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# INVESTIGATING TRANSACTIVE MEMORY SHAPED BY KNOWLEDGE MANAGEMENT TOOLS – PROPOSING A LONGITUDINAL STUDY IN CHINA

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## Abstract

*Chinese firms are increasingly paying attention to the knowledge resources of their employees – and are seeking to leverage those resources for the greater good of the firm. Based on prior research, we aim firstly to develop and test a theoretical model that explains the salient factors determining successful Knowledge Management (KM) practice in Chinese firms. We argue that the use of both formal and informal KM tools have significant impacts on shaping a firm's transactive memory (TM), where the impacts are moderated by employees' cultural orientation. In turn, TM has significant positive impacts on enhancing organisational performance. We will follow the theoretical validation with a case-based, action-oriented intervention. We have preliminarily identified two firms in each of the Public Relations and IT Services Offshoring industries that are interested in participating in the research. The theoretical validation will also involve survey-based data collection and statistical analysis. We aim to discover how specific KM practices influence key dimensions of organisational performance such as financial profits, customer satisfaction, operational efficiency, personal productivity and employee satisfaction. We expect that this two-pronged approach will generate knowledge of significant value to both KM researchers and organisations.*

*Keywords: Transactive memory (TM), Knowledge management (KM), Cultural orientation, China.*

## 1. Introduction

Knowledge management (KM) plays a prominent role in China's global competitiveness (Burrows et al., 2005). Prior studies on KM have provided us with both general (e.g., Alavi and Leidner, 2001) and specific (e.g., Voelpel and Han 2005) findings about IT support of KM in organisations. However, much of the prior research has been rooted in Western cultural and contextual norms, with the result that we know very little about KM in non-Western contexts such as China. Given substantial cultural and social differences between China and other countries, it is unwise to assume that successful KM practices from Western countries will be directly applicable in China. Furthermore, prior research has failed to reveal sufficient insight into the salient Chinese factors that may either influence the success or indeed measure the impact of KM initiatives in organisations. Given the considerable resources that are often invested into organisational KM initiatives, there is thus a critical need to understand how KM is experienced in the Chinese context, and to theorise the phenomenon appropriately.

In this research-in-progress paper, we aim to apply both qualitative and quantitative methods to address the following two key limitations in our knowledge about KM: the Chinese experience of KM, seen emically by a variety of internal stakeholders and etically by researchers; the validity of both formal and informal IT-based KM initiatives in terms of the value that KM adds to organisations. In particular, we argue that transactive memory (TM) - the process through which groups collectively encode, store, and retrieve knowledge (Wegner et al., 1991) - is the nucleus of KM practice in firms and so contributes significantly to organisational performance. We propose that TM can be shaped by

the deployment of both formal (e.g., knowledge repositories, data warehousing and intranets) and informal (e.g., blogs, wikis, and online communities) tools. The influence of these tools on TM depends on the moderating effects of employees' cultural orientation. In China, cultural orientation includes a preference for tacit knowledge and guanxi (reciprocal, dyadic personal relationships).

Following this introduction, we review the literature and undertake the theoretical development of the research model on KM in China, justifying the theoretical model in detail. In the methodology, we describe our plan to engage four firms in China for a longitudinal study including action research and survey methods. We then conclude the paper with implications and contributions.

## 2. Literature Review and Theoretical Development

### 2.1 Transactive Memory in Organisations

KM is a crucial activity for organisations because it enables them to promote best practices and reduce or eliminate redundant reinvention efforts (McDermott and O'Dell, 2001). Indeed, it has been asserted that a firm cannot compete effectively in a knowledge intensive industry if its employees insist on guarding or hoarding knowledge as personal secrets (Lu et al., 2005). Nevertheless, the reluctance of employees to share their knowledge has been documented in a number of contexts (Martinsons et al., 2009) and can be attributed to a variety of individual, organisational, professional and societal cultural factors. The evaluation of KM initiatives is also challenging. Different types of KM projects have different aims and objectives depending on the organisation and its strategic vision (Davenport et al., 1998) as well as the socio-economic context (Burrows et al., 2005). As a result, assorted benefits may be desired and an assortment of criteria and methods may be appropriate to evaluate the success of both individual KM projects as well as an organisation's overall KM performance. At an organisational level, KM may contribute to bottom-line profitability, top-line revenue growth, internal efficiency, external customer satisfaction as well as various dimensions of reputation. Since KM typically serves the interests of more than one stakeholder group, the adoption of a multi-dimensional performance evaluation framework may be appropriate. Given that in China, both the prevailing pattern of IT application (Martinsons and Westwood, 1997) and the prevailing approach to KM (Burrows et al., 2005) differ from those typical of Western countries, the criteria and measures used to evaluate the planning, design and implementation of KM systems may also differ, thus requiring adaptation if not wholesale rethinking.

We argue that TM lies at the heart of good KM because it incorporates a shared memory system of understanding, encoding, transferring, storing, retrieving and communicating information between different people and hence different knowledge domains. Notwithstanding the well-documented reluctance to share knowledge (Martinsons et al., 2009), a small number of researchers have noted the importance of TM in knowledge-intensive organisational contexts (Jarvenpaa and Majchrzak, 2008). The fundamental principle of TM is that since any one individual cannot know everything, so all individuals can rely on the shared memories of other people. In a TM arrangement, it is thus important to know who knows what and to be able to access other people's knowledge. TM is particularly effective in well-established work teams, as often encountered in organisations, whether team members are co-located or not. In a TM system (TMS), linkages are established between different knowledge domains and experts. The collective memory that results provides a broad range of knowledge that transcends individuals in an organisation and its surrounding environment, facilitating interpersonal collaboration that enhances the completion of organisational tasks. In this way, shared memories of knowledge have the potential to be leveraged in pursuit of better organisational performance, including such measures as productivity, efficiency and financial performance. Therefore, we propose:

*Proposition 1: Transactive memory contributes significantly to organisational performance covering productivity, efficiency, and organisational financial performance.*

## 2.2 Knowledge Management Tools

From a technical perspective, we anticipate that both formal and informal KM tools can contribute to TM at the individual, team and organisational levels. Formal KM systems (KMS) can be deployed to record and retrieve explicit knowledge, enabling the development of more mechanistic TM, including formal documents, reports, specifications and solutions. For example, Siemens' proprietary KMS "ShareNet" in China is a giant knowledge repository that supports 19,000 registered users (Voelpel and Han, 2005). Such a huge system is likely to be associated with a well-developed TMS, which significantly enhance organisational performance. We thus propose:

*Proposition 2a: The use of formal KM tools strengthens transactive memory in the focal organisation.*

In contrast with ShareNet, KM research in China (e.g. Burrows et al., 2005) indicates that tacit knowledge is seldom deliberately codified in a formal or explicit manner. Instead, an informal but robust KM process embedded in daily business operations may be more appropriate, especially for small and medium sized enterprises (SMEs). Formally structured knowledge, even though valuable, is often insufficient given the dynamic nature of organisational tasks. Therefore, informal KM tools which encourage social reciprocity and relationship building, coupled with the sharing of tacit knowledge, are particularly valuable for non-routine and complex projects. Thus, informal KM tools also have an important role to play in organisational TM. Accordingly, we propose:

*Proposition 2b: The use of informal KM tools strengthens transactive memory in the focal organisation.*

## 2.3 The Role of Cultural Orientation in Knowledge Management

Prior studies of KM in China tend to focus either on comparisons with other countries (Chow et al., 2000) or on the inward transfer of knowledge (Li and Scullion, 2006). Such studies are commonly informed by Western theories, assumptions and priorities, and thus focus on China through an externally informed lens, rather than studying China from the inside. While such research is valuable for cross-cultural comparisons, it typically does not permit the identification of the full richness of the Chinese KM context. In this respect, there are a number of salient issues to consider at the individual, group and cultural levels. For example, much prior KM research has focused on the codification of explicit knowledge, which has been championed as a new source of strategic and competitive advantage (Jarvenpaa and Majchrzak, 2008). In this respect, it has been suggested that IT is a prerequisite for effective KM, since IT enables "collaboration among different units and individuals unconstrained by the boundaries of geography and time" (Lu et al., 2005). However, much of the current literature is informed by the knowledge codification experiences of organisations in Western cultures. In contrast, we know little about either KM experiences in other cultures or KM practices that do not involve formal codification.

In particular, we argue that the effects of KM tools on TM development can be moderated by cultural orientation. Chinese societal culture, which emphasises high context communications and *guanxi* (reciprocal, dyadic personal relationships), emphasises the importance of tacit knowledge in work processes. Since both tacit knowledge and *guanxi* are considered to be prerequisites of personal and organisational success in China, it is important to consider how they may influence KM practice. We argue that due to a preference for tacit knowledge and *guanxi* in China, informal KM tools are likely to be more attractive and more effective than formal tools for the purpose of establishing TM.

*Proposition 3a: The impacts of formal and informal KM tools in strengthening transactive memory in the focal organisation are moderated by employees' cultural orientation of tacit knowledge.*

At the individual level, it is important to consider the need to develop and maintain one's *guanxi* (Xin and Pearce, 1996), as well as the extent to which individuals reflect such values as conformity, self-direction, benevolence, power, security, achievement and universalism in their behaviour (Schwartz,

1992). Given the strong preference of Chinese individuals for interpersonal relationships, codified explicit knowledge is relatively rare (Martinsons and Westwood, 1997). Moreover, tacit knowledge sharing is not easily amenable to formal codification. Thus, while IT applications are increasingly widespread in China, they are seldom used to support formal knowledge transfer between individuals. Consequently, interpersonal socialisation is seen as a more effective facilitator of tacit knowledge sharing in China than is IT: “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).

Furthermore, knowledge is typically not shared freely. Instead, it is shared selectively within in-groups (Chow et al., 2000), where an in-group comprises a close set of colleagues or peers with whom one works on a regular basis. In-groups are prevalent even in the context of a conforming organisational culture. Thus, Voelpel and Han (2005) found, in their in-depth study of Siemens’ ShareNet that in-groups were still a significant force despite an organisational culture that promoted knowledge sharing by all and to all as a form of public good. At the cultural (ecological) level, the societal dimensions of collectivism, long term orientation and power distance (Hofstede, 1991) are all relevant. For instance, the strong power distance score stereotypically accorded to the hierarchical Chinese culture (Hofstede, 1991; Schwartz, 1994) may suggest that a KM initiative will be easier to introduce because of the inclination by subordinates to obey (Martinsons and Davison, 2007), though actual knowledge sharing is likely to be among peers (the in-group) or top-down: Chinese managers are generally very reluctant to accept knowledge from their subordinates (Martinsons and Hempel, 1995). Furthermore, knowledge sharing is potentially face and reputation enhancing (Voelpel and Han, 2005), which is also associated with a long-term orientation, as well as the maintenance of *guanxi*.

*Proposition 3b: The impacts of formal and informal KM tools in strengthening transactive memory in the focal organisation are moderated by employees’ cultural orientation of *guanxi*.*

In summary, we outline three research focuses in this research: salient cultural factors in China; the choice of IT-based KM initiatives; and the evaluation of KM initiatives. We link these three focuses in a generic research framework (see Figure 1). We next explain how we propose to develop and test the research model through a longitudinal (multi-month) study of four firms.

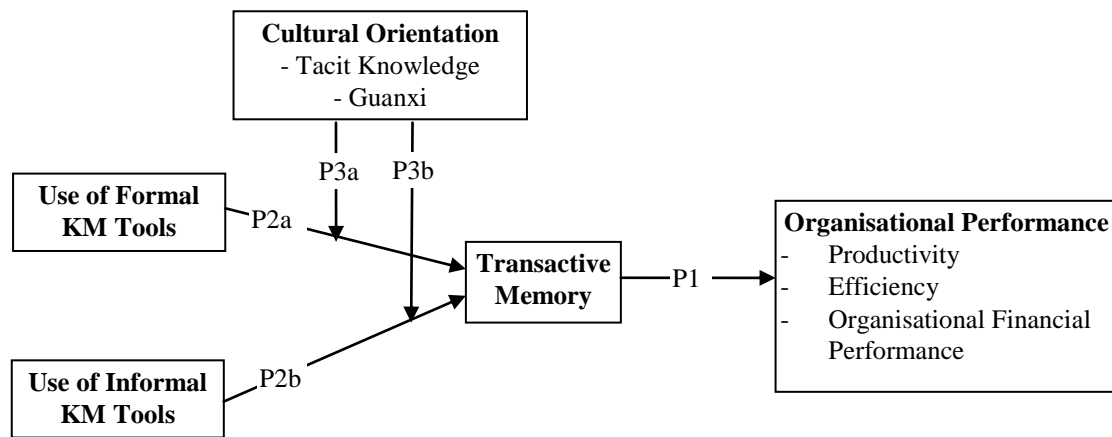


Figure 1. The research model

### 3. Methodology

Following development of the research model, we will proceed to the development or adaptation of scale items following the principles outlined in Moore and Benbasat (1991) with pilot tests and card sorting exercises. We intend to survey employees in two organisations in each of two industries: public relations and hotels. All four firms operate across multiple locations in China and serve a

variety of domestic and international clients. The PR firms are both SMEs, with 110-150 employees, an open and a flat and transformative management style (Yukl, 1992). The hotel is an international group with a chain of over 100 properties organised into different brands. We will survey employees at a number of properties within two of these brands. Each individual hotel functions as an SME, even though the group as a whole is larger. The group has a very small staff – executives and their assistants. The hotels are more hierarchical in leadership structure. We need to survey employees from more than one sector of the economy if we are later to be able to generalise our findings with a higher degree of confidence. In each of these four firms, work is undertaken in projects where team members are located in two or more sites. In order to work effectively, team members rely on a variety of IT applications so as to communicate and share knowledge. The first part of the project will entail surveying the employees in order to test the validity of research model (see Figure 1).

Following the validation of the research model, we intend to adopt a Canonical Action Research (CAR) approach as we work with the key organisations so as to enhance their KM practices, drawing on the principles for CAR developed by Davison et al. (2004) and further validated by many researchers (e.g. Lindgren et al., 2004). A concise but typical CAR intervention for a KM situation could be as follows:

- (i) Diagnose the current KM situation in the organisation and benchmark its comparative strengths and weaknesses. Discuss current and intended KM initiatives with key stakeholders. Assess the critical success factors for KM impact on identifiable outcomes (e.g. customer satisfaction, internal process efficiency). Identify potential barriers to KM success. Develop a theoretical model for the following intervention plan, drawing on relevant theory and the situation diagnosis.
- (ii) Plan for an intervention that will enhance the KM initiative's effectiveness and address any problems that the organisation is facing with respect to KM implementation. Problems might relate to use of technology support, motivating knowledge sharing among employees, organising knowledge that is shared so that it can readily be located by knowledge seekers. The intervention will need to be sensitive to current levels and types of technology use in the organisation, at the same time seeking to advance the current situation.

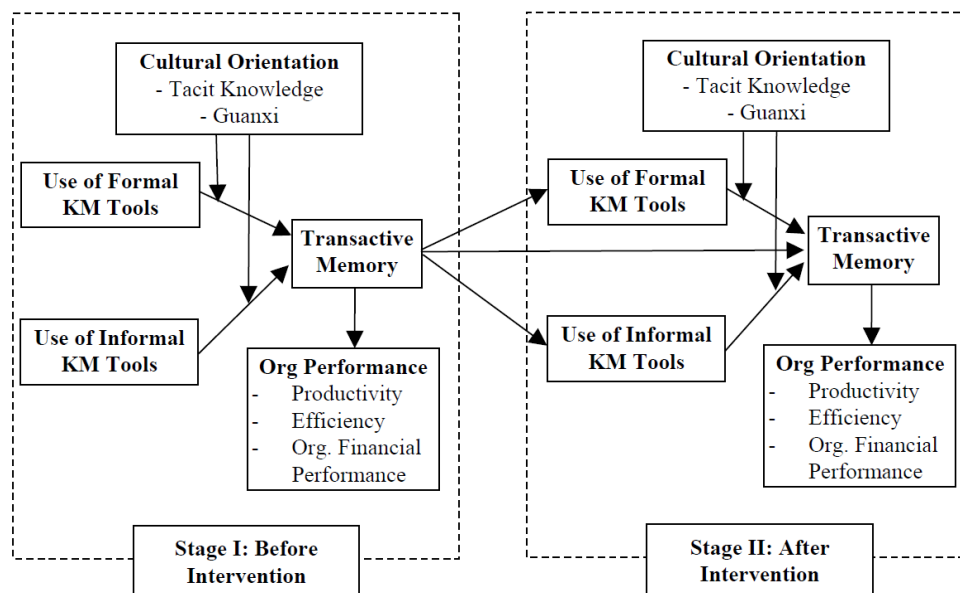


Figure 2. A Longitudinal Perspective of the Research Model

- (iii) Introduce changes to the way the KM initiative operates. The changes might be strategic or operational, but they will necessarily involve both technical and human elements, as well as

incentives, rewards or other sanctions. Both formal and informal KM tools may be incorporated into the change plans.

(iv) Measure the impact of the changes on the day to day running of the KM initiative, the use of IT support tools for knowledge sharing, the quality or quantity of knowledge shared and knowledge sought, the value of the KM initiative for organisational users. During the process of measuring the impact, we will compare the efficacy of KM tools and TM in the phases of before- and after-intervention (see Figure 2), particularly with reference to the measures of organisational performance. We acknowledge that organisational performance is a dynamic and emergent notion, so exact measurement of improvements will be tricky. This is why a focus on productivity and efficiency is necessary, with very careful linking of work process changes to outcomes, evidenced by both subjective performance data and qualitative, perceptual data from employees. The  $R^2$  changed and the comparisons of the path coefficients in the two stages will be focus of our examination so as to measure the impacts of the intervention.

(v) Reflect on the intervention conducted so far; consider the need for further intervention(s); consider whether the situation has changed or is better understood. At this stage, if the research is deemed completed, the action researchers exit the situation. If it is not complete, they engage with the organisation in a further cycle of activities, starting at (i) above.

#### 4. Implications, Future Research, and Conclusions

The implications of this longitudinal investigation into KM practices in Chinese firms across two industries may be considerable. Longitudinal studies are rare at the best of times, though there are examples in Action Research (e.g. Lindgren et al., 2004; Kohli and Kettinger, 2004). Such a study can usefully reveal both the impact of formal and informal KM tools and the salience of cultural orientation in terms of TM development and the subsequent impact on organisational performance. This can usefully guide managerial practice with respect to KM initiatives, not least with respect to the choice of KM tools and the value of facilitating the development of a TM network among employees. The impacts on organisational performance will be of particular interest to managers keen to reap a return on investment from their KM initiatives and may drive future consulting practice. Researchers, whether in China or further afield, can also learn from these findings and consider KM initiatives in other cultures – at the societal, organisational and professional levels. Methodologically, our combination of a survey (to test a theoretical model) and CAR (to effect change in an organisational context) may stimulate both consultants keen to expand their portfolio of tools that add value and researchers keen to do more than merely observe KM in practice. Indeed, we believe that CAR offers researchers a unique opportunity both to contribute to and to learn from organisational practice, with high standards of both rigour and relevance achievable if methodological principles are followed carefully. Although at the time of writing, this is a research in progress, we are optimistic that when we have a) collected and analysed data and b) effected interventions in organisations, we will be in a strong position both to prescribe a set of culturally-sensitive practices for KM in Chinese organisations and indeed to develop a theory to explain how knowledge can be managed effectively in organisational contexts where cultural orientation exerts a significant impact on KM tool use, TM development and the resulting measures of organisational performance.

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