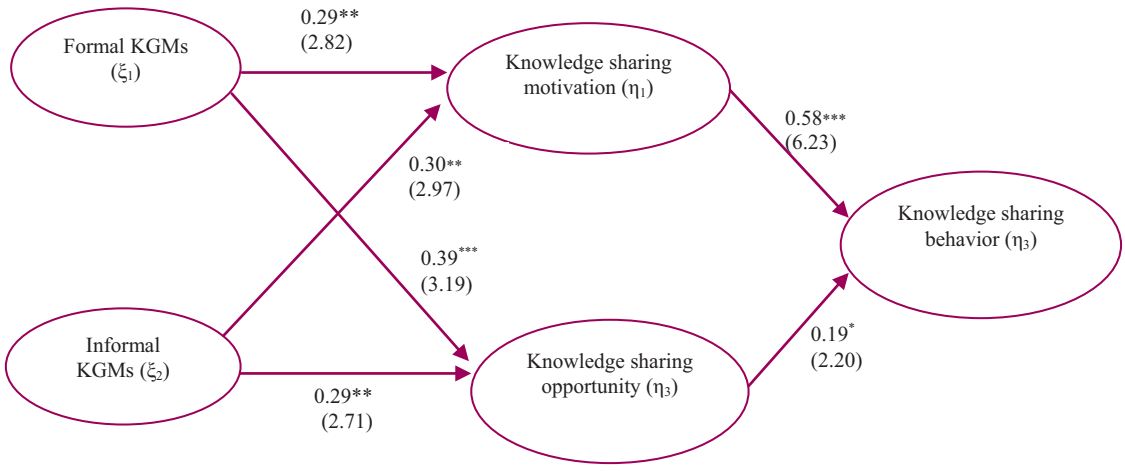
Finally, the empirical results indicate that knowledge sharing motivations and opportunities have positive and significant effects on knowledge sharing behavior ($\beta(1,1) = 0.58$, $t = 6.23$, $p < 0.001$; $\beta(1,2) = 0.19$, $t = 2.20$, $p < 0.05$), which supports *H5* and *H6*. However, the effects are particularly strong in relation to knowledge sharing motivation.

Table II Descriptive statistics and correlations between constructs

Variables	*Mean*	*SD*	*(a)*	*(b)*	*(c)*	*(d)*	*(e)*
(a) Formal KGMs	4.54	1.30	*0.83*	0.37**	0.55**	0.55**	0.43**
(b) Informal KGMs	4.76	1.47	0.72	*0.84*	0.23*	0.28**	0.27**
(c) Knowledge sharing motivation	5.43	0.96	0.54	0.33	*0.78*	0.56**	0.73**
(d) Knowledge sharing opportunity	4.70	1.20	0.76	0.49	0.65	*0.82*	0.56**
(e) Knowledge sharing behavior	5.32	1.00	0.56	0.40	0.72	0.67	*0.81*

Notes: Significant at: *$p < 0.05$ and **$p < 0.01$ (two-tailed); the numbers in italics in the diagonal row are square roots of the average variance extracted; the numbers on the upper-right along with the diagonal row are correlation coefficients; whereas the numbers at the left corner below the diagonal row are co-variances

Figure 1 Model estimation results



Notes: The figure given are the path parameters estimated for the structure with *t* value written in parentheses.
**p*: < 0.05; ***p*: < 0.01; ****p*: < 0.001

To further confirm the mediating effects of knowledge sharing motivations and knowledge sharing opportunities, we tested three alternative models. We separately added a direct path from formal KGMs to knowledge sharing behavior in Competing Model 1 and a direct path from informal KGMs to knowledge sharing behavior in Competing Model 2. Table III compares the results of the hypothesized model and the competing models. The fit indexes revealed that Competing Model 1 and Competing Model 2 did not fit better than the hypothesized model ($\Delta\chi^2(1)=0.18$, $p > 0.05$; $\Delta\chi^2(1)=1.42$, $p > 0.05$). The structure equation model results also showed that formal and informal KGMs did not have a significant effect on knowledge sharing behavior ($\beta_{formalKGMs}=0.04$, $p > 0.05$; $\beta_{informalKGMs}=0.07$, $p > 0.05$). These results indicated that knowledge sharing motivation and knowledge sharing opportunity play a full mediating role in the relationship between KGMs and knowledge sharing behavior.

To ensure the robustness of this structural model in a small sample, we compared the maximum likelihood and bootstrap results. Table IV indicates similar results across maximum likelihood and bootstrapping, giving further confidence to our findings.

In summary, because all hypotheses are confirmed, the results provide substantial evidence that formal/informal governance mechanisms affect the level of knowledge sharing motivation and opportunity, which ultimately affect knowledge sharing behavior.

5. Discussion

Several studies have investigated knowledge sharing. Most of these works were conducted from motivation-driven perspective, exploring relationships between antecedent motivators and knowledge sharing. In this study, we propose an opportunity-driven perspective that to shorten the distance between repatriates and coworkers facilitates knowledge sharing.

Table III Comparisons between the hypothesized model and competing models

	χ^2	$\Delta\chi^2$	*df*	χ^2/df	*NFI*	*TLI*	*CFI*	*RMSEA*	*GFI*	*AGFI*
Hypothesized model	*158.14*	–	*97*	*1.63*	*0.93*	*0.97*	*0.97*	*0.067*	*0.88*	*0.83*
Competing model 1	158.32	0.18	96	1.65	0.93	0.97	0.97	0.068	0.88	0.82
Competing model 2	156.72	1.42	96	1.63	0.93	0.97	0.97	0.067	0.88	0.83

Table IV Robust test results of this investigation

Path	ML estimation			Bootstrap estimation				
	Estimate	*SE*	*CR*	*SE*	*SE-SE*	*Mean*	*Bias*	*SE-Bias*
Formal KGMs → knowledge sharing motivation	0.286	0.102	2.807	0.077	0.001	0.142	−0.006	0.002
Formal KGMs → knowledge sharing opportunity	0.381	0.122	3.122	0.082	0.001	0.194	0.003	0.002
Informal KGMs → knowledge sharing motivation	0.280	0.100	2.799	0.078	0.001	0.159	0.012	0.002
Informal KGMs → knowledge sharing opportunity	0.301	0.100	2.740	0.054	0.001	0.130	−0.002	0.001
Knowledge sharing motivation → knowledge sharing behavior	0.572	0.093	6.130	0.182	0.003	0.768	0.002	0.004
Knowledge sharing opportunity → knowledge sharing behavior	0.194	0.089	2.171	0.282	0.004	0.371	0.045	0.006

The results of the study show that both formal and informal KGMs have positive effects on the enhancement of knowledge sharing motivations and the creation of knowledge sharing opportunities. The relationship shown to exist between knowledge sharing motivation and reward system, internal training, internal newsletter, leisure activities and friendly office design indicates the importance of such KGMs as prerequisites for repatriates' knowledge sharing willingness. Building friendships between repatriates and coworkers through arranging informal social activities and improving office design can play an important role in helping repatriates build knowledge sharing opportunities.

Such KGMs must be strongly emphasized in organizational design and culture. As Martín-Pérez *et al.* (2012) emphasize both intrinsic and extrinsic rewards are important to increasing employees' willingness to share their knowledge with their coworkers, especially concerning tacit knowledge, which is more complex to transfer. MNCs need to foster the motivation of repatriates through connecting knowledge sharing with a formal reward system and simultaneously creating an appropriate environment that encourages opportunities such as friendship and trust among coworkers.

Preset activities could focus on fostering relationships among employees, cultivating mutual trust in the workplace, and encouraging knowledge sharing in action. KGMs can create knowledge sharing opportunities for repatriates who return from foreign subsidiaries and can reduce distance between employees in the parent company. Lyu and Runyan (2010) propose that reverse knowledge sharing is equally important to corporate growth. Providing the home office staff with training and orientation about the practices of the foreign market could help facilitate knowledge transfer, and show appreciation for the skills and experience of the repatriate (Cox *et al.*, 2012).

The process of repatriate knowledge transfer should be one of the core activities of knowledge management through which repatriates can contribute their valuable international knowledge and experience to knowledge-based resources and the competitive advantages of their organization. However, organizations do not own the intellectual assets of their employees and cannot coerce workers to transfer their knowledge to others (Connelly *et al.*, 2012). Thus, an appropriate organizational design and culture (formal and informal KGMs) that can promote repatriates' knowledge sharing behavior is very important.

6. Conclusions

This paper addressed motivation and opportunity-driven perspectives to re-examine this issue, with a focus on the mediating roles of knowledge sharing motivation and opportunity. The findings support the mediating roles of knowledge sharing motivation and opportunity in the relationship between KGMs and the knowledge sharing behavior of repatriates. The model developed in this study goes beyond previous efforts not only by examining the relationships among knowledge sharing motivation, knowledge sharing opportunity and knowledge sharing behavior but also by delineating between two sets of KGMs – formal and

informal mechanisms – that influence knowledge sharing motivation and opportunity. Therefore, this study provides a theoretical model to explain differences in individual knowledge sharing behavior and also is a response to practical needs to prompt repatriates' knowledge sharing within the context of international organizations.

6.1 Theoretical implications

Drawing on agent theory, social exchange perspective, and social network view, this study makes several major contributions. First, the study provides an explanation for the inconsistent results found in previous researches regarding the effects of KGMs on knowledge sharing behaviors.

Second, knowledge is stored by the members of an organization, and a micro approach is needed for studies of the relationships between KGMs and knowledge sharing behavior (Minbaeva *et al.*, 2012). Our framework associates KGMs with knowledge sharing behavior, and echoes the growing acknowledgement of the need for additional research on the micro-foundations of knowledge sharing to complement the macro research (Michailova and Mustaffa, 2012; Minbaeva *et al.*, 2012).

Third, although some scholars have argued that knowledge sharing opportunities and motivations are critical facilitators in the knowledge transfer processes (Ipe, 2003; Rulke and Zaheer, 2000), there has been little research investigating the role of knowledge sharing opportunities. This paper offers a conceptual framework where knowledge sharing motivations and opportunities simultaneously plays mediating roles in a successful knowledge sharing. In particular, we argue that KGMs not only encourage knowledge sharing motivations but also create knowledge sharing opportunities for knowledge senders. Our finding confirm the empirical results of Gooderham *et al.* (2011), namely, that relational opportunity (social capital) has a positive impact on knowledge transfer.

Finally, notwithstanding the criticality of knowledge outflows and inflows within MNCs, most empirical investigations emphasize the importance of knowledge outflows from the parent company to its subsidiaries rather than knowledge inflows from subsidiaries to their parent company. Our findings advance scholarly understanding by showing that the reverse knowledge transfer behavior of repatriates is influenced by KGMs through increasing knowledge sharing motivation and opportunity. A proposed model must incorporate repatriation and knowledge management research. This framework extends our understanding of how MNCs can manage the process of knowledge inflow through repatriates.

6.2 Managerial implications

Organizations need to exploit their existing knowledge-based resources more effectively (Wang and Noe, 2010). There is a surprisingly strong tendency for firms to neglect knowledge transfer by repatriates who return from overseas assignments (Lyu and Runyan, 2010; Wittig-Berman and Beutell, 2009). Because repatriates play such an important role in bringing critical international knowledge and expertise with them from their overseas experiences and serving as facilitators for knowledge transfer and applications within MNCs (Lazarova and Tarique, 2005), MNCs should utilize and leverage repatriates to enhance corporate productivity (Furuya *et al.*, 2009).

Effective knowledge sharing behaviors are promoted by both formal and informal mechanisms. Companies desiring to institutionalize knowledge sharing behaviors must foster facilitative work contexts (Bock *et al.*, 2005). By identifying the effectiveness of KGMs, this study has contributed to understanding the actions companies can take to create facilitative work contexts. Our findings show the importance of various KGMs for providing repatriates with both motivations and opportunities to share knowledge. However, performance appraisals and compensation systems with knowledge sharing considerations are essential for generating knowledge sharing motivations and opportunities because they provide repatriates with incentives to share knowledge. Inviting repatriates as instructors in training programs and issuing internal newsletters to encourage knowledge sharing also successfully support knowledge motivations and

opportunities. Moreover, building trust and collaborative relationships among employees are good ways of increasing knowledge sharing. Strong social networks can value and support individual contributions (Prieto Pastor *et al.*, 2010).

Scholars argue about whether it is important for MNCs to know how to facilitate the transfer of knowledge from their repatriates and utilize this knowledge to enhance their competitive advantage. However, according to our findings, the presence of repatriates with motivations to share their knowledge is insufficient for complete knowledge transfer. MNCs need to design and use KGMs to develop knowledge sharing opportunities such as the formation of good working teams and strong attachments with coworkers, for repatriates to engage in knowledge sharing across individual-group boundaries. This study can help MNCs increase their returns on investments made in international assignments.

Therefore, MNCs would need to implement formal KGMs as well as informal KGMs to actively harvest knowledge throughout the expatriation-repatriation of their employees. Proper KGMs should be designed to convert tacit knowledge into explicit knowledge to guarantee that knowledge remains in the MNC.

6.3 Limitations and suggestions for further research

We note that our study has some limitations. First, the sharing and utilization of knowledge is a critical issue for organization with multilevel characteristics (Quigley *et al.*, 2007). This framework focuses on the functions of KGMs to facilitate the knowledge sharing behavior of repatriates. We do not explore the contextual effects of task-level, firm-level, and external environmental characteristics. Future studies could include these factors and use multilevel techniques (for example, hierarchical linear models) to test multilevel frameworks. Second, the shortcomings in our study included the use of perceptual instruments and self-reporting to measure the variables and possible limitations by the common method variance risk. Evaluation apprehension may result from self-perception (Wang and Noe, 2010). Future research could combine data gathered from multiple informants and use objective measures to increase measurement validity. Third, this study highlights the importance of repatriates' knowledge sharing behaviors in MNCs. As Yang (2010) demonstrates the transfer of individual knowledge or experience needs to be integrated into organizational assets or capability. This step goes beyond the scope of this study. Finally, we lack a list of repatriates, and it is not possible to confirm the population we studied. It may be necessary to establish a database of repatriates for future studies.

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