



香港城市大學  
City University of Hong Kong

專業 創新 胸懷全球  
Professional · Creative  
For The World

## CityU Scholars

### Information technology to support informal knowledge sharing

Davison, Robert M.; Ou, Carol X. J.; Martinsons, Maris G.

#### Published in:

Information Systems Journal

Published: 01/01/2013

#### Document Version:

Post-print, also known as Accepted Author Manuscript, Peer-reviewed or Author Final version

#### Publication record in CityU Scholars:

[Go to record](#)

#### Published version (DOI):

[10.1111/j.1365-2575.2012.00400.x](https://doi.org/10.1111/j.1365-2575.2012.00400.x)

#### Publication details:

Davison, R. M., Ou, C. X. J., & Martinsons, M. G. (2013). Information technology to support informal knowledge sharing. *Information Systems Journal*, 23(1), 89-109. <https://doi.org/10.1111/j.1365-2575.2012.00400.x>

#### Citing this paper

Please note that where the full-text provided on CityU Scholars is the Post-print version (also known as Accepted Author Manuscript, Peer-reviewed or Author Final version), it may differ from the Final Published version. When citing, ensure that you check and use the publisher's definitive version for pagination and other details.

#### General rights

Copyright for the publications made accessible via the CityU Scholars portal is retained by the author(s) and/or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights. Users may not further distribute the material or use it for any profit-making activity or commercial gain.

#### Publisher permission

Permission for previously published items are in accordance with publisher's copyright policies sourced from the SHERPA RoMEO database. Links to full text versions (either Published or Post-print) are only available if corresponding publishers allow open access.

#### Take down policy

Contact [lbscholars@cityu.edu.hk](mailto:lbscholars@cityu.edu.hk) if you believe that this document breaches copyright and provide us with details. We will remove access to the work immediately and investigate your claim.

This is the peer reviewed version of the following article: Davison, R. M., Ou, C. X. J., & Martinsons, M. G. (2013). Information technology to support informal knowledge sharing. *Information Systems Journal*, 23(1), 89-109., which has been published in final form at <https://doi.org/10.1111/j.1365-2575.2012.00400.x>. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Use of Self-Archived Versions. This article may not be enhanced, enriched or otherwise transformed into a derivative work, without express permission from Wiley or by statutory rights under applicable legislation. Copyright notices must not be removed, obscured or modified. The article must be linked to Wiley's version of record on Wiley Online Library and any embedding, framing or otherwise making available the article or pages thereof by third parties from platforms, services and websites other than Wiley Online Library must be prohibited.

# Information Technology to Support Informal Knowledge Sharing

Robert M. Davison

Department of Information Systems  
City University of Hong Kong  
Kowloon, Hong Kong  
[isrobert@cityu.edu.hk](mailto:isrobert@cityu.edu.hk)

Carol X.J. Ou

Department of Information Management  
Tilburg University  
Tilburg, The Netherlands  
[carol.ou@uvt.nl](mailto:carol.ou@uvt.nl)

Maris G. Martinsons

Department of Management  
City University of Hong Kong  
Kowloon, Hong Kong  
[mgmaris@cityu.edu.hk](mailto:mgmaris@cityu.edu.hk)

## ABSTRACT

*The knowledge management (KM) literature largely focuses on the explicit and formal representation of knowledge in computer-based KM systems. Informal KM practices are widespread, but less is known about them. This paper aims to redress this imbalance by exploring the use of interactive information technology (IT) applications for informal knowledge sharing (KS). We develop theoretical propositions to highlight the key facets of informal KS processes, and illustrate them through an interpretive case-study analysis of KS in two public relations firms in China. We then discuss the implications of our findings for practice in both China and beyond. Finally, we recommend a research agenda to further investigate informal, relationship-based knowledge sharing.*

Keywords: Relationship-Based Knowledge Management (KM), Knowledge Sharing (KS), China, Chinese Management, Guanxi, Social Networks, Transactive Memory (TM), Interactive IT Tools

## 1. INTRODUCTION

The stakeholders of modern organisations demand the right knowledge at the right time. In response to this imperative, knowledge management (KM) applications have been implemented and investigated extensively. Prior research focuses largely on the explicit and formal representation of knowledge in computer-based KM systems (KMS) (Oshri et al., 2008). This research stream tends to assume that knowledge can be codified explicitly and so formally transferred from its creator to other people who can then benefit from it (e.g., Kankanhalli et al., 2005). However, we argue that effective KM sometimes requires informal KMS, since a lot of organisational knowledge is actually shared informally. Historically, this informal knowledge sharing (KS) took place ‘around the water cooler’ (cf. Orr, 1996), but is now also mediated by information technology (IT) applications such as online forums, blogs and wikis (Wagner and Bolloju, 2005).

Informal organisational knowledge is typically tacit and dynamic, requiring knowledge workers to engage in high levels of interpersonal interaction. However, informal knowledge sharing is not easily supported by formal KMS, which rely on precise, impersonal and rational rules (Martinsons and Westwood, 1997) to standardise and codify knowledge that can be archived and retrieved (Cohen, 1998). These formal KMS are rarely designed to support unstructured, implicit and often ambiguous human interactions.

Culture influences KS preferences (Michailova and Hutchings, 2006). Cultures differ in terms of their preference for informal KS or formal knowledge codification. The prevailing culture in China has a deeply embedded preference for informal and tacit forms of information (Martinsons and Westwood, 1997). Indeed, Chinese also prefer interactive communication: “despite the widespread use of IT applications across China, personal interaction remains the dominant form of knowledge transfer” (Burrows et al. 2005, p.75).

The growing attention to KM research in China has paralleled its increasing importance to the global economy. Survey-based studies focus on country-level comparative analysis (e.g., Chow et al., 2000), the general transfer of knowledge to China (e.g., Li and Scullion, 2006), and the factors that may influence KM adoption in China (e.g., Lee et al., 2009). However, intensive research about KM in China is rare. Furthermore, empirical studies tend to be informed by Western theories and assumptions (e.g. Teo and Men, 2008), rather than develop indigenous Chinese theory (cf. Tsui, 2006).

Given these circumstances, China was an attractive context for researching the role of IT in supporting informal KS. We first developed an indigenous theory about the phenomenon and then drew on intensive case studies to validate our propositions. Our primary aim is to address a pressing question for research and practice, viz.: *How is organisational knowledge shared when informal practices are preferred?*

Our review of the KM literature reveals that IT can support KM in two distinct ways: formal systems designed to capture and deliver knowledge based on structural rules; and interactive IT applications that facilitate informal KS between individuals and groups. Neither approach is inherently superior. Instead, they complement each other, though one may be more appropriate than the other in a specific cultural context. Given the paucity of KM research into organisational contexts where IT applications have been widely adopted yet informal communication is still preferred, we identified a secondary research question as follows: *What role(s) can IT play in supporting informal KM practices?*

As part of our theory development, we formulated a number of propositions about informal KS practices. These propositions reflect indigenous theorising and incorporate constructs such as ‘guanxi’, which is specific to the Chinese context and relevant for informal KS. The theoretical propositions are further informed by the principles of Transactive Memory Theory (TMT) (Wegner, 1987). TMT has particular salience when knowledge is shared informally (cf. Jarvenpaa and Majchrzak, 2008). The case study is the most suitable method for exploring our propositions in practice. As described below, we rely on the analysis and interpretation of qualitative data collected in two organisations that allow us to explore more fully the richness of the contexts.

In the following sections, we first concisely review the relevant literature in order to set the scene for the research. Based on the literature, we then develop research propositions that relate to informal KS. A careful description of our research method then follows with detailed contextual information about the two firms that we studied. We then analyse the case material in the light of the theoretical propositions, focusing on the current and emerging KS practices in the two firms and use of interactive IT applications. Finally, we conclude the paper with a broader discussion of the implications, contributions and future research.

## **2. LITERATURE REVIEW**

Research into knowledge and its management has a long history, perhaps dating to Bacon's (1597) maxim "knowledge is power" (*scientia potestas est*). KM studies by IS researchers have commonly assumed that explicit knowledge is easier to manage formally than tacit knowledge. The development of IT-driven KMS has long been justified on the economic principle that organisations can benefit significantly when they codify and leverage the considerable knowledge of their employees.

KM systems aim to transfer knowledge from those who originally experienced and created it to others who could benefit from and apply the same knowledge (Alavi and Leidner, 2001). Since much of this knowledge is held tacitly by individuals, researchers have also attempted to abstract or convert it into explicit forms more amenable to formal representation.

Efforts to document knowledge often fail to preserve its contextual richness. The remaining knowledge is rather dry and context-free. Nevertheless, formally documented knowledge can be valuable. Voelpel and Han (2005) describe how a knowledge item created by Chinese employees in Siemens' ShareNet KMS was later recontextualised by Italian employees in support of a successful project. Similarly, Braganza et al. (2009) describe how Schlumberger's InTouch KMS facilitated the solution of oil services engineering problems with input from globally distributed experts.

Many organisations have invested massively in KMS, but the vast majority of their knowledge remains uncoded. This may be due to the difficulty of developing a useful KMS (Zollo and Winter, 2002) or simply because such codification is inconsistent with cultural and/or personal preferences. A knowledge community approach might then be more appropriate, with informal networks of experts relying on trust-based sharing processes (Dennis and Vessey, 2005).

The growing research on KMS has identified: the organisational, managerial and technological factors that enable these systems (Davenport et al., 1998); the drivers and barriers of 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). It has also identified several common KMS challenges or problems. For instance, the simple act of writing or codifying knowledge can facilitate its clarification (Newell and Edelman, 2008) and alembication, but it may also have negative consequences, such as compromising personal power and discretion (cf. Burrows et al., 2005).

Power and its potential loss is a particularly salient issue for employees. Employees will be reluctant to share knowledge if management is unwilling to share power and authority (Davison and Martinsons, 2002). Essentially, employees do not trust their managers and so it is axiomatic that trust is asserted to constitute “the single most important precondition for knowledge exchange” (Rolland and Chauvel, 2000), since it “reduces ambiguity and uncertainty” (Staples and Webster, 2008).

Organisational employees are often unwilling to use KMS, suggesting that even when knowledge is documented it may not be leveraged. This underutilisation or abandonment of KMS may reflect: a poor fit with human factors (Martinsons and Chong, 1999); a poor alignment to strategy (Newell et al., 2009); a focus on the supply of rather than demand for knowledge (Scarborough and Swan, 2001); or an insufficiently interactive experience for KMS users (Teo and Men, 2008).

Efforts encouraging employees to share their knowledge have also been criticised. Critics focus on technocentrism (Newell et al., 2009), poor alignment with core business processes (Wang, 2002), excessive focus on best practices (Newell et al., 2009), failure to consider the social construction of knowledge through interpersonal interaction (Cook and Brown, 1999), and inattention to individual work practices (cf. Burrows et al., 2005). These critics eschew technological determinism in favour of an emphasis on the context wherein the knowledge was experienced or created. The ‘knowledge-as-possession’ perspective is perceived to be naïve since knowledge cannot be usefully separated from its native work practice and context (Orlikowski, 2007) or simply converted from a tacit to an explicit form (Newell et al., 2009).

Knowledge is instead believed to be equivocal, contested, politicised, dynamic and context dependent (cf. Newell et al., 2009). This was effectively demonstrated by Orr (1996), who documented how Xerox photocopier technicians relied minimally on their organisationally approved ‘repair manuals’, i.e. formally codified knowledge, but instead almost exclusively on their self-developed and shared networks of informal, ad hoc knowledge sources.

Informal KS involves a personal approach whereby questions and answers are processed during discussions and conversations. This informality deviates from the assumptions associated with most KMS and subverts political authority (Suchman, 1996), but it contributes to effective knowledge work. Informal KM initiatives are widespread and important because they facilitate the abstraction of tacit, less-structured but highly contextual knowledge from the knowledge holder. Thus, informal KS practices do not compete with formal KMS, but are instead orthogonal and yet complementary (cf. Hansen et al., 1999).

### **3. THEORETICAL PROPOSITIONS**

Following the literature review, we now develop a set of theoretical propositions that encapsulate the key aspects of informal KS practices in the Chinese context.

#### **3.1 The Prevalence of Informal KS Practices in China**

Chinese organisations tend to have implemented fewer KM initiatives than their Western counterparts. Significantly, “the Chinese tend to manage knowledge more informally and personally than their American and Japanese counterparts” (Burrows et al., 2005, p.74). This reflects fundamental differences in prevailing values and beliefs (Martinsons and Westwood, 1997). An emphasis on informal KS in China has been observed, with employees in Chinese organizations seldom deliberately codifying their tacit knowledge (Burrows et al., 2005). Chinese employees exhibit concerns about the credibility of knowledge obtained through a KMS. Instead, they prefer to have a single, identifiable person answer a question and thereby take responsibility for the knowledge shared (Tong and Mitra, 2009).

Martinsons (2008) asserts that explicit information and knowledge will be scarce in a relationship-based economy like China. The prevalence of highly contextualized knowledge follows from the strong Chinese preference for informal communication and knowledge transfer (Burrows et al., 2005). Informal KS among peers and team members occurs much more frequently than any attempt to retrieve knowledge from a KMS.

Despite the prevalence of informal KS in China, many Chinese organisations have established formal, large-scale KMS. Indeed, informal KS often supplements formal KM practices to enhance individual and team performance (Ou et al., 2010a). By engaging in informal and interactive KS, employees can discuss innovative ideas, comprehend the context of specific information, compare various alternative solutions, and then reach consensus so as to complete teamwork effectively. As a consequence of these informal social practices, the knowledge transferred often includes both objective and subjective elements (Burrows et al., 2005). Meanwhile, the socially facilitated informal knowledge can be recontextualised by the recipient. We therefore summarize the above arguments and propose that:

*Proposition 1: Informal KS strengthens team performance.*

### **3.2 Transactive Memory and Informal Knowledge Sharing**

Informal KS depends on individuals being able to locate both knowledge and each other effectively. Knowing ‘who knows what’ is a feature of transactive memory networks (Wegner, 1987). Transactive memory (TM) is created when members of a network disclose information to each other concerning their specialised knowledge. TM is strengthened as each network member calls on the knowledge of other members. TM is most effective when each member of the network has access to unique or specialised knowledge (cf. Bradbury, 1953; Borgatti and Cross 2003). Work can then be coordinated by anticipating the knowledge and behaviour of other network members, at the same time strengthening overall team performance.

An individual knowledge worker may be a member of more than one TM network, both within the firm or immediate work context and with remote others. An IT-based TM network (Yoo and Kanawattanachai, 2001; Choi et al., 2010) will enable access to knowledge held by a wide range of others. The TM network can then help each knowledge worker either to meet his/her own direct needs, or to meet the vicarious needs of distant others whose

requests for knowledge are channelled to him/her. Effective TM networks thus contribute to a dynamic and distributed problem solving capability (Newell and Edelman, 2008).

TM can enhance knowledge transfer in both face-to-face teams (Yoo and Kanawattanachai, 2001) and globally distributed teams (Oshri et al., 2008). The effectiveness of a TM network for collaborative work depends on the extent to which the network's collective memory acts as a channel for recording and retrieving tacit knowledge. An effective TMS will support the generation of creative solutions to shared problems. It is particularly valuable in non-routine and complex projects, and when network members have different perspectives, backgrounds, knowledge and experience. Therefore, we propose that:

*Proposition 2: TM networks support informal KS by connecting knowledge workers.*

### **3.3 The Impact of Guanxi and In-Groups on TM and Informal KS in China**

Our review of the literature on KM in the Chinese context reveals the importance of two indigenous concepts: guanxi and in-groups.

Guanxi, defined as “the existence of direct particularistic ties between two or more individuals” (Tsui and Farh, 1997), is a critical and ubiquitous dynamic in Chinese society. Guanxi reflects the ties and interdependencies in social networks that involve mutual reciprocity, the exchange of favours and long-term benefits (Xin and Pearce, 1996). Guanxi is an integral part of Chinese business management (Martinsons and Hempel, 1995) and Chinese information systems (Martinsons, 2008). Guanxi becomes more relevant to KS when reliable knowledge is a scarce and intangible resource. Knowledge workers who are related to one another through guanxi can depend on each other for knowledge.

Guanxi has been likened to Western concepts such as social capital and business relationships (Wang, 2007), but there are subtle differences. For example, guanxi is also an informal mechanism that acts as “a substitute for formal institutional and legal support” (Xin and Pearce, 1996). Since guanxi operates between individuals, the benefits are also accrued at the individual level, though firm-level guanxi can be built through individuals (Wang, 2007). Furthermore, guanxi implies a mutual obligation to reciprocate and is literally a life-long phenomenon.

The in-group is closely related to guanxi. An in-group comprises a psychologically proximate group of people including colleagues, peers, kinsmen or friends with whom one interacts regularly and has mutual and reciprocal obligations (Chow et al., 2000). An in-group is therefore a group of people with tight guanxi. In-groups remain important even in the presence of a strong organisational culture that may espouse different values. For example, in-groups were salient for the Chinese employees of the German firm Siemens: they were reluctant to engage in extensive KS beyond their in-groups despite a strong cultural expectation that they should do so (Voelpel and Han, 2005). This is consistent with the suggestion that “knowledge throughout Chinese society is shared primarily with fellow in-group members” (Burrows et al., 2005, p.75).



Sharing knowledge within an in-group tends to be psychologically easier (Triandis, 1989) because one's face and personal reputation is enhanced through informal and implicit forms of communication. In this informal communication process, guanxi is instrumental because it connects TM network members into in-groups of mutual and reciprocal relationships – and their collective pools of knowledge. The instrumental role of guanxi in KS is in line with the literature: “In the digital era, there is still no perfect substitute for the motivational effects of human bonding and social connectedness” (Lu et al., 2005, p.33).

Guanxi-linked in-groups that focus on long term benefits for all individual members exert a significant influence on KS practices in Chinese organisations (Shin et al., 2007). By engaging the members of an in-group through trust building and favour exchanging, activities are coordinated, knowledge resources are pooled, and knowledge is transferred from one person to another on the basis of the strength of the guanxi that individuals have with one another (Peng and Heath, 1996). These various processes also act to strengthen TM networks. In-groups with wide-ranging TM networks are likely to be able to engage in KS activities both intra- and interorganisationally.

We argue that effective KS relies on an interactive communication network consisting of “interconnected individuals who are linked by patterned communication flows” (Rogers and Kincaid, 1981). Such an interactive network provides ways for individual members of the network to gather information and seek opportunities for innovation. This view is consistent with TM theory and highlights the importance of interaction in TM networks. Each employee will need to develop his/her own guanxi-based TM networks in order to secure knowledge resources. Guanxi helps in-group members obtain high-quality knowledge by providing mutual assurance of the reliability, richness and trustworthiness of the knowledge that they share. Since communications in China tend to be very personal, informal methods to transfer knowledge are both viable and desirable (Martinsons and Westwood, 1997). Finally, guanxi also helps to diffuse knowledge because the flexible and practical informality of guanxi networks enables creative interaction and communication processes (Michailova and Hutchings, 2006). We therefore propose that:

*Proposition 3a: Guanxi strengthens TM networks.*

*Proposition 3b: Guanxi facilitates informal knowledge sharing.*

### **3.4 The Role of Interactive IT Tools**

As noted earlier, IT applications can play a critical role in effective KM. Although formal KMS facilitate the movement of knowledge from individuals to centralised knowledge repositories for later dissemination or retrieval (cf. Voelpel and Han, 2005), they depersonalise employee interactions (Lu et al., 2005) and impose rigid knowledge structures (Burrows et al., 2005). Creativity and innovation will likely be inhibited when such sclerotic systems and structures are mandated.

Formal KM initiatives may limit individual opportunities to engage in IT-mediated, interpersonal interaction. However, some IT tools, such as the instant messenger (IM) and

weblog, have interactive potential. They enable interlocutors to communicate synchronously or asynchronously in near real time. Although originally developed as social applications, they are increasingly accepted as legitimate tools for work that relies on unscheduled and informal yet frequent and interactive dyadic communication.

Interactive IT tools such as IMs are often preferred to face-to-face interaction between both co-located and distributed workers (Nardi et al., 2000) because they are unintrusive and commonly support multitasking. Whether engaging with colleagues, clients or anyone else in a TM network, a knowledge worker can work across space and time by integrating assorted information sources, solve problems by blending tacit and explicit knowledge, and archive knowledge for future harvesting and reapplication. This is evident in some preliminary studies on the utilization of IM by Chinese employees (Ou et al., 2010a, 2010b).

Interactive IT tools can thus promote interpersonal socialisation in the organisational context. They facilitate a continuous series of interactions that create and deliver knowledge. These interactive IT tools neatly satisfy the requirement of effective KM by making the right knowledge available to the right people at the right time. Concerns have been expressed about the potentially interruptive nature of IMs. However, Ou and Davison (forthcoming) found that IMs are no more interruptive than telephone calls and other unscheduled meetings.

Weblogs and discussion forums reach broader audiences than IMs and are a key channel for widespread knowledge sharing (Hsu and Lin, 2008). They are effective in contextualizing knowledge conversationally: personal viewpoints about lessons and reflections learned in a work-related project can be communicated in detail and interlocutors may respond and comment. Weblogs are particularly effective tools in knowledge innovation (Yu et al., 2010) and the explanation of best practices at work (Wagner and Bolloju, 2005).

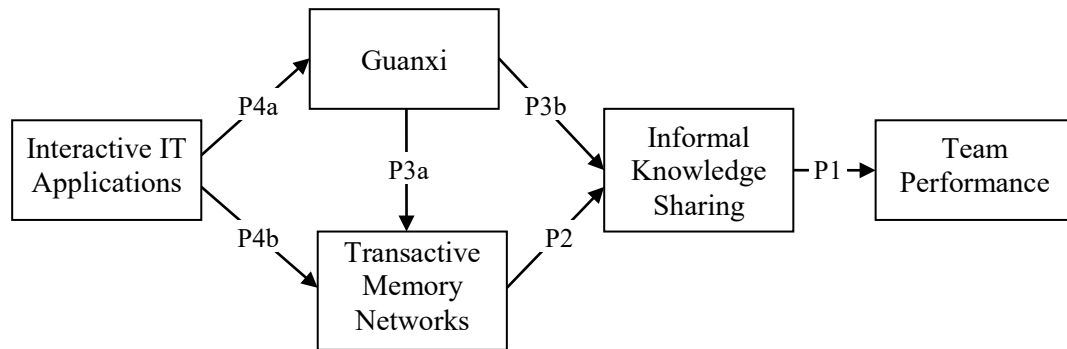
These IT tools facilitate KS in different ways, but they all support interactivity. Knowledge workers can use them to share and explain highly contextual tacit knowledge. These tools not only support effective representation, sharing and dissemination of knowledge, but also encourage guanxi development among knowledge workers as they engage in knowledge-focused conversation. This relational element can contribute to strong TM networks and so further facilitate effective KS. Therefore, we propose that:

*Proposition 4a: Interactive IT tools support informal KS by enhancing the guanxi of knowledge workers.*

*Proposition 4b: Interactive IT tools support informal KS by sustaining a robust TM network.*

Our propositions are summarised in a single theoretical framework (shown in Figure 1) and illustrated in the sections that follow with data that was collected from two case studies.

**Figure 1 The Proposed Theoretical Framework**



#### **4. RESEARCH CONTEXT AND METHOD**

##### **4.1 Research Context**

We undertook case studies sequentially in two public relations (PR) firms in China between November 2006 and January 2010. A PR firm is a type of professional service firm (PSF). PSFs are generally characterised by high levels of knowledge intensity, a highly professionalised workforce and low levels of capital intensity (Nordenflycht, 2010). The high levels of knowledge intensity that typify PSFs are significant for our research context. So too are the personal characteristics of knowledge workers; they are often viewed as having “preferences that conflict with the nature of bureaucratic organisations” (ibid.). These preferences include autonomy, which renders it more difficult to establish authority over knowledge workers who cannot easily be directed to undertake activities in which they are uninterested.

The two PR firms that we studied were Eastwei (EW) and RuderFinnAsia (RFA). EW ([www.eastwei.com](http://www.eastwei.com)) is headquartered in Beijing with a major office in Shanghai and smaller offices in Guangzhou and Chengdu. RFA ([www.ruderfinnasia.com](http://www.ruderfinnasia.com)) is headquartered in Shanghai, with a major office in Beijing and smaller offices in Guangzhou and Hong Kong. At the time when the research was conducted, each firm employed 100-150 consultants and provided various PR services to organisational clients - typically large multinational corporations with a need to maintain ongoing PR efforts in China.

The first author was introduced to EW in late 2006 as a result of a personal connection. In the first meeting with the CEO, we introduced our research interest in knowledge management – an interest that turned out to be mutual. Two years into our work with EW, the CEO introduced us to the CEO of RFA – his personal friend. We established a new research interest in this firm, along similar lines. This method of locating a research context may appear to be convenient rather than strategic. However, identifying potential research or business partners through a mutual tie (guanxi) is a prevalent practice in China. Without such a tie it would be extremely difficult to develop the necessary trust to conduct research (or business) at all.

In both EW and RFA, the researchers undertook both to interview employees and observe their behaviour, and to interact with the management of the two firms. This interaction was conducted in extended dialogues where we discussed key issues and considered how the two firms might respond to the emerging challenges associated with knowledge work. Both firms independently expressed an interest in developing their KM initiatives – and solicited us to help. We also played a more active role in identifying change opportunities – though any implementation of change would be undertaken by the firms themselves. We should note that we did not start work with RFA until the work with EW was complete. This helped to avoid the possibility of inadvertently sharing confidential information between the firms.

All work in EW and RFA is organised in client-focused teams, with team size ranging from 4-50 members. The teams are loosely organised by client industry, such as ‘auto(mobile)’, ‘pharmaceutical’, ‘travel’ and ‘luxury goods’. Each group is managed by a Senior Account Director. Each team is typically distributed across two or three locations in a hybrid fashion (Fiol and O’Connor, 2005), with some members (employees) in each location able to work face-to-face.

Team members interact with a variety of stakeholders on a regular basis. Apart from internal colleagues (in the same office or at remote offices) and other colleagues in the industry, these people include media event organisers and client employees such as PR managers or technically proficient staff who can provide details on products, services and industry trends in response to media questions. Externally, team members need to interact with journalists to: make arrangements for writing stories about client products and press releases; follow-up on the reception of recent product and press releases; update their knowledge continuously about the professional needs and expectations of journalists – and vicariously of the reading public; and build and maintain strong business connections. It is also important to be able to access the knowledge and expertise of team members at other offices, for example by sharing journalist contacts.

## **4.2 Research Methods**

Our research at EW and RFA was undertaken as a pair of sequential, exploratory case studies. However, given many similarities between the two firms, including operating procedures, client type and IT-based communication practices, we blend together our experiences at the two firms in our case descriptions and analysis. Where material is specific to a single firm, we indicate this clearly. In both firms, we have engaged with personnel at all levels from senior managers, through consultants to junior executives and research assistants in an extended series of conversations and discussions. Our descriptions and analysis of these interactions are supplemented with corporate documentation, observations of employees at work and analyses of user-generated texts.

The theoretical propositions informed our data collection process and guided our interview protocols. Our exploratory research did not aim to test a formal theory. However, as will become clear, we did successfully illustrate and validate the propositions, laying a

strong foundation for further theoretical work. In each firm, we engaged in one-to-one conversations, essentially semi-structured interviews, with employees at all levels, in order to collect data related to the research question and theoretical propositions. More than 100 employees were interviewed - 64 at EW and 39 at RFA. Meanwhile, we engaged the CEOs of both firms on multiple occasions in face-to-face and email conversations. Similar to the method detailed by Hempel and Martinsons (2009), data was analysed thematically in order to identify content corresponding to the propositions. Key themes were: interactive IT applications; guanxi as encountered in in-groups; transactive memory; formal and informal knowledge sharing; and teamwork performance.

## **5. INTEGRATED CASE ANALYSIS: EASTWEI AND RUDERFINNASIA**

In this section, we frame our analysis of the two cases using the four propositions. Each proposition is thus illustrated and discussed with case material. This analysis is not intended to chronicle the development of the two cases beyond the introduction to the research context given in §4.1 above.

### **5.1 P1: Informal KS Strengthens Team Performance**

PR firms create value for their clients by actively exploiting interests, needs and knowledge gaps in the mass media, rendering not just client information, but also more general information, perspectives and analysis on the client's entire industry. Successful project outcomes directly depend on the ability of consultants to generate, collate, apply and disseminate knowledge. PR work thus requires intensive access to knowledge sources.

In both EW and RFA, formal corporate knowledge databases have been created for the purpose of collecting and retrieving a variety of information and knowledge related to media work, journalists, event organisers and clients. These databases also include templates for frequently performed work processes, case reports from previous projects, as well as hyperlinks to internal and external documents. However, employees at EW and RFA reported that it is very time consuming both to update and to locate information in the corporate database. As one EW employee commented:

“You can search according to media name, person's name, email, telephone, post code, company type (media, client, partner etc.) but it's not user friendly. The search results cannot show you the full info: you have to click each of the items to check out the details, which can be time-consuming. Moreover, even a company name may not be standardised, e.g. Procter (or Proctor) & Gamble, or P&G, or BaoJie (宝洁), because each person who adds in the information may use their own naming convention”.

Given the problems that employees experience with the design and functionality of the formal corporate databases, many teams have developed their own resources, focusing in particular on informal KS applications and personalised directories of experts. These

directories parallel the functionality of the corporate database, yet are designed to enhance the usefulness by being more context relevant. In consequence, they end up subverting the authority of the corporate resources (cf. Suchman, 1996). Informal knowledge sharing processes add further value to work by improving task efficiency and effectiveness. One EW employee observed: “knowledge sharing means ensuring that the resources are available for the whole team”. The knowledge that is shared tends to be tacit in nature and is generated on demand by employees in order to solve specific problems that they encounter.

While observing work at both EW and RFA, we noticed distinct preferences for informal knowledge sharing. As one EW team leader remarked: “My method [of KS] is to tell people my personal lessons and experiences when I know they meet similar situations. ... My aim is to prevent people from repeating my mistakes”. Both EW and RFA have embedded informal KS in their business processes, and the interview scripts clearly indicate the significance of informal KS in enhancing team performance.

## **5.2 P2: TM Networks Support Informal KS**

Work teams in EW and RFA are commonly distributed across two or more locations. Despite this separation, team members remain in close contact with each other. By communicating with their colleagues (past and present) so they develop *guanxi* with their fellow interlocutors (which we discuss in the next section) and TM networks. TM networks take time to develop, but this can be justified by the latent dependency in PR work on the specialised knowledge of others. As an EW employee reported “some members are good at media relations, [others] know the product features well or have a better understanding of the dynamic information of the whole industry. Thus, every member can best use their expertise and the quality of the service [provided by the team] will be improved”. In RFA, we observed that employees were recognised as experts on such diverse topics as ‘identifying gifts for journalists covering media releases’, ‘negotiating with media event organisers’ and ‘locating the right journalist for specific topic write-ups’. Given these specific areas of expertise, it was not surprising that employees were often repeatedly charged with the same type of task, developing a knowledge-focused TM network appropriate to that task.

An individual employee may belong to several TM networks, given his/her prior communication with different people on different projects. An employee can leverage his/her membership of these networks to ensure that when a problem is encountered at work, an answer can be found – from a member of any TM network to which one belongs. For example, one RFA employee explained how he had needed to develop knowledge about the book publishing industry in order to address a client issue. His internal RFA colleagues were unable to help, so “I asked my friends in the media industry to help me”. Team members commonly turn to these informal, network-based resources rather than formal corporate databases. TM network members may work in the same office or a remote office of the firm, or may even be located outside the firm. This practice of seeking and sharing knowledge within the network was a cultural norm in both firms. However, this TM-focused approach simultaneously denied the value of the formal, corporate system. As an EW employee

commented: “If I need to get some media contacts which I do not have, I ask the other teams one by one. The [corporate intranet] system is there, but nobody maintains or updates it”.

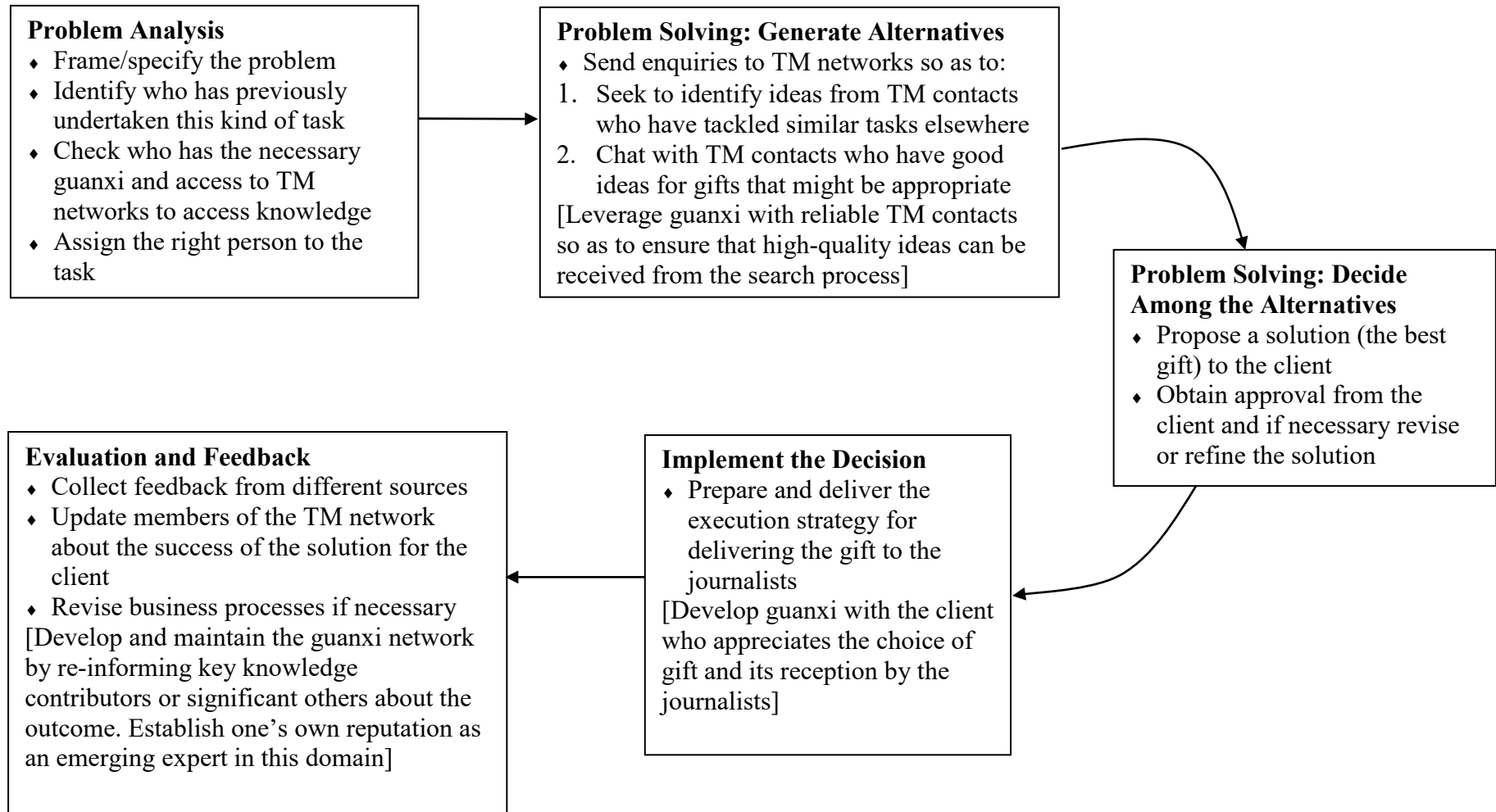
TM networks are not restricted to a single office or firm. They may cross geographical and industry boundaries and even include members who work for competing firms. We discussed the potential for confidential knowledge to leak out of a firm via a TM network’s KS arrangements with the CEO of EW. He admitted that knowledge leaks were certainly possible, but saw this as a two-way process, with knowledge moving in both directions. He clearly preferred an open organisational culture that encouraged all kinds of sharing instead of a restrictive culture. In his view, knowledge – although valuable for immediate problem solving – was less critical than *guanxi*.

### **5.3 P3: Guanxi Strengthens TM Networks and Informal KS**

*Guanxi* is arguably a media firm’s most valuable asset (Björkstén et al., 2008). When Grace, an employee in the RFA-Shanghai Auto Team needed help, she called on her *guanxi* network, requesting ideas from members of her TM network. Her reliance on *guanxi* and the TM network typifies a socio-cultural norm at EW and RFA, with both firms seeking to leverage *guanxi* in order to obtain knowledge, which is a key driver of value for their corporate clients. Indeed, it is a common expectation that employees should either bring *guanxi* with them when they enter the firm (cf. Tong and Mitra, 2009), or should develop *guanxi* with a variety of stakeholders in the industry, notably journalists and event organisers, as well as clients. Turnover in the PR industry averages 20-30% annually, so it is reasonable that many employees started their careers in other firms and so have peers with whom they maintain relationships.

When we first observed work at EW and RFA, we realised that it could readily be characterised as a value shop (Stabell and Fjellstad, 1998). In value shops, resources and activities are mobilised and managed according to the precise nature of the client’s problem. Thus, while work in a professional service firm generally involves “more or less standardised solutions”, the specific “value creation process is organized to deal with unique cases” (ibid., p.421). In Figure 2, we use the value shop to illustrate how a Shanghai-based RFA employee leveraged her *guanxi* and TM network to acquire knowledge that helped her solve a specific task related to the giving of gifts to journalists covering a product launch and in addition helped her to enhance her own competence and knowledge in this domain.

**Figure 2 A Value Shop Model of Work in a PR Firm (adapted from Stabell and Fjelstad, 1998; see also Davison et al., forthcoming)**





Having developed that competence, she will not only be able to perform her future work tasks in this area more effectively, but will also be in a position to act as a knowledge resource for others who can contact her through her membership of others' TM networks and the guanxi that binds her to those TM networks. Guanxi is notable for its obligatory reciprocity. As we noted above, EW's CEO did not object if she shared her knowledge about gifts with employees of other firms. The CEO recognised that the true competitiveness of the firm did not depend on the knowledge that it possessed, but instead on the guanxi that its individual employees were able to leverage as they sought the knowledge needed to provide clients with value-added solutions.

The positive aspects of guanxi in facilitating TM-based communication were paradoxically shadowed by an absence of guanxi in certain situations that led to a failure to share knowledge. This was particularly noticeable when employees were not members of the same team, both within offices and between offices. As one EW employee noted: "I think there is a lack of intra-office, cross-team communication, so we may not be able to help each other". Indeed, where intra-office guanxi and the associated TM development are concerned, many employees indicated that they lack the time to get to know people, socially and professionally. A RFA employee noted: "For example, I work for the consumer team and I may need a contact that is available in the auto team. But there is little daily communication between teams, so we can hardly know others and get their help". This clearly suggests that a lack of guanxi can hamper knowledge seeking and knowledge sharing.

#### **5.4 P4: Interactive IT Tools Support Informal KS and Sustain a TM Network**

Communications needs in EW and RFA are twofold: developing and maintaining high-frequency contact and high-quality guanxi with various external stakeholders, and coordinating project work and sharing knowledge within the (distributed) consultant team. The most frequently used communication channel in the two firms was the Instant Messenger (IM), with Microsoft's Windows Live Messenger (WLM) and Tencent's QQ being the tools of choice. We observed colleagues sitting next to each other communicating through an IM rather than turning and talking to each other. Unsurprisingly, colleagues further away would also turn to IM as their primary communication channel. Offices still retained a few fixed-line phones, but these were primarily used to contact clients who were not IM-literate. Although all employees had mobile phones, they tended not to use these in the office. IM is the primary mechanism to maintain and strengthen guanxi among colleagues and clients in both EW and RFA.

Employees typically kept details of contacts in their IM 'buddy' lists, which were carefully organised into multiple categories so as to permit quick location of a contact and his/her details. Heavier IM users had up to 700 such contacts with whom they maintained more or less frequent contact, and it was quite normal for a number of IM chats to be open simultaneously. Despite the fears of a senior manager at EW that IM applications would be used for unproductive social chatting, our text analysis of the IM logs of one 'heavy duty' IM user (3069 'chats' over two months) revealed that 80% of the content was work related, with

topics related to projects and coordination of activities being the most frequent. As an EW employee noted: “EW emphasizes internal communication, unlike other PR companies which may just pay attention to external communication”. On one occasion, we observed a Shanghai-based EW employee engaged in seventeen parallel IM chats, most related to her immediate task and with colleagues at the Shanghai or Beijing offices, though a few were with peers outside the firm. This leveraging of guanxi in order to obtain knowledge from an extended TM network takes place as a form of “rapid and ad hoc collaboration” (Jarvenpaa and Majchrzak, 2008), and is indispensable to effective and efficient work in this context.

Besides IM, a proprietary weblog (EastVoice: <http://eastvoice.eastwei.com>) is also actively used at EW. EastVoice is used as a Chinese and English corporate communication tool and includes a search function, organisation of topics by category, a display of the latest blog journals, and a comment feature so as to encourage interaction. Much of EastVoice’s content relates to marketing best practices, reflections and lessons learned from PR projects. Pictures, formulae and diagrams are used to illustrate the cases or theories discussed. Such knowledge is highly contextualized and includes detailed descriptions. While IM is primarily used for private chats and knowledge transfer, EastVoice provides a common platform for all company employees to ‘give and take’ knowledge. The journals reflect the expertise and interests of the authors, thus enabling a wider TM network at the company level. The great detail described in each blog journal enables other TM members to extract useful knowledge from stories and therefore contribute to effective KM.

## **6. DISCUSSION**

We have explored how guanxi-linked TM systems can support informal knowledge sharing. We developed a number of theoretical propositions based on the literature, each illustrated with data from two case studies of KM practices in Chinese PR firms. These propositions were conceptually linked in a theoretical framework (Figure 1) that can be further validated and enhanced in future research.

The evidence from the integrated pair of case studies clearly suggests that informal forms of knowledge (and knowledge sharing) are preferred in some cultural contexts. This informal knowledge is often highly contextual in nature and held in a tacit form by individual employees. The active sharing of this informal knowledge is very much part of the organisational culture in EW and RFA. Employees professed and clearly demonstrated a willingness to share knowledge informally. Losing power did not seem to concern them (very much). We observed employees spending much of their time in communication activities where knowledge flows freely. This communication took place between guanxi-linked individuals who were either members of a client-focused work team, or individuals who shared a TM network, or both (Yoo and Kanawattanachai, 2001; Choi et al., 2010). Substantially less communication took place between employees who did not belong to a guanxi-linked TM-network. This relationship-based knowledge sharing between individuals resembles the relationship-based commerce between firms reported by Martinsons (2008).

Knowledge sharing between individual members of a network was found to be enhanced by TM. Each network member knew (from memory or a personalised index) what kind of knowledge other network members possessed or could access from a remote location via their membership of another network. Although individual employees were seldom assigned the responsibility for maintaining specific knowledge, we observed that individual employees did develop recognised expertise in specific functions.

Whilst KS behaviour is widespread, very little knowledge is formally archived by a knowledge creator or recipient for later harvesting and reuse. Knowledge may be retained personally, but once used it is typically discarded. However, locating valuable knowledge depends on one's *guanxi* (Björkstén et al., 2008). Most employees have too many relationships (often several hundred) to manage all of their contact information informally. Instead, they rely on the IM and its associated 'buddy list' to manage contact information. Teams may establish and share databases of contacts. However, these are rather static resources and the IM remains the primary vehicle for KS and communication at EW and RFA, both internally (with employees in the same office or other offices) and externally (with clients, journalists, media organisers and other professional acquaintances).

It is important to separate professional knowledge from one of its primary facilitators, *guanxi*, and draw a distinction between the two concepts. Knowledge is often gathered as required and collectively owned. Indeed, Lu et al. (2005) suggest that knowledge can be treated as a 'public good', though in the current context it might be better to call it a 'team good'. Once knowledge is made explicit, it both becomes easily transferable and is open to misappropriation, theft or loss: the protection of both knowledge and intellectual property is a major concern for businesses in China, as evident from regular news headlines involving foreign investors such as Google, Microsoft, SAP and TCS.

In contrast, *guanxi* tends to be developed over a long time and cannot be stolen or misappropriated – unless one steals (headhunts) the person who commands the *guanxi*. *Guanxi* is valuable, rare and difficult to imitate. This makes it a source of sustained competitive advantage in China. Moreover, *what you know* (knowledge) is not as important as *whom you know* (*guanxi*), in contexts where informal KS and TM networks are prevalent. Indeed, *guanxi* is arguably the single most important resource for knowledge workers in contexts where formally codified knowledge is scarce or is culturally discouraged.

*Guanxi* is critical to the support of informal, interpersonal KS and constitutes the basic means to ensure that knowledge work is done effectively. Each individual must develop and maintain his/her own *guanxi* networks. Consequently, *guanxi* is constitutively and intricately entangled with the people who engage in transactive knowledge sharing (cf. Orlikowski, 2007). If a consultant has good *guanxi* with extensive knowledge networks, then s/he should be able to locate resources quickly in response to an immediate need (cf. Jarvenpaa and Majchrzak, 2008). Interactive IT tools, such as IM, are valuable because they support the use of *guanxi* both to seek and to acquire informal knowledge.

Employees at both EW and RFA believed that the knowledge accessible through their TM networks was superior to what they could obtain from corporate intranets or other formal

KMS, which typically lack the interactivity that is expected by professional service providers. More critically, these formal systems usually do not provide the connectivity needed for TM, though Choi et al. (2010) describe a holistic KMS that does include informal communication elements as well as formal ones. Formal systems such as intranets and KMS tend to separate knowledge from people and work processes, effectively disentangling them and diminishing their usefulness (cf. Orlikowski, 2007).

The formal and informal approaches to KS represent knowledge very differently. Knowledge held by individual people and accessed through the TM network is created on demand from experiences, stories and anecdotes. This serves to reiterate the suggestion that knowledge cannot simply be converted from a tacit to an explicit form (Cook and Brown, 1999; Newell et al., 2009). Nevertheless, we found that interactive IT applications do play a critical role in the effective communication needed for informal KS. IM conversations were commonly used to share knowledge informally, with sufficient context to give the knowledge experiential validity. It is unarguable that the knowledge shared is explicit. However, the written message was created afresh from a tacit form of knowledge embedded in the experience of the creator. It is not extracted from a computer-based KMS or other formal repository and then transmitted.

Our research demonstrates the explanatory power of TM theory, now repositioned in the context of informal KS practices. The dyadic and personal nature of guanxi means that TM based knowledge networks are essentially individual resources. Accessing knowledge through such networks requires guanxi with a network member. Further testing of these findings and tentative conclusions is required to confirm their validity, ideally across different cultural contexts. Nevertheless, we believe that an indigenous theory of KS in China will likely incorporate notions of: guanxi where much KS takes place; the communication tools most frequently used for KS, i.e., IMs and weblogs; and principles of TM theory, which explains how network members are able to leverage their own and others' guanxi in order to locate relevant knowledge via interactive IT tools (cf. Davison et al., forthcoming).

## **7. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH**

China's role in the global economy is growing, but how knowledge there is managed and shared still seems poorly understood. Theoretical explanations for KS in Chinese organisations remain underdeveloped and untested. Our interpretive investigation of KS practices in two knowledge-intensive firms revealed strong support for all of our theoretical propositions. Significantly, we examined the specific roles played by guanxi, in-groups and TM in informal KS. We also demonstrated that IM can effectively support informal KS in the Chinese context.

Several concepts in our study are indigenous to China. Nevertheless, we believe that our theoretical propositions will be salient in other contexts where knowledge is shared informally. For example, although guanxi may be specific to China and overseas Chinese communities, similar concepts exist elsewhere, both in East Asian countries influenced by principles of Confucianism, and further afield..

Our cases clearly show the importance and prevalence of informal and decentralised KS. We found that Chinese employees prefer to engage in informal and personal or in-group based KS practices that are not subject to central control. In principle, these informal communications could occur on any suitable IT platform, whether based on the public Internet or a corporate arrangement (cf. Choi et al., 2010). However, we found that a limited role for formal rules and procedures has enabled a benign and rather energising chaos to thrive. Both the personalised KS and the energising chaos may be surprising, even paradoxical, in a societal culture that is supposedly as collectivist and disciplined as China. Although beyond the scope of our study, this apparent paradox may reflect cultural tensions within China (cf. Martinsons and Ma, 2009).

The Chinese value the richness of context that can be preserved and reflected in informal, personalised processes. This rich context is hard to preserve and reflect in formal, centralised processes (Martinsons and Westwood, 1997). In this respect, we suggest that the management of knowledge will be culturally conditioned – at the societal and organisational levels (cf. Davison and Martinsons, 2003). Thus, formal KMS will be culturally appropriate in some contexts, but not universally.

We suggest that in many contexts, what you know is not as important as whom you know. Relationship-based knowledge sharing at the personal level will often mirror relationship-based commerce at the firm level. In these relationship-based contexts, the most important IT tools that support informal and interactive KS. This KS will commonly be among in-group members or among those who have established *guanxi*. Nevertheless, the specific combination of effective tools will vary from context to context.

Future research needs to be undertaken to verify these suggestions – ideally in a wide range of societal, professional and organisational cultural contexts. A key limitation of this research relates to its context. As with many research studies, data is collected in specific contexts, which narrows its validity. In this study, our data is restricted to two professional services firms. Each is relatively small and based in China. Furthermore, most of their clients are overseas firms, and so the work they do is tailored to this context. Further research both within China and beyond it can usefully explore other contexts, combinations of IT tools and their patterns of relationship-based KS in firms of other types and other countries. We expect to find significant multi-cultural variations in informal KS attitudes and behaviours.

We suggest at least three other streams of promising research on informal, relationship-based KS. First, the characteristics of IT tools such as their capability in enabling interactivity, networking and structuring knowledge could be summarized. This would enable the design and development of IT tools to support informal KS activities in companies (Choi et al., 2010). Hybrid KMS that incorporate both interactive and static IT tools might then become conducive to knowledge workers from different cultural persuasions. Second, the type of communication types (such as convergence vs. conveyance) required in work tasks (cf. Dennis et al., 2008) may also influence the use of the IT tools for KS. Therefore, inclusion of task types can provide a more complete theoretical view to further investigate informal and relationship-based KS and KM. Third, systematic scales to evaluate the

effectiveness of KM, KS and informal IT tools would be valuable for business leaders and operational managers.

#### ACKNOWLEDGEMENTS

**We are grateful for the feedback from the reviewer team that have helped us to refine our arguments.** This research is supported by the Hong Kong SAR Government's GRF Projects 1425/05H and 1420/10, and the City University of Hong Kong's Strategic Research Grant SRG7001279.

#### REFERENCES

- Alavi, M. and Leidner, D.E. (2001) Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues, *MIS Quarterly*, 25, 1, 107-136.
- Bacon, F. (1597) *Meditationes Sacrae*.
- Björkstén, J., Wang, L.S. and Yin, T. (2008) Chinese Public Relations (中国式公关). Beijing: CITIC Press.
- Borgatti, S.P., and Cross, R. (2003) A relational view of information seeking and learning in social networks, *Management Science*, 49, 4, 432-445.
- Bradbury, R. (1953) *Fahrenheit 451*. New York: Ballantine Books.
- Braganza, A., Hackney, R.A. and Tanudjojo, S. (2008) Organisational Knowledge Transfer through Creation, Mobilisation and Diffusion: A Case Analysis of *InTouch* within Schlumberger, *Information Systems Journal*, 19, 5, 499-522.
- Burrows, G.R., Drummond, D.L., and Martinsons, M.G. (2005) Knowledge Management in China, *Communications of the ACM*, 48, 4, 73-76.
- Choi, S.Y., Lee, H.S. and Yoo, Y.J. (2010) The Impact of Information Technology and Transactive Memory Systems on Knowledge Sharing, Application and Team Performance: A Field Study, *MIS Quarterly*, 34, 4, 855-870.
- Chow, C. W., Deng, F. J. and Ho, J. L. (2000) The Openness of Knowledge Sharing within Organizations: A Comparative Study of the United States and the People's Republic of China, *Journal of Management Accounting Research*, 12, 65-95.
- Cohen, D. (1998) Towards a Knowledge Context: Report on the First Annual University of California, Berkeley Forum on Knowledge and the Firm. *California Management Review* 40, 3 22-39.
- Cook, S.D.N. and Brown, J.S. (1999) Bridging Epistemologies: The Generative Dance Between Organizational Knowledge and Organizational Knowing, *Organization Science*, 10, 4, 381-400.
- Davenport, T.H., DeLong, D.W.D. and Beers, M.C. (1998) Successful Knowledge Management Projects, *Sloan Management Review*, 39, 2, 43-57.
- Davison, R.M. and Martinsons, M.G. (2002) Empowerment or Enslavement? A Case of Process-based Organisational Change in Hong Kong, *Information Technology & People*, 15, 1, 42-59.

- Davison, R.M. and Martinsons, M.G. (2003) Cultural Issues and IT Management: Past and Present, *IEEE Transactions on Engineering Management*, 50, 1, 3-7.
- Davison, R.M., Martinsons, M.G. and Ou, C.X.J. (forthcoming) The Roles of Theory in Canonical Action Research, *MIS Quarterly*.
- Dennis, A.R. and Vessey, I. (2005) Three Knowledge Management Strategies: Knowledge Hierarchies, Knowledge Markets and Knowledge Communities, *MISQ Executive*, 4, 4, 399-412.
- Dennis, A.R., Fuller, R.M., and Valacich, J.S. (2008) Media, Tasks, and Communication Processes: A Theory of Media Synchronicity, *MIS Quarterly*, 32, 3, 575-600.
- Fiol, C.M. and O'Connor, E.J. (2005) Identification in Face-to-Face, Hybrid, and Pure Virtual Teams: Untangling the Contradictions, *Organization Science*, 16, 1, 19-32.
- Hansen, M.T., Nohria, N. and Tierney, T. (1999) What's your Strategy for Managing Knowledge?", *Harvard Business Review*, 77, 2, 106-116.
- Hempel, P.S. and Martinsons, M.G. (2009) Developing international organizational change theory using cases from China, *Human Relations*, 62, 4, 459-499.
- Hsu, C.L. and Lin J.C. (2008) Acceptance of Blog Usage: The Roles of Technology Acceptance, Social Influence and Knowledge Sharing Motivation, *Information & Management*, 45, 1, 65-75.
- Jarvenpaa, S.L. and Majchrzak, A. (2008) Knowledge Collaboration among Professionals Protecting National Security: Role of Transactive Memories in Ego-Centred Knowledge Networks, *Organization Science*, 19, 2, 260-276.
- Kankanhalli, A., Tan, B.C.Y. and Wei, K.K. (2005) Contributing Knowledge to Electronic Knowledge Repositories: An Empirical Investigation, *MIS Quarterly*, 29, 1, 113-143.
- Lee, O.K., Wang, M., Lim, K.H. and Peng, Z.Y. (2009) Knowledge Management Systems Diffusion in Chinese Enterprises: A Multistage Approach Using the Technology-Organization-Environment Framework, *Journal of Global Information Management*, 17, 1, 70-84.
- Li, S.X. and Scullion, H. (2006) Bridging the Distance: Managing Cross-border Knowledge Holders, *Asia Pacific Journal of Management*, 23, 71-92.
- Lu, L., Leung, K. and Koch, P.T. (2005) Managerial Knowledge Sharing: The Role of Individual, Interpersonal and Organizational Factors, *Management and Organization Review*, 2, 15-41.
- Martinsons, M.G. (2008) Relationship-based E-commerce: Theory and Evidence from China, *Information Systems Journal*, 18, 331-356.
- Martinsons, M.G. and Chong, P.K.C. (1999) The Influence of Human Factors and Specialist Involvement on Information Systems Success, *Human Relations*, 52, 1, 123-152.
- Martinsons, M.G. and Hempel, P.S. (1995) Chinese Management Systems: Historical and Cross-Cultural Perspectives, *Journal of Management Systems*, 7, 1, 1-11.
- Martinsons, M.G. and Ma, D. (2009) Sub-cultural Differences in Information Ethics across China: Focus on Chinese Management Generation Gaps, *Journal of the Association of Information Systems*, 10, 11, 816-833.

- Martinsons, M.G. and Westwood, R.I. (1997) Management Information Systems in the Chinese Business Culture: An Explanatory Theory, *Information & Management*, 32, 215-228.
- Michailova, S. and Hutchings, K. (2006) National Cultural Influences on Knowledge Sharing: A Comparison of China and Russia, *The Journal of Management Studies*, 43, 3, 383-405.
- Nardi, B.A., Whittaker, S. and Bradner, E. (2000) Interaction and Outeraction: Instant Messaging in Action, *Proceedings of CSCW'00*, 79-88.
- Newell, S. and Edelman, L.F. (2008) Developing a Dynamic Project Learning and Cross-Project Learning Capability: Synthesising Two Perspectives, *Information Systems Journal*, 18, 6, 567-591.
- Newell, S., Robertson, M., Scarborough, H. and Swan, J. (2009) *Managing Knowledge Work and Innovation*, Palgrave-Macmillan, New York.
- Nordenflycht, A. von (2010) What is a Professional Service Firm? Toward a Theory and Taxonomy of Knowledge-Intensive Firms, *Academy of Management Review*, 35, 155-174.
- Orlikowski, W.J. (2007) Sociomaterial practices: exploring technology at work, *Organization Studies* 28, 9, 1435–1448.
- Orr, J. (1996) *Talking about Machines: An Ethnography of a Modern Job*, IRL Press, Ithaca, NY.
- Oshri, I., Fenema, P. van and Kotlarsky, J. (2008) Knowledge Transfer in Globally Distributed Teams: The Role of Transactive Memory, *Information Systems Journal*, 18, 6, 593-616.
- Ou, C.X.J. and Davison, R.M. (forthcoming) Interactive or Interruptive? Instant Messaging at Work, *Decision Support Systems*, doi:10.1016/j.dss.2011.05.004.
- Ou, C.X.J., Davison, R.M., Liang, Y. and Zhong, X.P. (2010a) The Significance of Instant Messaging at Work, *The 5<sup>th</sup> International Conference on Internet and Web Applications and Services*, May 9-15, Barcelona, Spain.
- Ou, C.X.J., Davison, R.M., Zhong, X.P. and Liang, Y. (2010b) Can Instant Messaging Empower Teams at Work?, *4<sup>th</sup> International Conference on Research Challenges in Information Science*, May 19-21, Nice, France.
- Peng, M.W. and Heath, P.S. (1996) The Growth of the Firm in Planned Economies in Transition: Institutions, Organizations, and Strategic Choice, *The Academy of Management Review*, 21, 2, 492-528.
- Rogers, E.M. and Kincaid, D.L. (1981) *Communication Networks: Toward a New Paradigm for Research*. New York: Free Press.
- Rolland, N. and Chauvel, D. (2000) Knowledge Transfer in Strategic Alliances. In: *Knowledge Horizons: The Present and the Promise of Knowledge Management*, Despres, C. & Chauvel, D. (eds.), 225–236. Butterworth Heinemann, Boston, MA, USA.
- Ryu, C.S., Kim, Y.J., Chaudhury, A. and Rao, H.R. (2005) Knowledge Acquisition via Three Learning Processes in Enterprise Information Portals: Learning-by-Investment, Learning-by-Doing and Learning-from-Others, *MIS Quarterly*, 29, 2, 245-278.



- Scarborough, H. and Swan, J. (2001) Explaining the Diffusion of Knowledge Management: The Role of Fashion, *British Journal of Management*, 12, 1, 3-12.
- Shin, S.K., Ishman, M. and G.L. Sanders (2007) An Empirical Investigation of Socio-cultural Factors of Information Sharing in China, *Information & Management*, 44, 165-174.
- Stabell, C.B. and Fjelstad, O.D. (1998) Configuring Value for Competitive Advantage: On Chains, Shops and Networks, *Strategic Management Journal*, 19, 413-437.
- Staples, D.S. and Webster, J. (2008) Exploring the Effects of Trust, Task Interdependence and Virtualness on Knowledge Sharing in Teams, *Information Systems Journal*, 18, 6, 617-640.
- Suchman, L. (1996) Supporting Articulation Work, in: Kling, R. (Ed.) Computerization and Controversy: Value Conflicts and Social Choices, *Academic Press*, San Diego, CA, 407-423.
- Teo, T.S.H. and Men, B. (2008) Knowledge Portals in Chinese Consulting Firms: A Task-Technology Fit Perspective, *European Journal of Information Systems*, 17, 6, 557-574.
- Tong, J. and Mitra, A. (2009) Chinese Cultural Influences on Knowledge Management Practice, *Journal of Knowledge Management*, 13, 2, 49-62
- Triandis, H.C. (1989) The self and social behavior in differing cultural contexts. *Psychological Review*, 93, 506-520.
- Tsui, A.S. (2006). Contextualisation in Chinese Management Research, *Management and Organization Review*, 2, 1-13.
- Tsui, A.S. and Farh, J.L. (1997) Where Guanxi Matters. *Work and Occupations*, 24, 56-79.
- Voelpel, S.C. and Han, Z. (2005) Managing Knowledge Sharing in China: The Case of Siemens ShareNet, *Journal of Knowledge Management*, 9, 51-63.
- Wagner, C. and Bolloju, N. (2005) Supporting Knowledge Management in Organizations with Conversational Technologies: Discussion Forums, Weblogs, and Wikis, *Journal of Database Management*, 16, 2, 1-8.
- Wang, J. (2002) Chinese Enterprises Need Knowledge Management, *Automobile Technology*, 6, 44-46.
- Wang, C.L. (2007) Guanxi vs. Relationship marketing: Exploring Underlying Differences, *Industrial Marketing Management*, 36, 81-86.
- Wegner, D.M. (1987) Transactive Memory: A Contemporary Analysis of the Group Mind, in Mullen, B. and Goethals, G.R. (Eds.) *Theories of Group Behavior*, 185-208. Springer-Verlag, New York.
- Xin, K.R. and Pearce, J.L. (1996) Guanxi: Connections as Substitutes for Formal Institutional Support. *Academy of Management Journal*, 39, 6, 1641-1658.
- Yoo, Y.J. and Kanawattanachai, P. (2001) Developments of Transactive Memory Systems and Collective Mind in Virtual Teams, *International Journal of Organizational Analysis*, 9, 2, 187-208.
- Yu, T.K., Lu, K.C. and Liu, T.F. (2010) Exploring Factors that Influence Knowledge Sharing Behavior via Weblogs, *Computers in Human Behavior*, 26, 1, 32-41.

Zollo, M. and Winter, S. (2002) Deliberate Learning and the Evolution of Dynamic Capabilities, *Organization Science*, 13, 3, 339–351.