Research Note

Strategic knowledge management failures in small professional service firms in China

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ABSTRACT

In this paper, we report and reflect on Knowledge Management (KM) projects conducted in two China-based, smaller–sized professional service firms. The authors acted as Action Researchers, assisting each firm extensively as it prepared for its implementation of an IT-based KMS. However, neither KMS implementation significantly improved knowledge transfer or work productivity. We analyze the project failures, noting the significance of specific strategic management deficiencies as well as inadequate employee involvement and incentives. The implications for the strategic management of knowledge and organizational change in China are considered.

1. Introduction

Knowledge is commonly regarded as an important organizational resource and its effective management is key to the success of organizations that wish to enhance employee productivity and reduce redundancies associated with recreating knowledge repeatedly (Ou, Davison, & Wong, 2016). Knowledge Management (KM) research focuses largely on the capture, retention, processing, and reuse of explicit knowledge (Gold, Malhotra, & Segars, 2001). Indeed, since knowledge is recognized as a driver of competitive advantage (Kogut & Zander, 1992), there is considerable interest in the application of IT as a facilitator of "collaboration among different units and individuals unconstrained by the boundaries of geography and time" (Lu, Leung, & Koch, 2005). Thus, it is not surprising that successes with formal knowledge management systems (KMS) in large, Western-based firms dominate the KM literature (Oshri, Fenema, & Kotlarsky, 2008; Von Krogh, 2012).

Given that organizations benefit from successfully implemented KM systems, it is not surprising that China, the world's second largest economy, should also pay attention to this phenomenon. Indeed, the last decade has witnessed considerable interest in KM research in China. Unfortunately, most of this research has involved surveys of captive or convenience populations (Chow, Deng, & Ho, 2000; Ou et al., 2016). Intensive studies of projects where a KM initiative has failed are difficult to find in any location, with Olesen and Myers (1999), Storey and Barnett (2000) and Davison, Martinsons and Ou, (2013) being rare exceptions. This limits opportunities to learn from past

mistakes and for organizational leaders to avoid repeating the errors of others. KM studies in both smaller organizations and less developed settings are also rare (Atherton, 2003; Empson, 2001). This is unfortunate given the substantial economic importance of both small enterprises and emerging markets.

The knowledge gap that we identify relates to the absence of significant literature intensively investigating KM failures in the Chinese context. By reporting and reflecting on KM failures in two small professional services firms based in China and identifying lessons that can help organizations avoid KM failure in future, we aim to redress this deficiency. Our guiding research question is thus: Why do formal Knowledge Management initiatives in China fail?

Following this introduction, we review the KM literature, with a focus on failure factors and KM experiences in China. We then present the theories that guided our action research (AR) investigations in these two firms, summarize our findings and reflect on the failures. We conclude with suggestions for further research.

2. Literature review

Knowledge management (KM) is a crucial activity for organizations. It enables them to identify, promote and spread best practices while improving productivity and other key performance measures. Many organizations have initiated KMS projects, but implementing such systems is both resource intensive and risky (Oshri et al., 2008). KMS projects often fail to meet deadlines, budgets and/or performance expectations. They may be unsuccessful "even when they are reason-

Table 1
Failure Factors for Knowledge Management Systems (adapted from Chua and Lam, 2005).

Category	Description
Technology	Deficiencies related to infrastructure, software applications and tools, and hardware equipment. Common problems include: poor connectivity, either to the KM system or between the sources and users of the knowledge; difficult to use applications, tools or equipment; and excessive costs to operate or maintain the system.
Culture	Deficiencies related to the softer aspects of individual or organizational behavior. Common problems include: political conflicts that impede the planning, design, implementation or operation of the system; reluctance or inability of organizational members and other stakeholders to share their knowledge; reluctance to rely on a formal KM system.
Content	Deficiencies related to the knowledge in the system. Common problems include: insufficient or fragmentary coverage; inadequate or inappropriate structure; lack of filtering or distillation of the knowledge to extract value from lengthy documents or general discussions; and a lack of relevance or currency in the knowledge.
Project Management	Deficiencies related to the planning, organization or control of a KM systems project. Common problems include: lack of user involvement; lack of technical or business expertise; inappropriate or inadequate allocation of resources; inability to manage conflicts; inadequate cost control; and poor relationships with consultants or other key stakeholders.
Strategic Management	Strategic management factors that can contribute to the failure of a KM system include: poor alignment of KM efforts with strategic goals; lack of a clear vision for KM; inadequate top management commitment and support for the KM system.

ably well resourced and there appears to be ample commitment from top management" (Storey & Barnett, 2000, p.155).

2.1. Knowledge management failure factors

Given the time, effort and financial resources that are expended on KMS projects, there is a need to understand why they often fail to meet expectations. Chua and Lam (2005) inductively analyzed five KM failures in large Western multinational enterprises (MNEs). They built upon an earlier classification of factors influencing KMS (Holsapple & Joshi, 2000) to identify four specific categories of failure factors: technology, culture, content and project management. These, together with a more general category, which we label as strategic management factors, are presented in Table 1, and briefly introduced here.

The technology category refers to infrastructure, software tools and hardware equipment. It includes issues of poor connectivity (such as bandwidth limitations); difficult usability; over-reliance on KM hardware; and excessive maintenance costs.

The culture category refers to the softer aspects of human and organizational behavior. It includes issues of politics, self-perception, leadership and motivation. For example, employees may be unable or unwilling to share their knowledge due to factors such as selfishness or self-interest (Lu et al., 2005).

The content category refers to the characteristics or properties of the knowledge itself. It includes issues of coverage (which can be insufficient or fragmentary), structure, usefulness (especially relevance or currency), and knowledge distillation (which is critical to extract value from lengthy documents and general discussions).

The project management category refers to the planning, organization and control of a KM project. It includes issues of: user involvement, technical and business expertise; cost control; and the management of relationships with consultants and other stakeholders.

The strategic management category of failure factors includes: poor alignment with strategic goals and priorities; unclear vision for KM in the organization; and the lack of top management support and commitment.

Chua and Lam (2005) were unable to identify a singular set of factors that were consistently responsible for KM failure in the five MNEs. Nevertheless, they concluded that: technology issues can be a major obstacle to KM success; cultural challenges can occur at three different levels: personal, group, and organizational; and content can contribute to KM failure if it is incomplete, outdated, irrelevant or poorly structured.

Chua and Lam (2005) found that key factors contributing to KMS success in large Western firms include: alignment of KM efforts with organizational goals; a clear vision for KM; top management commitment to and support for KM; and a culture that encourages knowledge

sharing. However, they admit that their multiple case analysis "has inevitably obscured the nuances found in individual KM projects" (Chua & Lam 2005, p.15). They recommend more intensive studies "to validate, refine or add to the overall completeness of the model" (Chua & Lam 2005, p.16) and suggest further research of KM in different organizational and social contexts. We have responded to their recommendation with AR of KM in China. The next section reviews the existing literature on KM in China.

2.2. Knowledge management in China

We undertook a thorough review of the literature across multiple disciplines using the following keywords: China; Chinese; knowledge management; knowledge sharing; knowledge exchange. Through this process; we identified 257 articles; over 200 published since 2008. Unfortunately; most lack academic substance. A careful screening for rigor reduced the total to 82. Of these; the most influential 26 articles are compared across multiple dimensions in Table A1 in Appendix A in order to illustrate the diversity of research on KM in China.

Many of the studies explicitly compare Chinese KM experiences with those in other, usually Western, cultures (e.g., Chang, Hsu, Shiau, & Tsai, 2015; Chow et al., 2000; Weir & Hutchings, 2005), document knowledge transfers to China (e.g., Li & Scullion, 2006; Hutchings & Michailova, 2004; Martinsons and Hempel, 1998) or identify factors that influence KM adoption in China (e.g., Lin & Huang, 2008; Lee, Wang, Lim, & Peng, 2009; Teo & Men, 2008; Wang, Noe, & Wang, 2014). More reflexively, Lu et al. (2005) adapt Western theory to compare the knowledge sharing practices of two Chinese managers. Similarly, Burrows, Drummond, and Martinsons, (2005) draw on distinctively Chinese cultural factors to not only describe and explain the prevailing KM approach in China, but also to contrast it with those prevailing in the U.S. and Japan. Meanwhile, case studies of Siemens (China) by Voelpel and Han (2005) and of two public relations firms by Davison et al. (2013) focus on KM arrangements in Chinese contexts.

Since the late 1990s, KM articles have also appeared in Chinese language business journals. They tend to prescribe how KM initiatives *should* be implemented in China (cf. Gao & Gu, 1998; Zhu, 2004). Few report on how KMS *has been* implemented in China, let alone *what really works* or *does not work* in Chinese contexts.

Chinese organizations increasingly recognize that effective KM is critical to innovation and competitiveness (Martinsons, 2005; Wang & Wang, 2012). Nevertheless, they are generally acknowledged to trail their Western counterparts with KMS (Burrows et al., 2005). No Chinese firm has ever won the annual Most Admired Knowledge Enterprise (MAKE) Award, although Lenovo was an Asian MAKE Award finalist (Teleos, 2016). KMS pioneers in China have commonly adapted Western models while relying on both technologies and professional

expertise from Western firms such as IBM and Accenture.

The lagging state of KM initiatives in China is attributed by Wang (2002) to poor alignment between KM initiatives and the firm's core business, inadequate planning and inefficient resource allocation, and a lack of KM expertise. These key factors fit the *project management* and *strategic management* categories of Chua and Lam (2005). Remarkably, none of the factors from Wang (2002) fit into the technology, culture or content categories.

2.3. The impact of culture and technology on KM in China

Although they were not highlighted by Wang (2002), we expect technology and culture to greatly influence the success of KM initiatives in China. KM success would seem to require useful and useable technology as well as organizational members willing and able to share knowledge. Knowledge sharing is likely to be influenced by various socio-psychological factors, such as incentives and personality characteristics as well as the organizational and societal culture (Davison et al., 2013). In China, knowledge sharing often takes place informally, without recourse to a formal KMS (Davison et al., 2013; Martinsons & Westwood, 1997; Ou et al., 2016). Even in the digital age, personal connections remain important for business in China (Martinsons, 2008), and are supported by informal IT applications (Davison et al., 2013).

Hofstede (2003) identifies high power distance and strong in-group collectivism as salient features of traditional Chinese culture. High power distance causes senior managers to be reluctant to request knowledge from their subordinates and their juniors hesitant to share what they know (Hong and Engestrom, 2004). Conversely, knowledge exchange within in-groups is encouraged by a sense of obligation (Chow et al., 2000) and the potential to enhance personal reputation or "face" (Du, Ai, Abbott, & Zheng, 2011). Although a fear of "losing face" can discourage knowledge exchange (Young, Kuo, & Myers, 2012), it is comparatively more efficient to rely on in-group ties when searching for knowledge (Qing, 2008).

Lu et al. (2005) found that "positive interpersonal relationships are conducive to … knowledge sharing" and suggest that "interpersonal trust is critical to facilitate social cooperation and coordinated social interactions". Consistent with the collectivist perspective discussed by Von Krogh (2009), knowledge sharing within a Chinese organization can be effectively motivated by co-worker collegiality (Lu et al., 2005) and explicit rewards (Chang et al., 2015). Meanwhile, Huang et al. (2008) found that management style can increase the intention to share knowledge by helping to develop interpersonal trust. However, it is not enough for managers to express support for knowledge sharing; they need to encourage peer-to-peer interactions and facilitate or even mandate knowledge sharing (Wang et al., 2014).

Management attitudes towards and encouragement of specific behaviours are comparatively important in China (Tong & Mitra, 2009). Incentives and sanctions are very useful in persuading employees to cooperate (Chang et al., 2015). Chinese firms perform better when they reward knowledge sharing and penalize knowledge hoarding (Davison et al., 2013). A supportive KM culture can be enhanced by "systematic efforts to recruit, select and socialize employees willing to share their knowledge" (Burrows et al., 2005).

Practices that induce accountability and offer rewards can also stimulate knowledge sharing in a formal KMS (Wang et al., 2014). Consistent with this general finding, when Siemens first set up its ShareNet KMS, it included an individual reward system. Employees received points for sharing, distributing and reusing knowledge, and answering specific questions (Voelpel & Han, 2005). These points could be redeemed for rewards such as gifts and trips, though financial rewards were less important to most contributors than symbolic recognition of their efforts and contributions.

2.4. Summary of the KM in China literature

The literature on KM in China is growing quickly. The theories commonly adopted include Task-Technology Fit (Goodhue & Thompson, 1995), Socialization-Externalization-Combination-Internalization (Nonaka & Takeuchi, 1995), Social Cognitive Theory (Bandura, 1997) and Social Capital Theory (Nahapiet & Ghoshal, 1998) along with the cultural dimensions of Hofstede (2003). Very few papers consider indigenous Chinese cultural factors such as guanxi (relationships), mianzi (face), hexie (harmony), or renqing (mutual benefits). Further, the literature has followed the Western tendency of reporting almost exclusively on successes while ignoring failures. The Chinese sensitivity to criticism and failure represents a formidable obstacle to studying and publishing cases that are unsuccessful, even if a firm is anonymized. This cultural barrier has been recognized implicitly by findings that the Chinese rarely admit their mistakes publically in order to save "face" (Wang et al., 2014), and tend to hoard knowledge within an in-group (Burrows et al., 2005; Voelpel & Han, 2005).

This literature also suggests that many Chinese businesses have sought to emulate the successful KM efforts in the West. The KMS pioneers in China have followed Western role models while relying on Western technologies and consulting expertise (Burrows et al., 2005). Some foreign firms, such as Siemens, have transplanted their KMS into China (Voelpel & Han, 2005). More often, Chinese enterprises have learned from the experiences of Western firms with KM and followed in their footsteps (cf. Wang, Su, & Yang, 2011).

3. Method and theories

In this paper we report and reflect on two KM projects undertaken in small professional service firms (PSFs) in China. Each of the projects involved a Canonical Action Research (CAR) investigation, where the researchers attempted to ameliorate an organizational problem situation related to KM by means of a theory-based intervention. CAR is premised on a five-stage cycle incorporating: diagnosis, action planning, action taking, action evaluation and reflection (Davison, Martinsons, & Kock, 2004, Davison, Martinsons, & Ou, 2012). Theory plays a key role in CAR (McKay and Marshall, 2001). Researchers may first find it helpful draw on an instrumental theory or theories during the initial diagnostic phase, when they identify the underlying conditions and analyze the nature of the problem. Once this diagnosis is complete, researchers need to identify a focal theory that supports the action-oriented change that is taken to resolve the problem (Davison et al., 2004, 2012). After the changes have been implemented, their effectiveness can be evaluated from the perspective of both the focal theory (was the change effective?) and the instrumental theory (have the underlying conditions been addressed?).

During each project, we first *diagnosed* the organizational problem situation, collecting and analyzing primary data from key stakeholders (including managers, employees, customers, KM system suppliers and competitors). We also reviewed many documents, including the minutes of management meetings and the plans for the development and implementation of the KM systems. After this *diagnosis*, we developed a theory-based *plan* for the introduction of a KMS before participating in its *implementation*. During the *implementation* stage, we observed key stakeholders applying the new work arrangements, and interviewed them so as to ascertain their reactions to it. Subsequently, we *evaluated* the outcome of the KMS implementation, and then *reflected* on why it failed. In each project, we undertook only a single CAR cycle: the failure was apparent within this sole cycle and it would have been inappropriate to conduct further cycles.

We adopted three theoretical perspectives in this research. Since both firms faced competitive pressures and their leaders expressed interest in the successful KM efforts of successful Western firms, we adopted Transaction Cost Economics (Williamson, 1979) and Institu-

tional Theory (DiMaggio & Powell, 1983; Scott, 1995) as our instrumental theoretical lenses (Davison et al., 2012). These two theories provided us with a means to understand the intentions of the two firms and their leaders, with respect to the KM initiatives. The focal theory that we used to drive change in the two organizations was Punctuated Equilibrium Theory (PET) (Eldredge & Gould, 1972; Gersick, 1991). We describe each of these three theories in the next section.

3.1. Transaction cost economics

The original aim of Transaction Cost Economics (TCE) was to explain contracting arrangements, and consequently both the scope and scale of the firm. Coase (1960) developed a framework to predict when activities would be performed internally by a firm, and when they would be contracted from the external market. Williamson (1979) subsequently examined the roles of frequency, specificity, uncertainty, limited rationality and opportunistic behavior as key determinants of transaction costs.

More recently, TCE has been used to study assorted economic relationships, ranging from vertical and lateral integration to transfer pricing and the organization of work. The principles of TCE are also useful to prescribe whether specific activities should rely on transactions with the external market (thus, being purchased as needed), rely on an intra-firm market, or be developed internally to strengthen the firm's own resources and capabilities.

Information Systems (IS) researchers have applied TCE to investigate how different institutions, such as firms, markets and franchises, affect the costs of developing and operating IS as well as producing and distributing information services. A TCE approach is particularly popular among researchers who study outsourcing, given the potential for cost rationalization (e.g. Lacity & Willcocks, 1995), which is relevant to PSFs in China that aim to transform the way knowledge is sourced and then transmitted internally.

China is undergoing a transition from a state-controlled to a market-oriented economy. This has created a growing need for enterprises, especially privately-owned and smaller-sized ones, to become more efficient. The reduction of transaction costs is an obvious way to increase efficiency. Formal KMS standardize many transactions, rendering individual knowledge transparent across the organization and thus reducing transaction costs, since knowledge once shared is available to all who need it without additional transactions. Given this potential for transactional efficiency, Chinese PSFs may be expected to adopt more formal KM practices in order to increase their efficiency and competitiveness.

3.2. Institutional theory

Institutional Theory focuses on the social aspects of organizations, including structures, schemes, systems, rules and routines. It considers how they are created, diffused, adopted and adapted over time, and how they subsequently fall into decline and disuse (Scott, 1995). Institutional theorists assert that organizational development is influenced strongly by the institutional environment along with market forces. Innovations, such as the adoption of KM, that improve the performance of early-adopting organizations become "legitimized" in the environment. Other organizations are then encouraged to adopt the innovation.

DiMaggio and Powell (1983) argue that successful practices are more likely to be duplicated when firms are more dependent on the institutional environment; face higher levels of uncertainty; have ambiguous goals; and/or rely extensively on professionals. This institutional isomorphism is likely to be evident in Chinese PSFs since they inherently rely on professionals and face a dynamic and uncertain business environment.

Organizations may become more homogeneous over time (Scott, 1995). However, the degree of conformity between organizations will vary. Some organizations will fully replicate the substance and spirit of the innovation while others will conform *ceremonially* (Meyer & Rowan, 1977). A study of large-scale IT-enabled changes found that Chinese organizations commonly seek legitimacy through *ceremonial* conformity (Hempel & Martinsons, 2009). Adopting an institutional theory lens lends our diagnosis a perspective rooted in the Chinese social environment, enabling us to consider whether the pressure to conform results in genuine isomorphic change or a more ceremonial posturing.

3.3. Punctuated equilibrium theory

Punctuated Equilibrium Theory (PET) focuses on the revolutionary changes that punctuate more stable periods of evolutionary change. Although originally developed in palaeobiology (Eldredge & Gould, 1972), it has been adapted to the management and IS disciplines. Thus Gersick (1991) suggested that punctuating stable but dysfunctional behaviours in groups with revolutionary changes can lead to dramatic enhancements in a group's productivity. Meanwhile Sabherwal, Hirschheim, and Goles (2001) found that strategic alignment practices vary over time, with an alteration between revolutionary and evolutionary change.

Recognizing the juxtaposition of the more stable (or evolutionary) state and the more volatile (or revolutionary) state, we anticipated the value of presenting ourselves, the action researchers, as revolutionary change agents with the specific role of planning and implementing radical change with the intention of achieving dramatic improvements in a firm's productivity. Thus, in the current study, while each PSF would naturally grow following an evolutionary cycle, our intervention was deliberately designed to be revolutionary, shaking up the stable equilibrium by introducing an innovation designed to solve an identified organizational problem.

4. Action research projects

4.1. Gamma Consulting

Gamma Consulting was founded in Shanghai by two brothers in 1994. Its professional services focus on different aspects of human resource management (HRM). Most of its customers are located in Shanghai or the neighbouring provinces of Jiangsu and Zhejiang. The vast majority of revenues for Gamma come from qualified professionals completing projects that have been drummed up by the brothers or their kin. The firm employs about 30 professionals and has 15 support staff. It has a serious business atmosphere and disciplined work practices based on informal controls. Reflecting the high power distance and family-oriented collectivism of Chinese management (Leung, 2008), the founders use a directive leadership style. Knowledge sharing is a key activity contributing to Gamma's success.

4.1.1. Situation context and diagnosis

The two brothers leading Gamma first became interested in KM after attending a seminar presented by a Western consultant at a local university in Shanghai. The consultant stressed that organizations could become more competitive if they made better use of their existing knowledge by managing it explicitly. He provided several examples of Western firms that had improved their performance significantly by adopting a systematic approach to KM.

The brothers were intrigued and conducted some of their own research. They discovered that many leading companies were using IS to manage their knowledge, Consistent with institutional theory and the concept of isomorphism, the brothers were keen to follow in the footsteps of these companies. In November 2008, they engaged a consultant and asked him to identify and review several existing KMS, and to assess their applicability to Gamma. The assessment included a diagnosis of Gamma based on McKinsey's 7S framework (Peters & Waterman, 1982).

First, the consultant diagnosed the organizational situation in order to get a better understanding of both the problem and the constraints facing a potential solution. A model of work processes and knowledge flows was developed after interviewing employees and reviewing company documents. Consistent with the focus of TCE to improve operational efficiency, key performance indicators were identified and measured in order to evaluate aspects of knowledge retention, sharing and retrieval. Gamma had a traditional Chinese management culture that fits the classic characterization of Martinsons and Hempel (1995). This culture was identified as a potential challenge to KMS adoption.

Second, alternative approaches for KM in Gamma were identified. These ranged from off-the-shelf purchases to custom-developed solutions. Three different KMS alternatives were shortlisted: purchase and adaptation of KnowledgePro software; stand-alone development of a customized KM system; and integration of a new KM sub-system with their existing computer-based information system. Each approach included software, hardware, policies, procedures and user training. The consultant presented the models and measurements of the existing business as well as the potential KM alternatives to Gamma's leadership duo in a meeting that lasted four hours.

4.1.2. Planning

The brothers decided on the KnowledgePro approach. They resisted suggestions from the consultant to involve their employees in the systems planning process. Consistent with a high power distance culture, they insisted on exercising their managerial prerogative to make key decisions about the KMS. One of the brothers asserted that since "Gamma is our family business, so only family members have the right to make the big decisions". However, the brothers did agree to have the consultant design a survey about KM and the proposed KnowledgePro arrangement, and administer it to their employees. A total of 17 employees completed the survey. Their responses influenced the planning for and implementation of KnowledgePro.

Implementation of KnowledgePro was planned systematically and carefully based on the principles of action research (Davison et al., 2004). The consultant now took on the role of action researcher. The plan included the creation of a simple scorecard to evaluate IS management based on Martinsons, Davison, and Tse (1999) and adoption of KnowledgePro software. This commercial package was designed to capture and organize the core HRM knowledge and heuristics that the firm used to solve client problems. A clear roll-out plan was developed and a user training session was organized. After being advised of the different ways that the system could be implemented, the brothers decided to have a rapid roll-out throughout their whole company rather than a phased introduction with pilot testing. This rapid roll-out was consistent with the principles of Punctuated Equilibrium Theory, i.e. constituted a revolutionary change to the otherwise relatively stable state of organizational processes. The costs and schedules of the KMS implementation were specified explicitly while several other changes were made to encourage adoption of the KMS. For example, some competing software was removed from Gamma's servers when the KnowledgePro-based KMS was deployed officially.

4.1.3. Implementation and evaluation of the knowledge pro KMS

In June 2009, Gamma quickly and smoothly implemented the KnowledgePro system. No significant technical or operational problems were encountered. In the first four weeks after the KnowledgePro system was deployed, Gamma employees nominally obeyed the founding brothers. They uploaded at least 10 basic "knowledge" items into the KMS each week. The employees also claimed to have extracted what they deemed to be "useful knowledge" from the system on more than a dozen occasions. This pleased the leadership duo and encouraged them to talk about the new KMS with several business partners. The brothers also planned to mention the KMS in their marketing efforts.

One month after the implementation, when maintenance and support levels were reduced after a service contract expired, use of the KMS started to drop. Total log-ins went from 67 in the first month to 28 and 17 in the next two months. Interviews with employees revealed not only that their use of the KMS had been mostly due to a sense of obligation, but also that they relied on other people for knowledge, rather than the new KMS. They commonly consulted colleagues who knew a lot about the subject of interest and were willing to share their knowledge. Face-to-face interactions were frequent while instant messaging tools such as QQ and Windows Live Messenger extended the scope of knowledge sharing beyond the Gamma office boundary. Meanwhile, they also observed that Gamma's formal IT systems, including KnowledgePro, were difficult to use and that response times were frustratingly slow. This was largely due to the firewall application that had been installed by the firm. Three months after KnowledgePro was deployed, it was essentially abandoned.

At this stage the action researcher asked ten employees how they subsequently used the "useful knowledge" that they had supposedly extracted from the KMS. Only two were able to provide a meaningful answer. Five of the others agreed with the interviewer's statement that the KMS was "a waste of time and effort". They admitted that it was easier to get timely and useful information by making use of their personal connections rather than accessing the computer-based system. The Gamma employees revealed that they had initially used the new KMS not because it helped them do their job, but because they wanted to ingratiate themselves to their bosses and "save (their) face". Indeed, the two brothers seemed to be the only ones who still believed that the KMS would benefit Gamma if only its content was updated regularly.

4.1.4. Reflection on the project

The top management duo at Gamma was clearly committed to the KMS. They also acted to address both technology and project management issues. However, they were more interested in citing the KMS for marketing and sales, which they personally undertook, than in improving operational productivity. In terms of our theoretical lenses, the mimetic isomorphism of institutional theory trumped the efficiency aim of transaction cost economics. Thus, although there could have been transactional advantages associated with the KMS, Gamma's top management was less interested in these transactional advantages and more interested in burnishing their image as a "modern business", isomorphic to the Western organizations that had already implemented a KMS successfully. Arguably, Gamma's top management wanted to have the benefits of appearing to be a modern business, but was reluctant to make significant organizational changes. Thus, we suggest that Gamma's decision to implement a KMS was never more than a veneer that would conceal the traditional family business structure.

In this light, it is easy to understand why, despite repeated prompting from the action researcher, Gamma's leadership duo did little to develop either commitment to or enthusiasm for the system among its intended users. The brothers neglected these soft factors that can make or break a KMS (Chua & Lam, 2005). This situation illustrates the uncontrollability threat identified by Kock (2004) and reflects the "guarded commitment" of an organization noted by Avison, Baskerville, and Myers (2001). The degree of control and influence that an action researcher can wield is ultimately limited. If the organizational client is not clearly committed to organizational change, then project failure is likely. From an action research perspective, the project was abandoned when the brothers admitted that their primary goal was to bolster Gamma's image rather than to improve knowledge transfer or productivity. This focus on institutional legitimacy rather than efficiency mirrors Hempel and Martinsons (2009) suggestion that Chinese businesses with the "right image" can succeed irrespective of their efficiency.

The KM effort at Gamma Consulting was based on a clear vision and aligned with organizational goals. It also had the commitment and support of top management. The technology factors were favorable. Meanwhile, management of the KM project adhered to (Western)

textbook guidelines with the notable exception of user involvement. Based on the classification of Chua and Lam (2005), the KM failure in this firm was due primarily to three cultural factors: the failure of management to contemplate genuine organizational change; the failure of management to involve employees in the KMS project process; and the reluctance of employees to rely on an impersonal KMS that they deemed inferior to their own informal knowledge exchange arrangements.

4.2. Theta Associates

Theta Associates is an executive search firm, with headquarters in Hong Kong, and regional offices in Beijing and Shanghai. Each office has between 20 and 30 employees. Revenue generation and service delivery are the firm's highest priorities, with all partners (termed 'billers') responsible for both activities. They are supported by junior 'researchers' who analyze specific industries and check on the credentials of prospective job candidates. Billers receive income mostly from commissions, whereas researchers get standardized salaries.

The top management team of Theta consisted of four managing directors (MDs). In late 2005, we met Ryan, one of the MDs. A discussion of how a KMS might benefit his firm was followed by a formal proposal to engage in a project. The proposal was accepted by Ryan, who was responsible for the Hong Kong and Beijing offices, and also approved by Carl, a second MD who oversaw the Shanghai office. They told us that they wanted to ensure that every employee had access to relevant information and knowledge, since this would sharply reduce transaction costs and lead to process efficiencies that would benefit Theta's productivity and the satisfaction of her clients.

4.2.1. Diagnosis of the situation

Our diagnosis of the organizational situation started in February 2006. Some 15 months before, Theta had tried to improve its management of curricula vitae (CVs) for job candidates. The MDs wanted every CV to be accessible across all Theta branches. Theta had acquired Deskflow, an IT application designed to manage CVs and track job applicants. Each newly-received CV should be uploaded to Deskflow, where all data would be centralized.

In practice, as we discovered, Deskflow was rarely used. Instead, each biller retained a private collection of CVs. Fewer than 90 CVs were ever entered into Deskflow, with over 1000 hard-copy printouts of CVs awaiting data entry. Several employees observed that it was both too complex to use Deskflow and too tedious to enter content. Nevertheless, two of the billers suggested that the effectiveness and efficiency of work at Theta would be significantly enhanced if CVs were entered and updated regularly.

The MDs recognized that, in addition to the CVs, each employee had specific expertise which could be leveraged with an effective KMS. Theta's researchers often shared this knowledge privately with each other when they were asked for help or ideas. This knowledge sharing commonly occurred through used informal but interactive IT applications like instant messengers, as well as e-mail. The use of instant messengers contravened company policy. Occasional sweeps of employee computers would occur, with unauthorized software being removed. Nevertheless, the same software was often reinstalled and put back into use shortly after it had been removed.

Billers were generally more reluctant to share their knowledge, either with other billers or with researchers, due to the time involved. One biller said, "If I have to formalize all my knowledge, what am I going to get? The company doesn't appreciate that at all. They don't even count that as part of my bonus". However, another biller said: "I personally haven't come across any reluctance to share knowledge. We help each other".

More than a dozen employees were interviewed, in Hong Kong, Beijing and Shanghai, as part of the situational diagnosis. Nearly all said that they would accept a more formal KM system if it helped them to share knowledge without taking up too much time. Billers in particular were sensitive to the time involved, since time spent on non-revenue generating (i.e. non-billable) activities reduced their salary.

4.2.2. Project planning

Based on the problems identified in the situational diagnosis, a new KMS that would replace Deskflow was proposed by the action researcher as a radical step to punctuate the stable but ineffective equilibrium that formed the status quo at Theta. The KMS was designed to enable knowledge exchange across the whole firm, not only between privately contracting pairs of employees. The new KMS would not only reduce transactional costs, enabling employees to access knowledge efficiently, but would also enable Theta to compete with other firms in its industry sector more effectively, in line with the principles of institutional theory. Although Ryan and Carl were cautious about instigating radical change, they authorized the custom development of this new KMS, which was to be known as the Theta Knowledge Management Portal (TKMP). TKMP was hosted for free in Hong Kong during an initial pilot testing period of six weeks.

4.2.3. Project implementation

The researchers and billers at Theta initially espoused strong support for TKMP. Nevertheless, we recognized that a formal statement of support from top management was essential if a critical mass of active participants was to be ensured. The MDs were urged to mandate KMS use as part of the implementation plan, and also to lead by example. Unfortunately, neither Ryan nor Carl was prepared to mandate usage. Ryan observed that "I can encourage people to use the software, but I cannot force them".

An unforeseen implementation problem concerned the very limited Internet bandwidth available to Theta employees, which frustrated their attempts to access TKMP. In Beijing, Internet connectivity was often so slow as to be essentially unavailable: loading a webpage took several minutes. Even when the bandwidth were increased substantially using a leased line from a Hong Kong Network Service Provider, the employees used the discussion forum infrequently. Interviews with several Beijing and Shanghai employees revealed that they expected to have essentially instantaneous access to websites. Use was further discouraged by intermittent technical problems; the absence of an onsite technical support person to explain "what went wrong" and "why it would not happen again" frustrated the employees and encouraged them to go back to "the old way of doing things".

4.2.4. Project evaluation

Although the development and implementation of TKMP had a clear mandate from Theta's top managers, their failure to mandate usage of TKMP suggested the absence of a strong commitment to the project. Although Ryan repeatedly asserted his personal commitment to the project in conversations with both Theta employees and the action researcher, he never did more than gently encourage use. In our assessment, he lacked the charisma to change the behavior of his subordinates, even as he recognized the transactional value that such usage would bring. Somewhat bizarrely, Ryan claimed that he was "not in a position to mandate use of the system". He fully expected a protracted struggle to occur before potential users could be persuaded of its benefits. Meanwhile Carl, as the Shanghai office director, could have encouraged staff there more directly to use the KMS, but chose not to do so.

Meanwhile, technical problems such as inadequate Internet access and the absence of onsite technical support, which made it more difficult to resolve technical problems quickly, undoubtedly hindered adoption of the KMS. Unsurprisingly, employees rapidly lost interest in the project with usage of TKMP dropping to zero within three months. Six months after the project started, it was informally abandoned. After six more months, it was formally terminated.

4.2.5. Project reflection

As we reflect on the project failure at Theta, we recognize in retrospect that ingrained work habits are hard to change. Despite making frequent visits to Theta's three offices and conversing with many employees at all organizational levels, we were clearly unable to elicit the core values of either the firm or its employees. We suggested an efficiency motive, consistent with TCE in both our of projects. However, this was clearly insufficient to achieve the cultural change needed to implement the KMS successfully. Similar to the resistance from the brothers at Gamma, we could not persuade Theta's MDs to change their 'laissez-faire' leadership culture (Bass, 1985) into something more directive. Completing work "in a reasonable amount of time" and "at appropriate levels of quality" was acceptable at Theta. It was also critical to guarantee future work by securing new clients or new projects with existing clients. Beyond this, researchers (and particularly billers) could work as they liked. For example, although Theta had a training and development manual, local practices tended to deviate from global norms in what one biller termed a 'flexible' approach. This apparent disregard for the precepts of institutional theory is intriguing: Theta appeared to operate as a lone wolf, essentially ignoring normative institutional expectations in highly competitive markets, devising a very local operating culture that permitted senior employees considerable latitude in their decisions and initiatives, irrespective of the impacts that these decisions exerted on the organization.

The organizational culture of Theta did not discourage knowledge sharing. Indeed, many employees espoused a keen interest in sharing knowledge, subject to work constraints. However, these constraints were significant: sharing was commonly perceived to take up (too much) time that the billers in particular preferred to devote to more lucrative, revenue-generating activities. While TCE suggests that all employees would benefit from a KMS that facilitated more efficient knowledge sharing, the absence of a reward mechanism that could be used to remunerate billers for their time spent on non-billable activities (i.e. transaction costs) provides another indicator of Theta's organizational short-sightedness. Indeed, rewards apart, it was not clear how senior employees would benefit from sharing their knowledge. Conversely, in-depth knowledge about specific clients (know-who) and industries (know-what) was very helpful to the junior researchers. We found that key tasks often could not be completed without such knowledge. This supports the contention that socially-connective know-who information is critical for business success in China (Burrows et al., 2005; Davison et al., 2013). As a firm, Theta relied extensively on social networking to identify both potential clients and future employees.

The lack of an internal project champion to inspire changes in knowledge sharing behavior also contributed to the KMS failure. Theta's leadership team was polycephalous (with four MDs) yet, paradoxically, also acephalous (with no paramount leader). Unlike Gamma, Theta is not a family firm, but rather a local franchise of an international firm. Local franchises are often given considerable flexibility to manage their own operations and strategic direction. However, the MDs in China failed to map out, let alone plan, their firm's future direction. All the MDs acted primarily as "rainmakers", generating business, and managers of highly-independent projects. None of the MDs assumed a strategic management role. There was a formal plan to implement and operate the KMS but the MDs never attempted to align it with any higher-level strategic plan for Theta's business development (Dulipovici & Robey, 2013).

Ryan accepted the role of project coordinator. However, he did not, could not or would not devote sufficient time, energy and resources to ensure project success. He encouraged his peers and subordinates to get involved but there was no compelling motivation for Theta's professionals to use the KMS.

5. Discussion

This discussion is divided into two sections. We first consider the failures that we encountered from a holistic perspective, in addition considering the five KMS failure factors identified by Chua and Lam (2005). In the second part, we consider the failures in the light of our theoretical lenses.

5.1. KMS failures and failure factors

The failures that we encountered in both CAR projects share a number of similarities. In both Theta and Gamma, employees were willing to protect the face of their managers, yet did not see real value in the new KMS. Meanwhile, even though the managers appeared to believe that the KMS would save transaction costs and lead to greater knowledge sharing effectiveness and efficiency, those same managers failed either to incorporate the KMS into a strategic plan or to communicate a rationale for why the KMS should be used by employees. In Gamma, we further learned that the two brothers who managed the firm had little interest in achieving real change with the KMS. Instead, they were interested in the symbolic value that the KMS might bring them by creating the aura of a modern firm that they could leverage to their advantage in the market where they operated.

In both Gamma and Theta, decision making was the exclusive purview of the senior management team. Employees were not consulted and even the influence that the action researchers could bring to bear was limited: our suggestions to involve more stakeholders and to communicate the rationale for the KMS were essentially ignored. Indeed, it is fair to argue that our own failure to insist on greater employee involvement and the provision of adequate incentives for using the KMS contributed to the unsuccessful outcome. Had we paid greater attention to the importance attributed by employees to the informal social interactions and instant messaging activities during the diagnosis stage of the project, we would have been in a better position to advise how a KMS could have been designed in a way more acceptable to its users, and a more successful intervention might have been achieved.

Theta's laissez-faire management style and culture is atypical in a society such as China, where both status-oriented hierarchies and transactional leadership continue to prevail (Leung, 2008). Theta's KM failure there can be attributed to the absence of a clear business vision, specific long-term objectives or a strategic plan. Although Theta's MDs accepted and approved the plan to introduce a KMS, their inadequate commitment to, and tepid support for the KMS after implementation led to a quick demise.

The KMS failures in both Gamma Consulting and Theta Associates were due largely to cultural and strategic management factors. This supports previous research revealing that culture and strategy can significantly influence an IT-enabled organizational change (Dutot, Bergeron, & Raymond, 2014; Martinsons et al., 2009). However, as shown in Table 2, the specific shortcomings in the two CAR projects were significantly different with one exception: employees were not involved significantly in planning or designing the KM system. Taken together, we assert that each of poor leadership, weak or non-existent institutional mandates, inadequate user involvement (especially at early stages of the process), and the lack of incentives can obstruct the effective implementation of a KMS. Technical issues, such as insufficient Internet bandwidth and poor technical support, can also hinder performance. Meanwhile, if Action Research is to be an effective method for project management, the action researcher must have a clear mandate to introduce change and indeed to have the clear support of the organization to do so. Similarly, a critical mass of active employee-users must be achieved so that sufficient content that is up-to-date and useful can be made available for retrieval.

The cultural challenges to knowledge sharing merit further discussion. The professionals in both firms perceived knowledge as a personal

Table 2
Knowledge Management Failure Factors in Two Professional Service Firms.

Category	Gamma Consulting	Theta Associates
Technology	Difficult to use the KM system. Poor technical support after an initial contract period ended.	Poor connectivity to the KM system. Inadequate Internet bandwidth. Poor technical support.
Culture	Failure of top management to involve employees in the KMS evaluation or development process.	Reluctance of top management to impose specific values on senior consultants. Reluctance of senior consultants to share their knowledge with junior employees.
	Preference of employees to rely on personal sources of knowledge rather than a formal KMS to the extent that they resisted genuine adoption of the KMS post-implementation and reverted to familiar ways of working.	
Content	Deficiencies in the coverage, relevance and currency of the content in the KM system because employees had no incentives to contribute knowledge.	
Project Management	Lack of employee involvement at all stages of the project.	
	The action researcher had limited influence on the way in which the KMS was designed, implemented and communicated.	
	A critical mass of active employee-users of the KMS was never achieved, greatly undermining the value of the KMS	Absence of a single project leader. Some inability to manage conflicts.
Strategic Management	Leadership was very centralized.	The leadership was polycephalous and, paradoxically, also acephalous: the firm had four MDs, but no paramount leader. Lack of a clear KM vision.
	The vision of the two brothers for the firm and for KM was not shared with other stakeholders.	
	Inadequate top management commitment and support for the KMS.	

and informal resource. Theta employees espoused a greater willingness to share knowledge than their counterparts at the more traditionally-managed Gamma. However, there was a common distaste for formally codifying knowledge in a repository. Instead, informal knowledge sharing through personal networking was sustained in both PSFs. The clear advantage of information knowledge sharing, from the employees' perspective was that it could be conducted through IT applications, such as email and instant messengers, that were both operationally and technically adequate. Informal knowledge sharing generally requires little infrastructure and relies on personal motivation (Davison et al., 2013; Von Krogh, 2009).

5.2. Theoretical interpretation of the failures

Our action research was guided by two instrumental theories and one focal theory. We selected transaction cost economics (TCE) (Williamson, 1979) because prior research has suggested that most KM projects aim primarily to improve organizational efficiency (Davenport, De Long, & Beers, 1998). Meanwhile, we also appreciated the value of the institutional theory of the firm because we recognize the desire of firms to mimic successful peers (Scott, 1995). Meanwhile, our recommended changes to the organizational status quo were premised on the principle of revolutionary change, as enshrined in Punctuated Equilibrium Theory (PET) (Gersick, 1991).

Our findings from Gamma Consulting suggest that small PSFs in China may be more interested in *looking like* their Western peers rather than *acting like* them. In contrast to the principles of TCE, efficiency improvements were low priorities during the planning process and notably absent after implementation. Slow response times and other factors that made the systems difficult to use and ultimately led to their failures. Our evidence is also consistent with efforts to achieve *ceremonial conformity* with the global KMS trend. This in turn supports a key principle of institutional theory.

Mimetic isomorphism was evident in both firms. The CAR projects were authorized at least partly by a desire to cultivate a modern business image. Neither firm aimed explicitly to improve its efficiency. Despite China's transition from a state-run to a market-oriented economy, the principles of TCE do not (yet) seem to be that important for many Chinese businesses. Impressing external stakeholders and maintaining good social connections remain more important than being productive.

From an institutional theory perspective, institutions operate with regulative, normative and cognitive elements (Scott, 1995). These elements achieve compliance through legally sanctioned rules, morally governed obligations and prevailing cultural values, respectively. Our evidence indicates that without any coercive mechanisms, such as rules

or policies mandated by management, or sanctions for contravening them, knowledge will not be shared formally. Such coercive mechanisms need to be revolutionary if they are also to be effective: the entire set of working arrangements needs to be jolted out of its current torpor and a new working environment established. A more normative and evolutionary approach, with leaders encouraging use of the KMS but not formally mandating it, is unlikely to be sufficient to change deeply ingrained behaviours.

A key problem with our application of institutional theory and transaction cost economics turned out to be the absence of interest of either firm to enact genuine change. Gamma saw instrumental value in being perceived as a modern firm: the enhanced image would help it as it sought new customers. Theta, meanwhile, had a culture of sub-optimism, being quite content to operate an organizational culture premised on flexibility and adequate performance. In neither firm was there a genuine interest to revamp internal processes and structures according to the precepts of institutional theory or transaction cost economics. Without such an intention, any change effort would be likely to fail due to misalignment of objectives: although the leadership teams of the two firms accepted the theoretical rationales that we presented, as action researchers, this acceptance was disingenuous, for neither leadership team had sufficient commitment to change.

Burrows et al. (2005) suggest that successful KM efforts in China are typically driven by exceptional people who use their personal energy and social connections to spread their enthusiasm for knowledge sharing through both word-of-mouth and walking the talk. These exceptional people have radical expectations for revolutionary change. However, such exceptional people were notably absent in our two cases. Our PET-inspired action research efforts may have jolted the firms away from their equilibria temporarily, but it did not take them beyond a "tipping point" (Gladwell, 2000), where a critical mass of employees internalized the new working arrangements and ensured the long term success of the new KMS.

6. Conclusion

Knowledge management takes on particular forms in particular contexts (cf. Davison & Martinsons, 2017). The formalization of knowledge has been attempted in a large number and wide range of organizations. Anecdotal evidence suggests that many of these attempts have been unsuccessful. Moreover, as Zhu (2004, p. 75) suggests, "a universal concept of knowledge management is unrealistic, counter-productive and undesirable". Nevertheless, the existing literature tends to privilege accounts of KM success stories in large Western enterprises to the exclusion of non-Western contexts. As Davison and Martinsons (2017) observe, "cultural and institutional differences matter!". It is

unlikely that the causes of KM successes and failures are universal.

Our CAR projects in China are among the first to examine in depth *how* and *why* KMS projects fail. They reveal a distinct preference for informal and unsystematic knowledge sharing. We found that knowledge workers in two small PSFs supplement face-to-face meetings with informal IT-supported communications. Although the management style in the two companies was very different, each ultimately failed to adopt a formal KMS.

Smaller firms in China and elsewhere can potentially benefit from a formal KMS. However, its adoption involves challenges. Developing a critical mass of users and content is not easy. Small PSFs are limited by low numbers of potential users and the absence of organizational slack. Key success factors include aligning KM initiatives with strategic objectives, demonstrating sustained leadership and commitment to organizational change, motivating and rewarding usage and allocating sufficient resources to support the system.

Our CAR projects should be seen as failures from an organizational perspective, yet clearly reveal the challenges faced by KM initiatives, especially in China. Consequently, we are able to offer specific suggestions to overcome these challenges with the hope that future KM initiatives may be more successful. Through these CAR projects, we have contributed to the understanding of organizational knowledge and its management in China.

Our investigation provides valuable insights but also has some limitations. First, it is risky to generalize our results beyond the context of small PSFs in China. They are subject to confirmation in different organizational contexts and social cultures. We advocate further intensive research in different industries along with more extensive data collection. Second, institutional theory appears to provide a good theoretical foundation for organizational research in China and other economies in transition, but further theorizing should accompany the design of additional studies. Third, we suggest that while a punctuated equilibrium perspective on organizational change brings the potential for clean-cut change, jolting an organization out of its safe but ineffective torpor, the rejection of a more normative approach may be anathemic to organizational leaders keen to preserve an organizational culture that is noted for its lack of surprises or discomforts.

KM in China remains poorly understood and merits more research. Further studies of both large and small enterprises should use assorted methods and theoretical lenses. They should also explicitly consider institutional factors in order to advance and broaden our understanding of knowledge management and knowledge sharing.

Appendix A

Table A1
Knowledge Management in China: Summary of 26 Key Articles.

	Study	Key findings in brief	Cultural Factors	Method	Theory	Context
1	Burrows et al. (2005)	In China, knowledge is largely tacit and contextual; Senior management and trusted supervisory staff are repositories of knowledge. Chinese favor: informal and implicit forms of communication; personal social and economic relationships; acceptance of status differences	Trust Power distance Tacit − Explicit Dichotomy	Interview Survey Case study Focus groups	Knowledge creation SECI	Multiple Chinese Case Sources
2	Chang et al. (2015)	Rewards are significantly related to knowledge sharing intentions for Chinese employees but not for American employees Reciprocity and knowledge self-efficacy influence knowledge sharing intentions in both countries	Hofstede: Individualism-Collectivism Uncertainty Avoidance	Survey	Social Exchange Theory Hofstede	394 employees in the United States and China
3	Chen, Tjosvold, Li, Fu, and Liu (2011)	Collectivist values promote open-minded discussions which result in knowledge sharing. Collectivist values and constructive controversy provide an important foundation for productive knowledge management in organizations.	Hofstede: Individualism-Collectivism	Survey	Hofstede	CEOs & VPs of various industries and regions of China
4	Chow et al., (2000)	Chinese shared knowledge significantly more than Americans with those who were members of their in-group, and significantly less with those who were not members of their in-group.	Individualism-collectivism, Face	Survey	Hofstede	104 US managers, 38 Chinese managers
5	Du et al. (2011)	Cultural understanding enhances personal trust, knowledge sharing and performance in global sourcing of IT services. Trust encourages knowledge sharing, whereas trust relationship and knowledge sharing do not impact performance.	Guanxi, Face	Survey	Hofstede	13 companies in Xi'an Software Park
6	He, Qiao, and Wei (2009)	Chinese favor informal communication and prefer to transfer knowledge through interpersonal contact rather than through formal means. Social relationships can stimulate KMS usage.	Tie strength Shared norms Trust in others	Survey, Interview	Social Capital Theory	Chemical Company in China
7	Hsu and Sabherwal, (2012)	Intellectual Capital (IC) affects KM which facilitates innovation; a learning culture facilitates IC and innovation but not KM;	None	Survey	None	533 companies in Taiwan.
8	Huang, Davison, and Gu (2008) and Huang, Davison, and Gu (2011)	Cognition-based trust does not significantly influence the intention to share knowledge, but affect-based trust does. Face-gaining behaviours encourage knowledge sharing while face-saving behaviours discourage it.	Trust Guanxi Face	Survey	Theory of Reasoned Action; Social Exchange Theory	159 MBA students in eastern China

(continued on next page)

Table A1 *(continued)*

9	Hutchings and Michailova (2004)	Guanxi orientation also has a strong impact on knowledge sharing. Group membership and guanxi are important factors in facilitating knowledge sharing in China	In groups, Guanxi	Conceptual	None	None
10	Kotabe, Jiang, and Murray (2011)	Knowledge acquisition only raises new product market performance with the presence of realized absorptive capacity. Knowledge management, integration and transformation are critical to enhance new product market performance.	None	Interview Survey	Absorptive Capacity	121 Emerging Chinese MNCs
11	Lee et al. (2009)	Technology, organizational and social cultural factors affect KMS initiation, adoption and routinization	Guanxi, Renqing	Conceptual − Framework development	Technology diffusion process theory; TOE framework	None
12	Lee and Lan (2011)	KM implementation success depends on harmony between infrastructure and process capabilities, including technology, culture and organizational structure.	Trust	Survey	None	SMEs in Hong Kong and Taiwan
13	Li and Scullion (2006)	Physical, institutional, and cultural factors affect knowledge acquisition, transfer and integration in China	Face	Conceptual	None	None
14	Lin, Liang, Xu, Li, and Xie (2008)	Human resource management and IT practices for managing knowledge are strongly correlated and have a significant influence on both financial performance and competitiveness of the firm.	None	Survey	Resource Based View of IT	236 firms in China
15	Lin and Huang (2008)	Task interdependence, perceived task technology fit, KMS self-efficacy, and personal expectations have substantial influences on KMS usage	None	Survey	Social cognitive Theory; Task-Technology Fit	192 knowledge workers in Taiwan
16	Lu et al. (2005)	Greed reduces knowledge sharing but self-efficacy increases it. Co-worker collegiality has an indirect influence on knowledge sharing by lowering greed and raising self-efficacy.	Greed Self-efficacy Collegiality Trust	Survey	Public Goods Theory	208 + 262 Chinese Knowledge Workers
17	McAdam, Moffett, and Peng (2012)	Cultural interpretations help to explain Chinese conceptions and applications of knowledge sharing at multiple organizational levels	Hierarchy Individualism-Collectivism	Case Study Interviews Focus Groups	Hofstede Critical Theory	5 consulting firms in China
18	Siau, Erickson, and Nah (2010)	Chinese virtual communities (VC) participate less in knowledge sharing than American VCs. In Chinese VCs, there are fewer knowledge-collection and knowledge-dissemination messages. Chinese are generally less willing to share knowledge with unknown VC members.	Power Distance Individualism-Collectivism,	Survey	Hofstede	Chinese and US Virtual Communities
19	Teo and Men (2008)	Knowledge tacitness, output quality, and compatibility are positively related to utilization.	Task & Technology characteristics	Survey	Task-Technology Fit	Chinese consulting firms
20	Tong and Mitra (2009)	Employees retain knowledge in an implicit form and are willing to share it informally. Hierarchy consciousness; fear of losing face; a sense of modesty; competitiveness; and a preference for face-to-face communication constraint KM. Intra-personal trust can partly mitigate the impact of these cultural characteristics.	Hierarchy consciousness Face Sense of modesty Competitiveness Communication preference	Qualitative case study	None	Chinese mobile phone company
21	Voelpel and Han (2005)	A significant in-group/out-group distinction despite the strong influence of a German-originated organizational culture that promoted knowledge sharing across such group boundaries. Senior and middle managers were typically more willing to share knowledge than their subordinates. Financial value of rewards from KM activities was less important than symbolic value.	Individualism-collectivism, Confucian Dynamism	Case Study	Hofstede	Siemens China
22	(Wang et al., 2011)	Organizational culture plays a critical role in knowledge creation capability. Collectivism has a positive impact on knowledge creation capability Power distance and uncertainty avoidance have negative effects.	Collectivism Uncertainty avoidance, Power distance	Survey	Hofstede	263 firms from across Chinas
23	Wang and Wang (2012)	Both explicit and tacit knowledge sharing contribute to innovation and improved business performance	None	Survey Interview	None	89 high-tech firms in Jiangsu province, China

Table A1 (continued)

24	Weir and Hutchings (2005)	In China, managers and organizational members share knowledge with those with whom they already have a trustful relationship.	Wasta Guanxi	Conceptual	SECI	None
25	Young et al. (2012)	A web-based KMS was designed to enable knowledge sharing, but its capabilities for surveillance severely limited sharing	Face, Gaze	Case study	Foucault	SCTNet in Taiwan − for Teachers
26	Zhao and Anand (2009)	Collective-level mechanisms, such as collective teaching and collective absorptive capacity, are more effective in transferring both collective knowledge and individual knowledge in comparison to their individual-based counterparts	None	Survey	Absorptive Capacity	Engineering units of MNCs in the Chinese automotive industry

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