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**THE INFORMAL ENTANGLING OF KNOWLEDGE, GUANXI AND TECHNOLOGY:
EVIDENCE FROM CHINA AND A NEW THEORY**

ABSTRACT

Knowledge, guanxi and technology are mutually entangled in the workplace in China. We document how these three concepts interact and pay particular attention to guanxi – the mutually reciprocal relationships that govern Chinese social and work lives. We draw upon multiple sources of evidence to develop six theoretical propositions. Initial validation of the propositions is conducted by studying the working practices of Chinese knowledge workers. Given the lack of non-Western, emic research of how knowledge is sought and shared, we believe that our findings and associated theorizing make a significant contribution to the knowledge management (KM) literature. We consider the implications for future KM research and practice and provide specific advice aimed at developing a more global understanding of informal knowledge management.

Keywords: knowledge management, Chinese management, guanxi

1. INTRODUCTION

The appropriate management of knowledge resources is generally regarded as critical to organizational competitiveness and has been researched extensively for many years. The role of information technology (IT) in knowledge management (KM) has also been a focus of research, with thousands of published articles. Reflecting real-world practice, IT-based KM research has investigated organizational initiatives, team behavior and individual employee practices. Accounts that privilege an organizational perspective often take a formal, public and centralized approach (e.g. Kock and McQueen, 1998; Markus, 2001). Conversely,

research at the team and especially individual levels tends to promote the need for a more informal, private and personal approach that identifies knowledge resources as being created by and belonging to the team or individual, not the organization (Newell and Edelman, 2008; Topi, Lucas & Babaian, 2006).

The public-private dichotomy of this research also reflects societal norms present in the prevailing sociocultural environment. Most of this research is based in the business cultures of Western societies. Correspondingly, the theory developed to date tends to reflect the sociocultural norms of these societies. Thus Alavi and Leidner (2001) make extensive reference to the Western experience of KM, but largely ignore non-Western experiences. Similarly, in MIS Quarterly's (2005) special issue on Knowledge Management, only one of the accepted papers (Ryu, Kim, Chaudhury & Rao, 2005) referenced a non-Western perspective of the phenomenon, with an etic study of Korean knowledge sharing practices. However, the research model was based on constructs of Western origin, ignoring indigenous Korean antecedents of knowledge sharing behavior.

An increasing amount of quality research about KM in non-Western contexts has been published in the last decade. This research has revealed several significant differences in KM practice compared to Western contextual norms. In the Chinese context, these differences relate primarily to interpersonal relationships and the informality of communication. A key construct for the Chinese is *guanxi*. *Guanxi* broadly refers to the mutually and reciprocally obligatory ties that bind individuals together in a fashion far stronger than notions of social capital or 'relationships' in the Western experience. As we explore in this paper, *guanxi* is intricately entangled with technology and the processes of knowledge seeking and sharing.

Our purpose is to integrate a review of the relevant literature on *guanxi* and its affiliated concepts with a description of how Chinese employees leverage both *guanxi* and technology in their knowledge seeking and sharing practices. From this integration, we aim to

develop a new theory of how knowledge is shared that incorporates considerations of both guanxi and technology.

Following this introduction, we first identify gaps in the KM research literature and outline our research focus. We seek to amalgamate the concepts of knowledge, guanxi and technology (KGT) into an integrated model that emphasizes the Chinese context. We then introduce and justify six key theoretical propositions by drawing on both the literature and our own prior work. After theoretically developing and depicting the six key propositions in a structural model, which we refer to as the KGT model, we present a rich description and analysis of how knowledge is shared by Chinese employees. This section includes background material on the companies that we studied and detailed descriptions of how individual employees leverage guanxi and technology in order to accomplish their knowledge-based work. Finally, we conclude the paper with implications and directions for future research.

2. THEORETICAL DEVELOPMENT

2.1 Towards A New Theory of Knowledge, Guanxi and Technology (KGT)

The antecedents of knowledge sharing (and contributing) behavior have been researched quite thoroughly in a number of different contexts (e.g. Alavi and Leidner, 2001; Kankanhalli, Tan & Wei, 2005; Bock, Zmud, Kim & Lee, 2005; Wasko and Faraj, 2005; Choi, Lee & Yoo, 2010), notably in the context of formal KM systems (KMS). This rapidly growing research literature has identified a variety of pertinent organisational, managerial and technological factors, as well as costs and benefits associated with contributing to KMS (e.g. Tong and Mitra, 2009); and the individual processes associated with the acquisition of knowledge from KMS (Ryu et al., 2005).

Social exchange theory (Blau, 1964) is often drawn upon when identifying the costs and benefits of sharing, while social capital theory (Nahapiet and Ghoshal, 1998) provides evidence of contextual factors that may moderate the influence of these costs and benefits. This stream of research has neatly described the psychological and organizational motivations of knowledge contribution to KMS. This focus on motivational factors has led, however, to researchers overlooking the critical role that technology plays in facilitating the knowledge exchange process. In contrast, another stream of research has provided valuable insights into the influence of KMS on user or organizational performance. For instance, Malhotra, Gosain & El Sawy (2005) investigated how memory systems for inter-organizational activities and interpretation systems for inter-organizational information have facilitated inter-organizational knowledge transfer. Also, Poston and Speier (2005) empirically demonstrated how the design of a KMS influences users' decision performance.

From the above brief literature review, we can see that empirical research has investigated the motivational factors, KMS design, and the resulting performance associated with KM. However, to date these factors have largely been studied in isolation. We suggest that a more accurate picture would demonstrate how motivation factors, technology and knowledge management are mutually entangled in practice (Orlikowski, 2007), with culture also playing a critical role. To address this situation, we develop a research model that explicitly connects knowledge, guanxi and technology (KGT) (see Figure 1). Our emphasis is on guanxi's component parts and bases and how these influence the choice of KM initiatives, a process that contributes to effective knowledge exchange and subsequently enhanced individual and organizational performance.

Insert Figure 1 about here

We argue that the knowledge-based ecosystem of Chinese employees is imbued with guanxi and facilitated by communication technologies. The three key elements – knowledge, guanxi and technology – are mutually entangled, with employees leveraging all three as they undertake their work. The most valuable knowledge resides in the head of the person who creates and maintains the knowledge. Access to this up-to-date knowledge is only possible if a knowledge seeker knows who knows what – an instantiation of the Transactive Memory System (Wegner, 1987). This meta knowledge is accessed via two mechanisms: guanxi and specific communication technology applications.

Individual employees generally belong to several in-groups in which members are linked by mutually reciprocal and obligatory ties (i.e., guanxi). In-groups vary in size, but rarely exceed a dozen active members. Through membership of one or more in-groups, an individual not only gains knowledge, but also is linked through guanxi ties to the people who shared that knowledge. This is helpful if and when additional knowledge is needed.

The presence of strong guanxi, and in particular the mutually reciprocal obligation, means that when a knowledge seeker requests more knowledge, help will be forthcoming. If the immediate recipient of the request for knowledge knows the answer or has immediate access to the knowledge, s/he will share it. If s/he does not know or have access to the answer, s/he will seek it from her/his own guanxi network. In this way, the original knowledge seeker can access knowledge not only within the minds of his/her immediate network of in-groups, but also the more remote networks of others' in-groups. Thus, guanxi and technology play critical roles in this knowledge exchange process. We justify each of the roles in detail below.

2.2 *The Influence of Guanxi Elements on Knowledge Exchange*

The knowledge exchange between individuals is of particular salience in China, where interactions between employees who seek and share knowledge are lubricated and facilitated by guanxi (關係). As mentioned in the introduction, guanxi is an indigenous Chinese concept, which broadly refers to a network of mutually-obligatory, reciprocal relationships (Xin and Pearce, 1996). The literature (e.g. Kiong and Kee, 1998) indicates that guanxi as a second-order factor incorporates the elements of reciprocal obligation (人情回報), trust (信任) and face (面子). We contend that these elements constitute the incentive to engage in knowledge exchange behavior that includes both seeking and sharing, as explained below.

People who are linked by guanxi have a mutual obligation to reciprocate in the future. By engaging in mutually reciprocal actions such as knowledge seeking and sharing, so each person develops his/her own face (i.e., pride and dignity). People who are linked by strong guanxi are conventionally referred to as belonging to ‘in-groups’ (圈内) (Voelpel and Han, 2005; Burrows et al., 2005), while people who are less tightly linked may see each other as belonging to ‘out-groups’ (圈外) (Qing, 2008). Triandis (1989) notes that it is usually psychologically easier to exchange knowledge within an in-group, not least because the sharing process provides an opportunity to enhance one’s face and personal reputation. Furthermore, as Qing (2008) suggests, “in-group ties are more efficient in searching [sic] private knowledge”. Membership of a guanxi-linked in-group is a powerful and often lifelong phenomenon, with a strong sense of obligation acting as a conforming force that ensures benefits for all members including knowledge exchange. The obligation is strong and tends to function as a moral duty for the members of the in-groups with which one is affiliated (cf. Qing, 2008). In fact, most knowledge sharing behavior can be described as a two-way exchange, where both parties (seeker and sharer) provide and receive knowledge during the

communication process. In such two-way interactions, the potential for reciprocity provides a strong incentive for knowledge sharing (Kankanhalli et al., 2005; Wasko and Faraj, 2005).

In addition to reciprocal obligation, trust is a construct that is almost ubiquitous in studies of KM, especially those premised on social exchange theory (e.g. Kankanhalli et al., 2005; Staples and Webster, 2008). In the KM context, *trust* refers to the belief in the good intent, competence, and reliability of employees with respect to contributing and reusing knowledge (Kankanhalli et al., 2005). Trust has been considered as being “at the heart of knowledge exchange” (Davenport and Prusak, 1998, p.35). Researchers have consistently suggest that trust “improves the quality of dialogue and discussions...[and] facilitates the sharing of ... knowledge” (Ichijo, von Krogh & Nonaka, 2000, p. 200). Rolland and Chauvel (2000) go so far as to remark that trust constitutes “the single most important precondition for knowledge exchange”, since it “reduces ambiguity and uncertainty” (Staples and Webster, 2008), enabling cooperative and productive activity to take place.

The third component of *guanxi* is *face*, referring to the respect, pride and dignity of an individual as a consequence of his/her social achievement and the practice of it (Leung and Chan, 2003). In the KM context, image, reputation and respect are considered to be incentives for knowledge sharing (Wasko and Faraj 2005). During the process of knowledge sharing, pride and dignity, i.e., face, can be earned. In contrast, a concern for the potential loss of face is an impediment to knowledge seeking and sharing behavior. For example, Voelpel and Han (2005) highlight the “concern of face” for knowledge sharing behavior, explaining that “the fear of losing face due to poor English also prevents some Chinese employees from contributing actively to the knowledge base” (ibid., p.58). Huang, Davison & Gu (2008) empirically demonstrated the contribution of face saving and gaining to knowledge sharing intentions.

As detailed above, all three guanxi elements, viz., reciprocal obligation, trust and face, constitute significant psychological motivations to encourage knowledge seeking and sharing behavior. As Lu, Leung & Koch (2005) note, guanxi is more likely to facilitate knowledge sharing than IT, since "...there is ... no perfect substitute for the motivational effects of human bonding and social connectedness". Indeed, Chinese employees tend to focus their work-based interactions on other people (whether employees in the same organization or not) with whom they have developed guanxi (Blind Ref #1). Guanxi is valuable in a society where the rule of law is less developed, and so where it is safer to rely on strong relationships than on legal protections or guarantees (Martinsons, 2008). We therefore propose:

P1: Guanxi elements, including principles of mutually reciprocal obligation (P1a), trust (P1b), and face (P1c) between linked individuals, constitute powerful antecedents for knowledge exchange.

2.3 Facilitating Knowledge Exchange with KM Tools

As a consequence of technology advancements in the past two decades, various KM applications have been developed and utilized in organizations. Specifically, two types of KM systems have been identified: the knowledge repository and the knowledge network (Alavi 2000). The *knowledge repository* incorporates a codification approach to KM in a company (Hansen, Nohria & Tierney, 1999), focusing on the formal codification and storage of knowledge (Grover and Davenport 2001). The purpose of such knowledge repositories is to facilitate knowledge reuse, especially by new employees who often do not have well developed personal knowledge. Typical examples of knowledge repositories include Intranets (e.g., Newell, Scarborough & Swan, 2001) and Lotus Notes-based systems for storing case studies, project reviews and lessons learned (e.g., Kankanhalli et al., 2005).

Unlike the repository approach, the *knowledge network* approach emphasizes connections among people for the purpose of knowledge exchange, corresponding to the personalization approach of KM (Hansen et al., 1999). In order to facilitate knowledge exchange, the application components of KM networking tools include the expert directory (Ruggles, 1998), the knowledge sharing forum, where people can ask and answer questions as well as interact with each other as communities of practice (Brown and Duguid 1991; Choi et al., 2010), and other social networking tools such as instant messengers or micro-blogs (Blind Ref #1).

The benefits of utilizing KM tools are clear. Specifically, a knowledge repository facilitates KM practice by leveraging existing knowledge rather than creating new knowledge. Such a repository can allow employees in a company to exchange their project experiences, working methods, market ideas and reports by storing documents on a centralised database which can be accessed by other employees (Cabrera, Collins & Salgado, 2006). Because the knowledge repository readily covers accessed routines, meeting records, work templates and documents, information and knowledge, more than 80% of companies make use of a knowledge repository as their major KM initiative to facilitate knowledge exchange in organizations (Davenport and Prusak, 1998).

However, notwithstanding organizational enthusiasm for the formal and centralised knowledge repository, employees are often unwilling participants. A number of salient causes of this unwillingness have been identified, notably poor alignment of the repository with human issues (Martinsons and Chong, 1999), core business processes (Wang 2002) and corporate strategy (Newell, Robertson, Scarborough & Swan, 2009). Further, knowledge repository design is criticized for being insufficiently interactive (Teo and Men, 2008), divorced from the specific work contexts where knowledge is created (Cook and Brown,

1999; Burrows et al., 2005; Orlikowski, 2007) and premised on the simplistic transformation of knowledge from a tacit to an explicit form (Newell et al., 2009).

In contrast to this repository approach to knowledge sharing that assumes knowledge to be acontextual and easily shared with technological support, Orr (1996) demonstrated how Xerox's photocopier technicians ignored the formally codified knowledge in their organisationally mandated 'repair manuals' and instead relied on informal networks of knowledge experts in an ad hoc fashion. When a technician encountered or solved a problem, he would share the relevant knowledge with other technicians, seeking their comments and ensuring that all could benefit from the knowledge in the future. This informal approach to knowledge sharing is dependent on knowledge seeking that is primarily conversational. It is notable that this informality violates the norms of KMS-based knowledge contribution expectations and subverts political authority (Suchman, 1996), since no knowledge is centrally stored in the KMS even though knowledge work is undertaken effectively. Indeed, notwithstanding a lack of attention in the research literature, informal KM initiatives are widespread (Topi et al., 2006; Halverson, 2004). Further, they play a critical role in organisational effectiveness, since they facilitate the creation of knowledge in an explicit form out of the tacit experiences of knowledge holders.

In fact, we argue that formal KMS and informal knowledge seeking-sharing behaviour are orthogonal yet complementary (cf. Hansen et al., 1999). Some corporate KMS include both formal and informal components with knowledge libraries, Q&A forums and interactive platforms for knowledge sharing in order to enable the exchange of not only explicit but also tacit knowledge (Voelpel and Han, 2005; Choi et al., 2010). Thus, a knowledge repository and a knowledge network can be complementary in a single company. We therefore propose:

P2: KM tools, including KM repositories (P2a) and KM networks (P2b), facilitate employees' knowledge exchange in the workplace.

2.4 The Impacts of Guanxi Bases on Knowledge Exchange

The social psychology literature distinguishes several types of guanxi-based in-group. Each is characterized by a particularistic tie, including family members (to whom traditionally one is unconditionally loyal, in line with the precepts of Confucian philosophy), friends, work colleagues (Farh, Tsui, Xin & Cheng, 1998, Fu, Tsui & Dess, 2006; Qing, 2008), classmates, and people speaking the same dialect or from the same hometown (Farh et al., 1998; Kiong and Kee, 1998).

In-groups are commonly found in working contexts, e.g. team members working on a project or colleagues in a department, but they are not restricted to these contexts. An individual person may belong to a number of different in-groups, both within the organizational boundary and beyond it, even with people who work for competing organizations (Blind Ref #1). Following Farh et al. (1998) and Kiong and Kee (1998), we refer to this different types of guanxi, as found in in-groups, as *guanxi bases*. We contend that guanxi bases play an important role in KM in China.

The guanxi-oriented norms and expectations with respect to knowledge work that we have described in the Chinese context differ markedly from the knowledge exchange practices found in Western contexts. The moral and ethical aspect of knowledge sharing in China underlines this distinction (cf. Martinsons and Ma, 2009). In Western contexts, knowledge is generally shared on the basis of personal benefit, individual discretion and agreements between individuals. In China, knowledge sharing is based primarily on interpersonal obligations and allegiances as well as a desire to maintain social harmony (Martinsons & Ma, 2009, pp. 19-20). Nevertheless, knowledge sharing can be motivated by

the prospect of rewards, whether monetary or in kind, for instance in the form of knowledge of similar (or greater) value. Knowledge sharing may also be motivated by economically irrational, yet emotionally satisfying, terms such as a desire to help others, to be altruistic.

A key aspect of the Western literature on knowledge exchange is that one can learn more from individuals who are relatively heterogeneous to oneself (cf. Granovetter's, 1973, theory of weak ties). It is suggested that people with whom one has weaker ties may be able to supply knowledge of greater and more unique value because they are more likely to know things that one doesn't know. More strongly tied people, on the other hand, are more familiar to the knowledge seeker and so the degree of knowledge heterogeneity is reduced. Reciprocal agreements to share knowledge with weakly linked others can thus be valuable.

This, however, is very different to the Chinese approach where weakly tied others, i.e. people with whom there is negligible *guanxi*, could not be comfortably relied on – irrespective of the potential value of their knowledge. It is the strength of the interpersonal relationship (*guanxi*) that determines the reliability and credibility of the knowledge. For the Chinese, a theory of strong ties (*guanxi* reliance or homogeneity) is more salient than a theory of weak ties (independence or heterogeneity).

Collectively, the in-group is treated as a resource from which its members can seek knowledge, for instance in order to solve problems, and with which they are obligated to share their own knowledge when asked (cf. Bennis, 2000). Seeking and sharing are thus two complementary behaviors associated with in-group membership. As highlighted by Farh et al. (1998), the *guanxi*-based in group is accorded great significance in a relationship-centered world. As a result, people interact at work because of different *guanxi* bases, i.e. particularistic ties. If the particularistic tie is strong, then the individual is usually more willing to exchange knowledge in order to maintain the tie. We therefore propose that:

P3: Guanxi bases facilitate knowledge exchange in the workplace.

2.5 Guanxi Bases' Moderation of the Link between Guanxi and Knowledge Exchange

In addition to the direct effect, we argue that guanxi bases also moderate the relationship between knowledge exchange and its determinants. Specifically, the principles of transactive memory theory (Wegner, 1987) suggest that each member in a transactive memory system learns about the specialized expertise of the other members and thus knows from whom to seek specific kinds of knowledge (cf. Oshri, Fenema & Kotlarsky, 2008). Although the guanxi-linked in-group appears to function in a similar way to the transactive memory system, there are a number of differences. In particular, the ethical and moral obligations associated with guanxi are prevalent in Chinese in-groups, but are less likely to be encountered in non-guanxi-based transactive memory systems, where a strong sense of obligation to reciprocate is generally absent and where the negative consequences of not sharing are less severe. Nevertheless, as in-group members become more knowledgeable about each other's areas of expertise over time, so in-group membership becomes more valuable.

On the other hand, an individual who refuses to share knowledge in response to a request from another in-group member violates the principles of reciprocity and mutual obligation, nullifies the interpersonal trust, damages his/her face and potentially jeopardizes the right to receive all the benefits normally associated with in-group membership (cf. Luo, 2005; Qing, 2008). If the knowledge seeker is sufficiently annoyed by the refusal to share, then the guanxi between the two parties may be irreparably damaged. Further ramifications are possible if the annoyed party chooses to publicize the behavior of the nonconformist, in effect ostracizing this person from a wider network of guanxi-linked in-groups (Qing, 2008). As such, violating the fundamental principles of guanxi can have disastrous consequences – personally and professionally. In China, it is very hard to live and work without guanxi

(Björkstén, 2007). These arguments suggest that reciprocal obligation plays a more influential role in knowledge exchange when the employee relies more on in-group members for work, indicating the moderation effect of guanxi bases on the causal relationship between reciprocal obligation and knowledge exchange behavior.

Similarly, face is a salient issue in Chinese social interactions (Redding and Ng, 1982; Ting-Toomey, 1988), though face-related issues are not unique to the Chinese. When people's work is more dependent on others, or in a situation where social relations are more appreciated, face gaining and maintenance can become an identifiable objective of life (Chu, 2006; Ho, 1976). This is why face concerns are considered to be embodied in the consciousness of Chinese people (Huang et al., 2008). By sharing knowledge, the sharer enhances his/her face (dignity) and so collectively benefits not only the knowledge seeker, but also the in-group. In contrast, in situations where social relationships and guanxi reliance are less appreciated or relied upon, the effect of face on motivating knowledge exchange may be significantly reduced, as evidenced by Kankanhalli et al.'s (2005) demonstration that image plays an insignificant role in knowledge contribution behavior in Singapore. These theoretical arguments suggest that guanxi bases may exert a moderating effect on the causal relationship between face and knowledge exchange behavior.

Interestingly, Kankanhalli et al. (2005) found that trust has no direct effect on encouraging knowledge contribution. We argue that the same logic about guanxi reliance applies to the relationship between trust and knowledge exchange. In fact, general distrust of outsiders (out-group) is a typical characteristic of the Chinese (Kiong and Kee, 1998). Similarly, distrust is more prominent among the Chinese when compared to other nations (Huff and Kelley, 2003).

In contrast, in-group members have a high degree of trust in each others' reciprocal behavior. For instance, Huff and Kelley (2003) found that Chinese and Koreans had high

levels of trust for in-group members. When people come from a culture characterized by high levels of guanxi and where guanxi reliance is more salient, trust plays a more significant role in regulating the in-group members' behavior including cooperation and also knowledge contribution. In this light, it appears that the previous assertions about the apparently universal role of trust and the inconsistent findings related to trust's role in knowledge sharing neatly ignored those cultural traditions with other cultural constructs of equal or greater importance. Indeed, these theoretical arguments and the inconsistent empirical results suggest the moderating effect of guanxi bases on the causal relationship between trust and knowledge exchange behavior. Integrating the above detailed arguments, we thus propose:

P4: Guanxi bases moderate the influence of guanxi components (reciprocal obligation, trust and face) on knowledge exchange. A greater degree of reliance on guanxi bases will result in guanxi components exerting a stronger influence in encouraging knowledge seeking and sharing behavior.

2.5 Guanxi Bases' Moderation of the Link between KM Technology and Knowledge Exchange

The recent focus of the KM literature reflects a shift away from technology-driven initiatives towards the network-based connections between people. This paradigm change may be traced to the realization that knowledge seeking and sharing are in fact social processes, not simply machine-based question and answer processes (Panteli and Sockalingam, 2005). In China, the informal ways of seeking and sharing of knowledge between individuals are of particular salience, since formal corporate systems tend to be distrusted and informal communication is preferred (Martinsons and Westwood, 1997). Instead of knowledge repositories, KM

networking tools such instant messengers (IM), forums and blogs are prevalent in informal knowledge exchange in China (Blind Ref #1).

This preference for KM networking tools over knowledge repositories may largely be attributed to the reliance on guanxi bases in the workplace. Knowledge seekers contact experts using a process that is typically mediated by the instrumental agency of networking technology. This use of technology applies to individuals who are near or far in space and time: people sitting on opposite sides of the same table are just as likely to use technology to communicate as people on opposite sides of the planet (Blind Ref #1). The technology of choice depends on the personal preferences of the two interlocutors, but more interactive applications such as IMs that permit an informal, near synchronous communicational experience are likely to be more popular than less interactive, more formal, asynchronous applications, such as email.

Meanwhile, transactional meta knowledge (knowing who to ask), guanxi (having a relationship with the person who knows) and technology (as a means of engaging the person who knows in a conversation) are all critical to the success of knowledge exchange. Knowledge, guanxi bases and technology do not respect boundaries, whether individual, team or corporate. Thus, knowledge may be sought and shared beyond boundaries, so long as guanxi also spans boundaries. Indeed, psychological boundaries, such as those that govern guanxi-based in-groups, are more salient in determining the use of technology in exchanging knowledge than is the technology alone (Lu et al., 2005). Knowledge seeking and sharing processes are inextricably entangled with guanxi bases and technology in an informal communication process. Given these theoretical conjectures, we propose:

P5: Guanxi bases moderate the influence of different technologies in knowledge exchange behavior. Greater reliance on guanxi bases will result in KM networks being more influential

than knowledge repositories in facilitating employees' knowledge exchange behavior in the workplace.

2.6 The Impacts of Knowledge Exchange on Work Performance

By regularly engaging in knowledge seeking and sharing, guanxi-linked individuals both activate and energize their guanxi, maintaining it in a healthy state and ensuring their long-term mutual interest. At the same time, by participating in an intellectual knowledge exchange process, individual employees can best utilize the knowledge by integrating new experiences and thus improving their individual work performance.

From the organizational perspective, individual employees' knowledge exchange tackles business issues and problems. As a result, work processes can be fine-tuned and best practices can be developed, applied and shared. Knowledge exchange is therefore considered essential to render the organization the capability to support ongoing activities that help it retain and enhance its competitive advantage (Christensen, 2007). We therefore propose:

P6: Effective knowledge exchange can result in better individual work performance and organizational performance.

3. METHODOLOGY

The research that we are reporting in this paper has been undertaken continually since November 2006 and is still ongoing. Given the extended timeline of the research, the methods have evolved accordingly. Further, the final state of this paper owes much to the various detours and dead-ends that we encountered. In the first part of the research (2006-2010), we used a mixed methods approach to investigate knowledge sharing practices in two Chinese Public Relations (PR) firms – Eastwei (www.eastwei.com) and RuderFinn

(www.ruderfinnasia.com). This research was undertaken as Canonical Action Research (Davison, Martinsons & Kock, 2004), with data from corporate documents, interviews with employees at all levels, participant observation of employees at work and a survey of attitudes towards technology-based knowledge sharing.

Recognizing the limitations of focusing on a single industry, we had already decided to expand the scope of the research to include other kinds of professional service firm, viz.: hotels, software houses, network service providers, management consulting firms and network service providers. Hotels are ubiquitous in China, with many large international chains such as Accor, Starwood, Intercontinental and Shangri-La, as well as domestic chains such as JinJiang. Recognizing that each chain would have its own corporate culture and set of operating practices, we believed that it would be sensible to collect data from within a single chain, reducing the potential conflicts associated with different corporate cultures. We selected the Accor chain because it operates in a wide variety of locations in China at different levels, from budget to luxury.

We contacted the two Senior Vice Presidents for Accor in China, both of whom agreed to support our research and authorizing us to collect data from Accor hotels (e.g. Sofitel, Pullman, Novotel, Grand Mercure, Mercure, Ibis) across the region. We then contacted hotel General Managers at thirteen Accor-managed properties in eight cities across China: Beijing, Shanghai, Chengdu, Chongqing, Suzhou, Shenzhen, Wuhan and Hong Kong. Through these initial contacts, we arranged to interview 60 employees at all levels throughout 2011. These people were responsible for functions such as revenue, front office, public relations, sales & marketing, IT, engineering, security and e-commerce. At each of these meetings we engaged in semi-structured interviews related to our emerging theoretical ideas. This data is as yet unpublished, but is drawn upon in the current paper.

4. KNOWLEDGE SEEKING AND SHARING BY CHINESE KNOWLEDGE WORKERS

In the preceding material, we have developed six key propositions that relate to the way knowledge, guanxi and technology are entangled with work processes in the Chinese context. In order to validate these propositions, we now present a typical scenario of the process of knowledge seeking and sharing undertaken by a Chinese knowledge worker. Although we only present a single account here, we emphasize that the account is typical of many that we observed in several Chinese knowledge-focused professional service firms. This account incorporates some material previously published in Blind Ref #1. In order to link this account to the propositions, we place proposition numbers in square brackets, e.g. [P4] at relevant points in the text below. Given the entanglement of knowledge, guanxi and technology, these references to the propositions do not occur in a simple sequential order.

Grace is a junior employee in the Shanghai office of a PR firm. She is part of a project team that is coordinating a media event to promote the latest model of a European car for a key client. Each team member has specific responsibilities and is a recognized knowledge expert in certain specific areas. The team is distributed across the firm's Shanghai, Beijing and Guangzhou offices. Grace's responsibility is to coordinate the journalists (from the mainstream and niche media organizations) who will be covering the media event. One specific task is to identify a suitable gift that the client will give to each journalist as a token of appreciation for attending the event. This gift giving is common corporate practice in China. A gift both lubricates the initial contact between two parties, and embodies the respect of the giver for the recipient. In this case, it initiates the development of guanxi between the client and the journalists, which is mediated by the PR firm. The client has specified that the gift "should have a European theme" and cost no more than RMB200 (approx US\$30).

While Grace has worked on journalist-related tasks frequently, locating suitable gifts is not quite so easy, especially when the client specifies a particular theme. Searching on

www.baidu.com (Baidu is China's largest search engine and is commonly preferred to Google or other Western search engines, especially when local content is sought), she is unable to find anything suitable. She now turns to her IM contacts – people who belong to an in-group with her, yet who also belong to other, more distant in-groups [P1a, P2b, P5]. Clearly her colleagues on the current task constitute an in-group, even though this is only a temporary work arrangement – when the project is completed, the team members may be virtually dispersed as they are reassigned to other project work, but the *guanxi* is maintained and can be used for future purposes. So, from previous work projects, employers and friends, Grace has a wide range of contacts in addition to her current project-related in-group members for locating possible solutions to her work problems [P3]. The primary communication channel that she uses to contact her in-groups is the instant messenger (IM) [P2b]. Grace maintains a list of several hundred 'contacts' in her IM – several times more than the 120 employees of her own firm. She organizes her contacts into a number of categories and sub-categories. For example: Journalists – Auto; Journalists – Pharmaceutical; Industry Experts – Luxury Goods; Government – Customs & Excise.

Grace identifies several contacts who may be able to help her locate a suitable European-themed gift. She sends out an IM message to each, seeking their ideas [P2b]. Two of her contacts also work for her PR firm – one in Shanghai and the other in Beijing. Other contacts are located outside her PT firm. Some work in competing PR firms while others are in completely different industries [P3]. Even as Grace requests help in this way, other contacts are using the IM to ask Grace for help – she is thus acting as both a seeker and a sharer of knowledge. When we observed Grace engaged in this activity, she had up to 17 IM chat-windows open simultaneously [P5]. All of these 17 conversations were related to some form of work, whether hers or someone else's. Indeed, when Grace is at work, her IM tools (she uses several including MSN Messenger and QQ) are turned on permanently. We found

that she was engaged continuously in a process of knowledge seeking and sharing, even as she focuses on her own work projects.

Grace explained that she uses IM for almost all her informal communication needs – and most of her communication needs are informal. Email is only used for formal communication with clients, for instance where contractual issues are documented. As such, her email is usually turned off. Her own boss, the project team leader, who is located in Beijing, uses IM to communicate with the team members. The Shanghai General Manager and Beijing-based CEO also use IM to communicate with employees. In this respect, knowledge seeking and sharing occur as an uninterrupted stream of communication that is intricately interwoven with work [P5].

Remarkably, Grace prefers to communicate directly with her friends and contacts, in order to locate knowledge. Although there is a corporate intranet with case reports and analyses, she does not use it [P2a]. We were initially puzzled by this deliberate neglect of corporate resources, since the firm insists that all projects should be documented in formal reports that are archived on the intranet – precisely so that the knowledge should be available for reuse [P2a]. However, in our conversations with employees, we learned that while the intranet based reports might contain valuable knowledge, this was hard to locate since items were not indexed consistently. For example, some of Grace's colleagues handle the account of Procter & Gamble. However, individual employees may index-code this company in a number of different ways including: Procter & Gamble, Proctor & Gamble, P&G, PG, 宝洁 (the official Chinese rendering of Procter & Gamble) and BaoJie (the pronunciation of 宝洁). This inconsistency of coding aggravates the difficulty of locating relevant material. Furthermore, the intranet was seen as a static and rather boring tool [P2a], whereas an IM enabled interactive and interesting conversations [P2b]. Employees expressed a strong preference for a more interactive knowledge seeking and sharing experience, which can be

partially attributed to their work context with a heavy reliance on the guanxi network [P5]. For them, an interactive experience would mean that they could query the source of knowledge and thus elicit more details of the context wherein the knowledge was originally created, valid, and trustworthy [P1a, 1b, P2b, P4, P5].

Validity is a key attribute of knowledge. It is critical that knowledge should be up-to-date. The most-up-to-date sources are perceived to be those where knowledge is being continuously generated, applied and verified. Historical reports and documents, as stored on intranets, are considered less valuable in this respect as the knowledge that they contain may no longer be current. A far better and more immediate source is the people who are actively engaged in this work. As one employee mentioned “In terms of my work, I cannot live without QQ”, signifying the critical role that this IT application plays in her personal communications ecosystem [P5]. By engaging in conversation with these people, the highly contextualized knowledge that is required in Chinese business (Martinsons and Westwood, 1997) can be identified – and later recontextualized to the problem at hand [P6].

In order to obtain knowledge from experts, it is common practice to send out an enquiry to a large number of IM contacts in the belief that at least one, possibly more, will have an answer – or can locate an answer. By sending an IM-based enquiry to many contacts, the cost to the knowledge seeker is minimal, since others can be relied upon to provide the answer quickly. The cost to most of those who receive the request is also minimal – if they do not know the answer. If they do know, or if they are otherwise able to locate the answer via their own in-group networks, then they do have to contribute some time and energy in replicating that knowledge via the IM to the knowledge seeker. Asking others for knowledge is not, however, seen as a selfish way of seeking since the seeker and sharer are bound in a dyadic relationship that is characterized by reciprocal obligation to share when requested.

Spending time to build and sustain relationships is a natural part of this process. (cf. Kellogg, Orlikowski & Yates, 2006) [P1a, b, c].

From these descriptions, we can see that there is a marked preference for knowledge from informal and uncodified sources [P2b]. Naturally, the knowledge must be rendered explicitly if it is to be communicated (Newell and Edelman, 2008) – short of telepathy, tacit communication is unrealistic. Yet the knowledge is being sought from the experiences of one or more individuals – who are likely to extract it from their tacit, uncodified memories, not from a formal, codified resource such as a report or document. The extent to which the communicated knowledge is easily understood and then recontextualized into a new practice depends on the extent to which the seeker and sharer are linked by a common lexicon (cf. Carlile, 2002). However, the IM tool that is common to seeker and sharer greatly facilitates the comprehension of knowledge, since it enables seeker and sharer to engage in a conversation about the knowledge [P2b]. This conversation has the potential not only to clarify obscure meanings, but also to generate new knowledge, as the seeker probes the sharer for more details and the sharer actively engages in thinking about the knowledge.

Knowledge seekers can also leverage not only their own in-group memberships, but also the more remote contacts of their in-group members [P3]. This more closely approximates Granovetter's (1973) theory of weak ties – as the more distant the eventual source of knowledge, so the weaker the tie, and the greater the degree of independence from and heterogeneity with that source. Linked through one or more series of intermediating in-group contacts, the most immediate of whom manifests a strong tie and therefore a strong degree of comfort [P1a,b], a knowledge seeker may thus obtain knowledge from a variety of distant individuals.

Ultimately, Grace may not know the original source of the ideas returned to her, but this is usually not a critical concern. Firstly, she must evaluate the ideas for suitability and

feasibility. In the case of gifts, she also has to acquire sufficient quantity. Secondly, the exact source is unimportant since she implicitly trusts her in-group and their ability to help [P1b]. The knowledge seeking and sharing process has strengthened the relationships of the immediate in-group, including their individual faces and senses of mutual and reciprocal obligation [P1a,c]. In the end, the effectiveness of the in-group sharing depends on the interlinked in-groups and their transactive memories of who knows what. Our observations indicate that these guanxi-linked in-group members are often connected by IT that is used informally, notably IM [P5], a work practice that fulfils the requirement of accessing highly contextualized knowledge and the need of problem solving at work [P6].

5. DISCUSSION AND CONCLUSION

Through an intensive series of interviews spanning five years with knowledge workers at all levels (from CEO downwards) in two unconnected PR firms as well as thirteen hotels belonging to the Accor chain, we have elicited a rich description of the Chinese knowledge ecosystem – at least insofar as it applies to the Professional Services sector. Through our observations of and interviews with Chinese knowledge workers, we found that they have developed an intimate relationship with the components of this ecosystem. Taken together, the combination of knowledge, guanxi and technology in the context of organizational problem solving and the generation of solutions and services for clients constitutes an effective, if informal information system. We have explored the intricately entangled nature of the components, which can be further illustrated by such interviewee remarks as: “Without guanxi, I can’t work” (Shenzhen); “I can’t live without QQ because this is the channel that I use for all communication most clients” (Wuhan) and “I rely on my in-group contacts to remember things for me. If they can’t help, they may ask their own contacts” (Beijing). If access to guanxi-linked knowledge resources is limited, or if guanxi itself is not well

developed, then the quality of work suffers. As a Beijing manager reported: “I am not allowed to use MSN at work, and my guanxi network has suffered in consequence. It is harder to work effectively”.

Given the lack of non-Western, emic accounts of how knowledge is managed, sought and shared, we believe that our findings and associated theorizing make a significant contribution to the KM literature. We urge scholars to investigate non-Western contexts in greater detail through intensive investigations that go beyond mere replication of Western models with local data. Instead, scholars should seek to probe local contextual variables that influence the way knowledge work is undertaken. Several specific research topics can be identified from our own work. For instance, although guanxi is an indigenous Chinese concept, relationships are universal and we suggest that they will influence knowledge seeking and sharing practices in other cultures, even if to a lesser extent than is the case in China. However, guanxi-type relationships should not be confused with social capital, which lacks the key aspect of mutually obligatory reciprocation that is central to guanxi.

Our preliminary research in China suggests that knowledge workers prefer to form guanxi not only with current and former colleagues who share work interests, but also with people from their hometown who speak the same dialect and share similar backgrounds. This latter finding applies particularly when people are ‘away from home’. Thus Shanghainese prefer to develop guanxi with fellow Shanghainese – and are less interested to develop guanxi with others. One Beijing-located manager we interviewed said: “I come from Wuxi and I have strong networks there. My Wuxi contacts often communicate with me for information about what is happening in Beijing”. Whether similar patterns of guanxi or relationship formation exist in other cultures, and what impact this has on work, remains to be investigated.

With respect to technology, we were surprised at the extent to which knowledge workers have embedded communications technology, particularly IM and email, into their personal work practices. When engaged in knowledge seeking and sharing, these technologies are generally used in a dyadic and interpersonal fashion: a knowledge seeker sends an email to or opens an IM chat with one interlocutor. They seldom copy multiple others on email or engage in group chats. However, they do open multiple chat windows simultaneously and IM tools are often left running permanently with an 'available' status, so as to signify their on-line presence and willingness to chat. In the prior literature, evidence of the critical nature of email at work has been reported for many years (e.g. Markus, 1994; Kellogg et al., 2006), but the IM has received less attention in the work context (Ou and Davison, 2011). We suggest that further investigation of the role that IM plays in leveraging guanxi and relationships at work would be valuable.

Finally, we suggest that organizational performance depends on an appropriate entanglement of knowledge, guanxi and technology. We formalized this entanglement in six theoretical propositions that lie at the heart of our new theory of knowledge exchange. Employees access knowledge held in the minds of guanxi-linked others through informal technologies, such as knowledge networking tools, in order to complete their work. Meta-knowledge of who knows what is critical, as is the right to ask, which is embodied in the guanxi that one has with knowledgeable others. Informal technologies complete the equation, since they provide the means to contact knowledgeable others and so obtain knowledge needed for work. There are important implications here for senior managers who always have the prerogative to set corporate policy and so determine which technologies employees can use, and how. While organizations may prefer more formal and centralized KMS, we suggest that informal and interpersonal knowledge exchange arrangements are likely to be just as effective, if not more so. Ideally, employees will be free to choose from a tool-box of

technologies that best match their own preferences with respect to knowledge-guanxi-technology practice. We hope that other researchers will test these propositions, whether through intensive case studies or surveys, refine them and so help us to achieve a better understanding of the way knowledge can be managed in organizations. We anticipate many productive debates to come in this area.

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Figure 1: Research Model on Knowledge, Guanxi, and Technology (KGT)

