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**Knowledge management in consultancy-involved process
improvement projects: Cases from Chinese SMEs**

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Abstract

Knowledge management (KM) is considered as an effective strategy to improve organisational performance. In its application to small and medium enterprises (SMEs), resource constraints mean that exploitation of knowledge from external sources, such as management consultants, is often needed. Drawing on the knowledge management literature, in particular the theory associated with liminality, this study explores practical KM issues encountered by Chinese SMEs when working with management consultants to introduce new business improvement practices from a multi-level practice-based perspective. A comparative case study is conducted focusing on two consultancy-involved process improvement projects in Chinese manufacturing SMEs. The case results suggest a clear KM strategy is needed at the outset of the project and SME managers and employees need to play a proactive role in the learning and adoption of new knowledge. The research is novel in that it is the first study to explore knowledge management and the notion of liminality within the context of consultancy-involved Chinese SME improvement projects. The paper culminates with two research propositions that require further empirical study. Implications of this research are provided for SME owner/managers and management consultants.

Keywords: knowledge management, SMEs, China, consultants, liminality

1. Introduction

Driven by the rapid growth of the knowledge economy, knowledge has become an essential strategic resource for organisations to achieve competitive advantage (Bessant and Venables 2007). Knowledge management (KM), which deals with activities associated with managing and leveraging knowledge in the organisation (Civi 2000; Laudon and Laudon 2001), is considered as a cornerstone for organisations to better compete in the marketplace (Aboelmaged 2014; López-Nicolás and Merono-Cerdán 2011). Recent studies show KM practices have been adopted by many industries including the manufacturing, high-technology and financial service sectors (Alegre et al. 2013; Choi et al. 2008; Nemoto et al. 2015; Yang 2010) with reported benefits including increased profits, improved operational performance and reduction of costs (Aboelmaged 2014; Nagati and Rebolledo 2013). However, while much of the existing literature focuses on large enterprises, Durst and Edvardsson (2012) and Massaro et al. (2016) have observed only a few studies that have empirically investigated KM issues in small and medium enterprises (SMEs), defined as those organisations with less than 250 employees in UK and Europe (European Commission 2017).

As the engine of the world's economic growth, SMEs contribute significantly to job creation and innovation in many countries. For example, 67% of total employment in EU countries is provided by SMEs (European Commission 2016). In the U.S., SMEs account for 63% of net new private-sector jobs and have produced 16 times more patents per employee than large firms (SBA Office of Advocacy 2014). In the emerging economies such as China, SMEs have been positioned as “the important

force” for the economy since 2009 (The Central People’s Government of PRC 2009).

Despite the vital role of SMEs in world’s economy, they often operate under difficult conditions with pressures from larger competitors and demanding customers. SME managers are driven to consider KM issues since benefits from adopting KM practices such as improved organisational performance (Aboelmaged 2014; Zack et al. 2009) can address the operational difficulties they encounter. However, several studies suggest that it is challenging for SMEs to manage their knowledge processes strategically and formally due to their structural characteristics (Corso 2003; Hutchinson and Quintas 2008; Merono-Cerdan et al. 2007; Salojarvi et al. 2005). The resource constraints also mean SMEs often need to exploit knowledge from external sources (Balestrin et al. 2008; Chen et al. 2006; Egbu et al. 2005). It is important for SMEs to have access to big data to strengthen their knowledge of consumers. Furthermore, when carrying out data facilitation projects, SME-owners often welcome like-minded and skilful facilitators (O’Connor and Kelly 2017).

Management consulting companies, as knowledge-intensive business service firms, have become an important external source for many organisations to learn new business practices (Beltencourt et al. 2002). In practice, management consultants are employed by SMEs to gain access to the knowledge of advanced business improvement practices such as process improvement (e.g. Heras-Saizarbitoria and Boiral 2015; Hu et al. 2016; Purcarea et al. 2013; Ramsden and Bennett 2005). Therefore, this study focuses on the management of knowledge in consultancy-involved projects in SMEs.

China is chosen as the research region. Chinese SMEs, which are defined as organisations with less than 1000 employees, contribute to approximately half of tax income and over 80% of total employment in the urban areas (MIIT 2016). However, the latest economic growth plan shows that Chinese SMEs have been encountering difficulties. For example, the costs of land and labour have been increasing considerably (MIIT 2016). Hence, Chinese SMEs are called to innovate at both technological and managerial levels by adopting advanced business improvement practices. External agencies such as professionals and management consultants are acknowledged as important sources to support Chinese SMEs to learn business improvement practices (MIIT 2016).

This study is of academic significance, as KM in SMEs of an emerging economy such as China has received little attention compared to research conducted in the UK or Australia (Durst and Edvardsson 2012; Massaro et al. 2016). Although the importance for SMEs to use external learning sources has been recognised (e.g. Della Peruta et al. 2014; Wei et al. 2011), little has directly addressed KM issues in SMEs with external agencies' intervention. In this study, we draw on a novel theoretical lens from Czarniawska and Mazza (2003) and Sturdy et al.'s (2006) studies to better understand the management of knowledge in consultancy projects. In their studies, consulting is conceptualised as a liminal space where usual practices and organisational rules are suspended (Czarniawska and Mazza 2003; Sturdy et al. 2006). In such a liminal space, challenges and opportunities of knowledge transfer between consultants and clients may co-exist (Czarniawska and Mazza 2003; Tempest and

Starkey 2004). Therefore, the objective of this study is to investigate practical issues associated with KM in Chinese SMEs when new knowledge of business improvement is introduced by management consultants. The paper explores approaches adopted by management consultants who often dwell in liminal spaces and are keen to promote changes, to address these practical KM issues. The key research questions are:

- What challenges are encountered when SMEs employ consultants to learn new knowledge of business improvement?
- How are these challenges addressed?

The remainder of this paper consists of a further five sections. Following this brief introduction, the literature in relation to KM in SMEs and management consultancy is reviewed in section 2. Section 3 describes the multiple case study method employed in this research. The case results are presented and discussed in Sections 4 and 5 respectively, with the latter culminating with two research propositions. Section 6 concludes by reflecting on the limitations and addressing the implications of the research.

2. Literature review

2.1 Knowledge management (KM)

Since the foundation of industrialised economies has shifted from physical resources to intellectual assets, managers are driven to examine how to manage and develop the knowledge underlying their businesses (Hansen et al. 1999). The theoretical lens of knowledge management (KM), embraces activities associated with leveraging

knowledge processes such as creating, sharing, storing and using knowledge (e.g. Choi and Lee 2002; Haas and Hansen 2007; Hutchinson and Quintas 2008). KM has become one of the most dominant topics among academics and practitioners in the 21st century. At the strategic level, KM practices significantly influence financial performance and competitiveness of the organisation (Andreeva and Kianto 2012; Kianto et al. 2013). At the operational level, the importance of KM in process improvement has been recognised (Linderman et al. 2004; Choo et al. 2007). Han and Park (2009) stress that knowledge is embedded in business process and the use of knowledge is considered as part of organisational members' daily work. Grzegorzcyk and Ghiorghita (2017) point out the implementation of KM practices is an effective way to ensure the continuous process improvement of the organisation. Process improvement needs to be supported by KM since KM systems, technologies, and tools enable knowledge to be captured, stored, and shared to benefit the organization (Becerra-Fernandez and Sabherwal, 2010). Massingham and Holaibi (2017) confirm that organisations need to implement KM practices to achieve business process improvement, for example, by embedding KM into business processes, the waste points in business processes can be removed and the efficiency of work-flow can be improved.

To better guide KM practices, many frameworks and models have been developed by researchers (e.g. Carlile 2004; Girard and McIntyre 2010; Heisig 2009; Maier 2007; Nonaka and Takeuchi 1995; Pawlowski and Bick 2012; Von Krogh and Roos 1995; Wiig 1993). Nonaka and Takeuchi's (1995) research on knowledge

creation, conversion and utilisation is one of the best-known and most influential models in the KM field (Choo and Bontis 2002). Drawing on Polanyi's (1966) notion, two forms of knowledge are identified by Nonaka (1994) and Nonaka and Takeuchi (1995): explicit knowledge (i.e. knowledge captured in words and easily shared) and tacit knowledge (knowledge embedded in contexts and actions). The well-known SECI model depicts the creation and utilisation of these two forms of knowledge through four conversion modes, including socialisation, externalisation, combination, and internalisation (Nonaka 2007; Nonaka et al. 2000; Nonaka and Takeuchi 1995). Tacit knowledge exchange has a stronger impact on performance than explicit knowledge exchange, though tacit knowledge is often hard to transfer among individuals (Clinton and Bloodgood 2008; Esterhuizen et al. 2012; Nagati and Rebolledo 2013). Recent research shows the use of social media and Web 2.0 can facilitate knowledge sharing between different organisational and supply chain members (Irani et al. 2017).

More recently SECI processes have been linked to other organisational factors, for example, the role of leadership in supporting knowledge creation (e.g. Nonaka et al. 2014; Nonaka and Takeuchi 2011). Maier (2007:154) takes a more systematic perspective on KM activities and views SECI processes as part of the organisational learning cycle. He suggests KM should start at a strategic level with the development of a KM strategy to foster a supportive operational environment for knowledge flows and organisational learning (Maier 2007:155). Carlile (2002) further critiques Nonaka and his colleagues' studies by arguing that knowledge is not only tacit, but is also localised around particular problems faced in a given practice, embedded in individual

experience and methods, and invested in ways of carrying out work and success gained from developed knowledge. Building on the work of Nonaka and Takeuchi (1995) and others, Carlile (2004) develops a more integrated framework to explain the management of knowledge across three increasingly complex boundaries: syntactic, semantic and pragmatic boundaries. At a syntactic boundary, a common lexicon needs to be developed to transfer domain-specific knowledge. At a semantic boundary, common meanings for identifying novel changes should be established to translate domain-specific knowledge, whilst at a pragmatic boundary, common interests for making trade-offs should be created to transform domain-specific knowledge (Carlile 2004). Multiple iterations need to be supported as the development of common lexicon, meanings and interests among actors often needs to go through a trial-and-error problem solving process (Carlile 2004; Carlile and Reberich 2003). It is recognised that the process at a more complex boundary requires capacities of those below it, for instance, the transformation of domain-specific knowledge at a pragmatic boundary needs to be supported by a syntactic capacity to transfer knowledge and a semantic capacity to translate knowledge (Carlile 2004).

Carlile's (2004) framework sheds light on the dynamic nature of KM processes in organisations. Using empirical case data, we explore the interactions across boundaries and what is theoretically termed as the liminal space, by taking a multi-level practice-based approach as recently advocated by Torugsa and O'Donohue (2016) in their proposed agenda to progress innovation and KM research. In addition, we extend the use of Carlile's framework beyond managing knowledge across functional groups

in large organisations to a multi-perspective with SMEs and business consultants.

2.2 Knowledge management in SMEs

While many empirical studies of KM are conducted in large enterprises, KM in SMEs has received limited attention (Massaro et al. 2016; Serenko 2013). It is argued that the structural characteristics of SMEs should not be overlooked when studying KM (Desouza and Awazu 2006; Wee and Chua 2013; Wong and Aspinwall 2004). Given the centralised decision-making process in most SMEs, owners and senior managers are more likely to become the main drivers of KM (Cantú et al. 2009; Desouza and Awazu 2006; Wee and Chua 2013). Particularly in Chinese SMEs where the centralisation of decision-making is reinforced by traditional Chinese “command and control” culture (Cunningham 2010; Redding 1993; Whitley 1992). Hence, the ongoing support and commitment from top management is the most critical factor for effective KM in SMEs since this ensures the initiation and sustainability of KM effort (Bolisani and Scarso 2016; Bozbura 2007). However, since the owner and senior managers in SMEs focus more on operational details of their daily business, KM is often considered as being more tactical rather than strategic (Beijerse 2000; Cantú et al. 2009; Corso 2003; Salojarvi et al. 2005). Merono-Cerdan, Lopez-Nicolas and Sabater-Sanchez (2007) report that, although most investigated SMEs are orient to the personalisation strategy, they still lack deliberate and conscious KM strategies. Serenko, Bontis and Hull (2016) further confirm that SMEs such as credit unions often manage their knowledge tactically by applying KM techniques instead of developing official KM strategies.

In comparison to large enterprises, operational procedures and systems in SMEs are more informal and flexible. Hutchinson and Quintas (2008) contend SMEs manage knowledge informally without using KM concepts and terminology. Many SMEs fail to develop formal techniques such as knowledge repositories or information and communication technologies (ICT) (Corso 2003; Desouza and Awazu 2006). Given the limited resources, user-friendly and relatively low-cost technologies such as wiki and cloud technology provide more opportunities for SMEs to carry out KM activities effectively (Bolisani and Scarso 2016; Wee and Chua 2013).

SMEs create, share and apply knowledge via people-based mechanisms (also known as “people-centred” KM), for example, the use of face-to-face meetings and apprenticeship training methods (Desouza and Awazu 2006). The common knowledge (i.e. the knowledge that is known to all the organisational members or members with overlapping responsibilities) possessed by SME managers and employees eases communications within the organisation (Desouza and Awazu 2006; Wee and Chua 2013). The relatively low level of specialisation in SMEs means they may lack adequate expertise to conduct KM activities (Wong and Aspinwall 2004). It is therefore important for SMEs to use external knowledge sources such as business partners and management consultants to facilitate their KM processes (Chen et al. 2006; Chirico 2008; de Zubielqui et al. 2015; Liao and Barnes 2015; Pillania 2008; Zhang et al. 2006). For this study, we focus on the practical KM issues encountered by SMEs when involved in consultancy projects.

2.3 Knowledge management and management consultancy

Being categorised as knowledge-intensive firms, it is unsurprising that management consultancies are described as firms that transfer knowledge to their clients (Kubr 2002:5). From the client's side, many organisations employ consultants for gaining specific knowledge and skills that they do not possess (O'Mahoney and Markham 2013). Difficulties associated with knowledge transfer and sharing between consultants and clients have been well documented (Gammelsaeter 2002; Kipping and Armbrüster 2002; Richter and Niewiem 2009).

Kipping and Armbrüster (2002) identify the "burden of otherness" associated with KM in the consultancy project. Firstly, it may be difficult for consultants to gain contextual information from client employees since they are viewed as experts who should supply new knowledge (i.e. the burden from client's expert image of their consultants). Secondly, due to their insufficient understanding of client's daily operations, consultants may struggle to engage with client employees and implement their advice (i.e. the burden links to transfer and transformation of knowledge), even though the use of management tools and techniques can help them explicate tacit knowledge (Nonaka and Takeuchi 1995) in their client organisations (Kipping and Armbrüster 2002). In practice, client managers are more likely to involve consultants with prior knowledge of their organisations in implementation-oriented projects (Richter and Niewiem 2009). Consulting companies including McKinsey & Company have started to focus on recruiting more experienced managers who have shared knowledge of a specific sector or domain with their clients (O'Mahoney and Sturdy 2016; Sturdy 2011; Sturdy et al. 2009). Moreover, the otherness between different

activity systems adopted by consultants and their clients may further challenge transformation of knowledge in an implementation-oriented project since consultants are keen to promote changes and their clients' activities are driven by the established rules and procedures (Kipping and Armbrüster 2002).

However, the management of knowledge in consultancy projects is more dynamic than consultants being "burdened" by the otherness discussed above. Czarniawska and Mazza (2003) conceptualise consulting as a liminal space where institutionalised rules and usual practices are suspended. It is noticed liminality is particularly evident in projects such as consultancy projects since consultants typically work in the interstices between the consulting company and their client organisation where traditional organisational rules and functional structures are not applicable (Sturdy et al. 2006; Sturdy et al. 2009). The liminal space can be unsettling and challenging (Czarniawska and Mazza, 2003; Kipping and Armbrüster, 2002), but also it can be creative and productive for developing new knowledge as new metaphors and language introduced by consultants encourage client organisations to think and act differently (Clegg et al. 2004). Consultants tactically use liminal spaces to pursue politics of organisational change (Sturdy et al. 2006). Tempest and Starkey (2004) suggest liminality enables the organisation to broaden learning scope beyond their employees and take options on new areas of knowledge. On the other side, uncertainty of skills and prior knowledge possessed by contractual workers may inhibit learning processes in the organisation. Borg and Söderlund (2013) summarise four liminality practices adopted by consultants to deal with unsettling and ambiguous situations they

might face in liminal spaces, these being role carving (active social practice to negotiate their roles with clients), redefinition (i.e. active task-related practice to simplify problem solving process), reputation reliance (i.e. passive social practice to use reputational capital to build role-based trust with clients) and relaxation (i.e. passive task-related practice to await central players to proceed project tasks). Hence, liminality does not necessarily mean a negative experience as individuals who are engaged such as consultants have opportunities to choose to take an active part in forming their contexts (Borg and Söderlund 2013).

Although the notion of liminality has been recognised in the consultancy literature, little research has been conducted to investigate KM issues in liminal spaces. A search was conducted of scholarly, peer reviewed papers in two leading business based search engines, ABI and EBSCO using the terms "liminal*" and "knowledge management". The search produced only two papers and on review both were noted as being in completely unrelated fields of study. In this study, by bringing the theoretical concept of liminality to KM research, we provide a novel theoretical lens to investigate challenges associated with KM in consultancy projects, and practices adopted by SMEs and consultants to deal with the identified challenges.

3. Research methodology

A multiple case study was adopted for this study. Yin (2014) suggests the case study is suitable for “how”, “why” and exploratory “what” questions and is often the preferred research method to explore an under-developed research area (Stuart et al. 2002). As

noted earlier KM in SMEs, particularly in emerging markets such as China, is still under-researched.

In this study, the basic unit of analysis was the consultancy improvement project conducted with two Chinese SMEs and the selection of these cases mainly reflected on a theoretical replication logic (Yin, 2014) (i.e. cases can predict contrasting findings). The cases were chosen based on following criteria:

- The different levels of common knowledge or sector knowledge (Desouza and Awazu 2006; Sturdy 2011; Sturdy et al. 2009; Wee and Chua 2013) possessed by the consultants as these would enable various KM approaches in the projects to be studied;
- The roles of consultants played in the projects were varied and this would allow the practical issues associated with different types of consultants' interventions to be explored;
- The selected consultancy projects needed to be at the final stage to ensure access to project documents; and
- The SME-client organisations would be willing to grant access to their managers and employees.

3.1 Case organisations

Consultancy projects are often politically and commercially sensitive in nature and it can therefore be difficult to gain access to these projects (Sturdy 2012; Sturdy et al. 2009). To gain access for this study, AB Consulting Company (pseudonyms have been used to provide anonymity and confidentiality to the case organisations) was approached. This leading management consultancy company is in the eastern part of

China, and provides SME-organisations with advisory services in business management such as quality and operations management. Supported by the consulting company, an invitation letter with the outline of the background, purpose, methods of the study, was sent to its current SME-client organisations. Two consultancy projects conducted with two Chinese SMEs were selected based on the four case selection criteria identified above. In addition, this study drew on cases of less than 250 employees, so qualifying as SMEs under both EU and Chinese definitions. Table 1 provides the background information of the two SME-client organisations. To aid case comparison, both client organisations were based in the manufacturing sector in China, and were similar in company size and age.

Table 1 The background of Chinese SME-client organisations

Background	SME-client 1	SME-client 2
Ownership	Private	Private
Company age	12	14
No. of employees	127	155
Industrial sector	Machinery manufacturing	Glass manufacturing
Main markets	U.S.	China
People involved in the project steering team	Two consultants, one deputy general manager, production manager	The senior consultant, the general manager, one deputy general manager

Source: Developed by the authors

3.2 Data collection

The data were collected from semi-structured interviews, direct observation and project documents between November 2012 and March 2013. Prior to visiting the case organisations, initial contacts were made between the lead author and the gatekeeper in each case organisation to discuss practical issues; for example, when to enter the case

company, the author's accessibility to people, workplace and documents during the visit. The outline of interview questions was also sent to each case organisation before the visit.

The interviews were audiotaped with the consent of the interviewees and then transcribed on the same day. For those interviewees who felt uncomfortable with audio recorder, field notes of their answers were made during the interviews. Interviews were conducted with managers and employees who were involved in the consultancy projects, such as owners, senior managers, middle managers, operators and consultants in both cases (see Appendix 1). Since this study focused on practical KM issues in consultancy projects, questions related to the background of the project, key KM activities in the projects, main difficulties of managing knowledge of new process improvement practices during the consultancy projects and the relationship established between consultants and their Chinese SME-clients were asked during interviews (see Appendix 2). One practical issue related to conducting interviews was how to improve the employees' participation. To deal with this issue, the participant was assured of the confidentiality of his or her response at the beginning of the interview. Each participant was clearly informed that he or she held the right to refuse to answer any question during the interview and had the opportunity to withdraw at any time during this study. In addition, brief explanations of research purposes and the KM concepts (where appropriate) were provided to facilitate employees to understand the interview questions. A prize draw was also offered in each case organisation to further motivate employees to participate in the interviews.

In addition to semi-structured interviews, eleven consultancy project steering team meetings and four training courses were observed. The duration of direct observations was between sixty and ninety minutes. Documentation developed and used within the consultancy projects, including project implementation guidelines, progress reports, presentation materials and training materials made by consultants, were collected to validate the interview and observation data.

Follow-up interviews were conducted with the owner, senior managers, middle managers and consultants between October 2013 and May 2014 (when both projects had moved to a late implementation phase). Participants were asked to reflect on the learning processes in the project, operational performance improvements and consulting company/client organisation's plan for learning the new business improvement practices. The average duration of follow-on interviews was between forty and fifty minutes. The number of follow-on interviews is summarised in Appendix 3.

3.3 Data analysis

The data analysis method employed for the qualitative data was template analysis (King 1998), using a list of codes to represent themes identified from the collected textual data. The use of template analysis enables the development of an initial list of codes prior to data analysis. For example, in this study, the initial codes of KM processes were developed based on Carlile's (2004) integrated framework. Kipping and Armbrüster's (2002) three types of "burden of otherness" and Borg and

Söderlund's (2013) four liminality practices were adopted as the initial codes to label KM challenges encountered and approaches adopted in the consultancy projects. The use of template analysis also allows the modification of pre-developed codes and the inclusion of codes emerging from empirical data (King 1998). For example, during the data analysis, it was found that the consultants were commonly viewed as "*laoshi*" (which means teacher that should supply new knowledge) by the interviewed managers and employees. Hence, a new code named "*consultant as laoshi*" was developed to complement three types of "burden of otherness". Cross-case analysis (table 2 shows the characteristics of selected cases) was performed to illustrate the similarities and differences of KM practices and issues. The coding list and case study results were cross-checked by all the authors and disagreements were solved by discussion meetings.

One major concern of case study research is its generalisability. Yin (2014) stressed that case study research intended to pursue analytic generalisation (i.e. generalisation based on comparing the previously developed theory with the empirical results from case studies) rather than statistical generalisation. It was suggested that analytic generalisation would be achieved by using the replication logic in case study research (Yin, 2014). In this study, a theoretical replication logic was applied when selecting cases to enhance its generalisability. The reliability of this case study was enhanced through the development of a case study protocol (see Appendix 4) which included the research purpose, case selection criteria and data collection methods such as interviews (Yin, 2014). Multiple data sources were collected, cross-checked and

analysed by the authors to establish a chain of evidence, which enhanced the construct validity of this study.

Table 2 Characteristics of two cases

Cases	Characteristics of the selected cases
Case 1	The consultants did not possess sufficient work experience in the client's industry; they were employed as external advisors and played an advisory role in the project steering team.
Case 2	The consultant had extensive work experience in the client's industry; he was employed as the senior manager and played a decisive role in the project steering team.

Source: Developed by the authors

4. Results

This section presents the results from the cross-case analysis. The consultants in these two SME cases were involved in the implementation of process improvement practices. Three consulting phases to the implementation of these practices were identified based on the triangulation of project documents and interviews with consultants and managers. Three practical issues in relation to KM and three approaches adopted to deal with these issues are recognised. Table 3 summaries the results.

Table 3 Summary of case results

Consulting phases	Pre-early implementation	Early-mid implementation	Mid-late implementation
Primary consulting activities	Identifying problems and proposing possible process improvement practices	Adapting process improvement practices to the client's context	Applying process improvement practices on the shop floor
Challenges	A tension between “consultant as <i>laoshi</i> ” and the need for interactions between consultants and managers. Consultants needed to understand the context and undertake a diagnostic of the problem.	A tension between people-centred KM approach in SMEs and the need of building a shared understanding of “what” and “how” to improve on the shop floor between consultants and managers.	A tension between “owner as <i>big boss</i> ” and the need of certain authority to pilot and implement process improvement practices.
Approaches <i>Primary activities</i>	Actively exchanging thoughts and ideas with managers; adapting to common language adopted by managers; negotiating expectations. <i>Face-to-face discussions, interviews, lunch meetings, informal talks, project steering team meetings</i>	Developing a simple language to interpret improvement practices; exploring managers' common requirements; emphasising tangible benefits of applying certain process improvement practices. <i>Training; on-site show-how; group meetings; project steering team meetings; the use of Internet platform</i>	Influencing the owner's decision making by providing evidence to show the need of support; keeping the project current; demonstrating the new gap to pursue future business opportunities. <i>Writing progress reports; face-to-face discussions; project steering team meetings; the use of Internet platform</i>
Effects	<ul style="list-style-type: none"> ● Managers and employees were freed from their daily work and motivated to involve in problem-diagnosis processes; ● Consultants reduced their role-overload. 	<ul style="list-style-type: none"> ● Consultants and managers gradually developed common interpretations of process improvement practices; ● Consultants and managers made some agreement on implementation guidelines and operational procedures. 	<ul style="list-style-type: none"> ● The owner was motivated to reconsider resources allocated to the project; ● The owner agreed to extend project deadlines and was driven to consider future possible business with consultants.

4.1 Pre-early implementation phase

4.1.1 Challenges

The tension between the client manager's view of "consultant as *laoshi*" (means teacher in English) and the need for interactions between managers and consultants to co-develop initial project proposals was the main challenge found in both cases at the early stages of the projects. In both cases, the owners and senior managers commonly termed their consultants as "*laoshi*" and as being extremely knowledgeable in the area of process improvement. They generally expected the consultants to tell them "what to improve" and "how to improve", and felt they should respect consultant and follow their "*laoshi*". Particularly in Case 2, the owner expected the consultant to play a more decisive role in the project because of the consultant's extensive prior knowledge of the client industry and his personal friendship with the consultant. Similarly, the middle managers and employees reported being comfortable about carrying out the consultant's instructions since they believed the consultant possessed more knowledge about the industry and process improvement practices than themselves.

From the consultants' perspective, they were particularly concerned that the managers were over-dependent on them for diagnosing problems and provide solutions. They contended their clients were too demanding and failed to see that the thoughts and ideas from managers and employees contributed significantly to the problem-diagnosis process. In addition, the low availability of documented contextual information in both cases further inhibited the consultants' understanding of the organisational context. The consultants in both cases highlighted the need for

collaborative working with middle managers and experienced supervisors from production, quality and other relevant departments in order to fully understand the problems in practice and develop proposals for process improvement.

4.1.2 Approaches and effects

To increase managers and employees' involvement in projects, consultants in both cases actively organised interactive activities such as group interviews, workshops, and individual sessions to exchange thoughts and ideas with middle managers and some experienced supervisors. From these activities, the importance of using accessible language to interpret existing operational practices became apparent to the consultants. The consultants in Case 1 reported they spent more than three weeks making sense of jargon and technical terms commonly adopted by middle managers from production, quality and warehousing departments. They also attempted to interpret their ideas of improvement practices by using these terms to ease communications. For example, the term "house-keeping" was often adopted by middle managers and supervisors to describe activities of tidying workshops, whereas the consultants used the same term when interpreting how to improve current operational processes. In Case 2 where the consultant had extensive work experience in glass manufacturing, the consultant found himself more aware of its general operational processes, core technologies as well as jargon and technical terms used on the shop floor.

Managers and supervisors in both cases generally had a positive perspective of being involved in interactive activities. For example, the production manager (Case 1) felt these activities released him from normal shop floor fire-fighting environment and

allowed him some time to reflect on the design of daily operational processes. The quality manager (Case 2) reported he enjoyed the friendly atmosphere when communicating with the consultant, though he initially thought the consultant would directly decide all the necessary improvements.

To reduce the burden (e.g. stressful work, long working hours) deriving from over-demanding clients, the consultants in both cases actively negotiated their roles with the owners and senior managers. For instance, the consultants in Case 1 continually emphasised their advisory roles during the project steering team meetings as they felt sometimes they were asked to make training-related decisions. The consultant in Case 2 also negotiated with the owner to keep his decisive role within process management as he realised some middle managers tried to expand his role to other areas of the business such as sales and marketing events.

4.2 Early-mid implementation phase

4.2.1 Challenges

The interactions between consultants and clients at the pre-early implementation phase of the project enabled the identification of problems in client organisations. Three improvement practices including workplace organisation, standardised work and visual management were commonly proposed by the consultants to solve identified problems of disorganisation on the shop floor and informal operational procedures. At the early-mid implementation phase, more detailed and practical procedures of how to apply these practices on the shop floor needed to be further developed. The tension between people-centred approach to manage knowledge in both SME cases and the

need for building a shared understanding about implementing these improvement practices was found to be the main challenge at this phase.

The owners and senior managers in both cases reported that, due to their limited financial and human resources, they did not adopt formal systems, such as large databases to regularly record and share their daily operational practices. Supervisors and operators confirmed there were no specific policies and guidelines on how to record and access operational data prior to the projects. They also mentioned that the instructions for their daily work were not clearly stated and they relied on a 'learning by doing' approach to carry out their work. Managers and employees usually communicated and shared their work experience through informal and ad-hoc conversations rather than formal meetings.

The consultants in both cases agreed it was challenging to adapt improvement practices to their clients' context and made these practices accessible to their client managers without an in-depth understanding of processes, management and relationships among different departments and workshops. For instance, in one project steering team meeting in Case 1, the deputy general manager reported the difficulties of trying to make sense of the implementation guideline proposed by the consultants. He stated the guideline was too broad and he could not see what specific shop floor practices needed to be improved. In Case 2, although the consultant played a decisive role in the project and had extensive prior knowledge of the client's industry, he stressed it was necessary to clearly understand the managers' (mainly managers involved in the project steering team) perspectives and continually negotiate with them

to ensure the development of a feasible and agreed implementation guideline.

4.2.2 Approaches and effects

In both cases, most senior and middle managers were not aware of improvement practices and had limited training in advanced management practices prior to the projects. The consultants agreed it was crucial to adopt simple and accessible language to interpret improvement practices since this could help managers make sense and ease the diffusion of key improvement activities. For instance, in Case 1, the consultants spent considerable time co-developing practical terms such as “*big tag*” and “*white boards*” with managers to describe activities (e.g. the use of visual boards) required for improved visual management. A combination of the extensive work experience, sector knowledge and availability of internal information, enabled the consultant in Case 2 to use real-life examples in the client’s industry to explain the meaning of improvement practices.

To aid communication and sharing of knowledge, the consultants in both cases engaged senior and middle managers to participate in regular project steering team meetings and additional group meetings. Free and less sophisticated Internet platforms such as QQ instant messenger and WeChat, which could be easily accessed through mobile apps, were frequently adopted to facilitate timely communications between consultants and managers. Possible tangible benefits such as improved operational performance, were often highlighted during their communications to convince managers to adopt certain improvement practices.

The consultants in Case 1 reported, through their communications with

production, quality and warehousing managers, as well as some workshop directors, they could recognise common concerns and requirements in relation to applying process improvement practices. This enabled them to adjust and revise their proposed implementation guideline, for example, the priority of implementation was given to workplace organisation since managers commonly concerned the disorganisation on the shop floor. They mentioned that when discussing some sensitive changes, such as how to measure the performance of the use of improvement practices, it was necessary to involve the owner in the discussion to speed up the approval of implementation guideline and procedures. In Case 2, the consultant provided evidence to show the extent to what the implementation guideline and operational procedures could be applied on the shop floor.

4.3 Mid-late implementation phase

When the implementation guidelines and procedures were agreed by the project steering teams, process improvement practices needed to be piloted on the shop floor to further test their feasibility. In Case 2, the owner devolved some responsibility to the consultant to change operational activities on the shop floor if the cost of changes did not exceed the budget, affect the structure of management team or delay the completion of customer orders. Hence, the pilot scheme was launched efficiently on the shop floor and the feedback from front-line employees helped the consultant further revise the implementation guideline. The owner in Case 2 felt the consultant kept him informed with activities and issues of the project formally (e.g. regular meetings, progress reports) and informally (e.g. social meetings) though he did not

directly participate in project steering team. By the time of the follow-on interviews, the owner had extended the service contract with the consultant since he was pleased with the progress of the project and believed the consultant performed well in this decisive role.

4.3.1 Challenges

In Case 1, the tension between the owner as the “*big boss*” (the term used by the senior consultant) and the authority to carry out the pilot scheme became the main challenge. The owner who acted as the “*big boss*” kept tight control of financial and human resources, but, the project steering team needed to have some authority (e.g. purchasing some simple equipment, adjusting organisation of workshops) to support the pilot scheme. The consultants and managers were concerned that the progress of the project would be delayed if the approval of pilot scheme could not be obtained from the owner. Table 4 summarises the improvements made by both cases. Case 2 was more effective in establishing a key performance indicator system and show improvements than Case 1. The general and deputy general managers in Case 1 reported they made several efforts to negotiate with the owner to conduct the pilot scheme. Whilst awaiting approval they continued to focus on their daily managerial and operational tasks.

Table 4 Improvements of operational performance in the two investigated SMEs

Operational performance indicators	SME-client 1	SME-client 2
Production cost	Reduced by 0.1%* Reduced by 2.4%**	Reduced * Reduced by 3.5%**
Cost of raw materials	-----* -----**	Reduced by 0.6%* Reduced by 2.3%**
On-time delivery rate	Improved * Improved by 4% **	Improved * Improved by 5.4% **
First pass yield	-----* -----**	Improved by 0.23%* Improved by 3.2%**
No. of Safety accident	No safety accidents were recorded after the project's start***	

Notes: A specific figure of the improvement measure is provided where possible

“-----” no performance indicator had been set up at the time of research;

“**” data from main interviews with owners and senior managers;

“***” data from follow-on interviews with the consultants

Source: Developed by the authors

4.3.2 Approaches and effects

The consultants attempted to influence the owner's decision-making by providing specific evidence (e.g. the effort made by project steering team to accomplish project tasks; possible tangible benefits from piloting improvement practices) to justify the need for financial and human resource for the pilot scheme. Along with progress reports, face-to-face discussion sessions were held between the consultants and the owner. The consultants continually reminded the owner of the tight deadlines and actual progress of the project, and re-emphasised the effort they made and the support required to proceed with the pilot scheme. Since the consultants recognised the owner could not make a quick decision on the pilot scheme, they then advised the owner to extend the project deadline. They also suggested the owner to consider future possible improvement projects, such as the performance management project which could

further help the company improve its operations.

The owner reported he was surprised by the additional costs of the project such as purchasing facilities and painting the floor as he thought the consulting fee would be the main cost of the consultancy project. He agreed to extend the project deadline, but he believed the pilot scheme and the entire implementation guideline should be revised, and perhaps simplified, due to the financial situation in the company. The consultants confirmed that multiple revisions were performed to simplify the initial implementation guideline.

5. Discussion

This study investigates the practical issues associated with KM in consultancy-involved process improvement projects in SMEs. As acknowledged by Chen et al. (2006), de Zubielqui et al. (2015) and Pillania (2008), SMEs often need to seek external learning sources due to their resource constraints. In this study, SME owners employed consultants to help them learn new knowledge of process improvement practices. However, the identified challenges showed that while new process improvement practices were introduced through the consultancy projects, SME structural characteristics and the “otherness” (Kipping and Armbrüster 2002) between consultants and their client managers not only led to syntactic issues, but semantic and pragmatic issues associated with KM across boundaries were also identified (Carlile 2002; 2004).

The novelty of this study is the exploration of approaches adopted by consultants who were keen to promote changes and often resided in the liminal space (Sturdy et al.

2006), to facilitate KM. The results indicated consultants employed active social and task-related liminality practices (Borg and Söderlund 2013) to gradually develop syntactic, semantic, pragmatic as well as iterative capacities required by KM at a pragmatic boundary (Carlile 2004).

The informal operations and the low level of documentation of operational data in both cases inhibited the consultants in gaining a quick and in-depth understanding of the operational context of their clients (Gammelsaeter 2002). This was particularly identified at the early phase of projects, when consultants who did not possess sufficient industry knowledge of their clients found it difficult to understand technical terms and jargon commonly adopted by managers. In this sense, a syntactic issue arose due to a lack of common language between consultants and their client managers.

To enhance the understanding of their clients' organisational context and address the main problems they encountered, the consultants actively increased their interactions with managers through face-to-face communications (labelled as redefinition practice in Borg and Söderlund's (2013) study). These communications provided managers with opportunities to be temporarily released from normal organisational rules and practices and motivated their reflection of current operations (Clegg et al. 2004). Through face-to-face communications, consultants were also able to gain an initial understanding of their client's operational context and the common language adopted by managers. Based on their interactions with managers, the consultants started to adopt and adapt the language to interpret problems and propose relevant solutions (e.g. the use of term "house-keeping" to describe cleaning activities),

which was fundamental to the development of the syntactic capacity (Carlile 2002).

In this study, both case SMEs adopted a people-centred approach (Desouza and Awazu 2006) to manage knowledge prior to the projects, without a strategic guidance on the use of formal procedures or IT system to document and store operational data (Corso 2003; Salojarvi et al. 2005). While managers and employees shared their domain-specific knowledge informally (e.g. through personalised meetings), it was more challenging for consultants to capture the details of their daily operations or propose practical guidelines on implementing certain process improvement practices. In addition, the consultants were commonly viewed as experts who possessed superior knowledge of improvement practices by senior and middle managers (Kipping and Armbrüster 2002). Instead of criticising advice or decisions made by the consultants, managers in both cases were more likely to simply follow them. This appears to reflect the command and control characteristic in traditional Chinese culture (Cunningham 2010) where juniors, including middle managers and employees, are expected to respect and follow seniors and experts like “*laoshi*”. The results indicated managers relied on the consultants to provide knowledge rather than actively expressing and discussing their thoughts with consultants. This “expert image” inhibited consultants in their recognition of the requirements from different departments and in their ability to translate key concepts of process improvement practices based on these requirements. Managers also struggled to understand the meaning of proposed process improvement practices, for example, what and how to improve and the potential benefits of improvement. This can be described as a semantic issue since the common meaning of

implementing improvement practices had not been established between the consultants and managers.

To accelerate the development of common meaning, the consultants continued to engage managers in interactive activities with the support of low-cost technologies, such as Internet platforms (Bolisani and Scarso 2016; Wee and Chua 2013), to refine their interpretations of newly proposed improvement practices with simple and accessible language: for example, the use of plain language including *big tag* and *white boards* to interpret key activities of visual management practice. Moreover, they actively negotiated their roles with the owner and senior managers to clarify the scope of their consulting tasks and encourage managers to contribute to the design of implementation guidelines. The consultants' active liminality practice of role carving (Borg and Söderlund 2013) reduced the burden (e.g. clients' over-reliance on consultants to supply solutions) deriving from the clients' expert image of management consulting and relaxed the "command and control" culture. Meanwhile, it enabled the consultants to explore managers' common requirements of improvement practices since managers were motivated to voice their concerns over what and how to improve the shop floor as well as their expectations of potential benefits from adopting certain improvement practices more explicit (Nonaka 2007; Nonaka et al. 2000; Nonaka and Takeuchi 1995). Hence, the consultants could effectively adapt their interpretations of improvement practices to managers' common requirements (e.g. emphasising the tangible benefits of using certain improvement practices). Managers in both cases were more likely to agree on the implementation guidelines that reflected on their specific

needs. In this sense, the consultants' use of active liminality practices developed the semantic capacity at the boundary where common agreement on implementing certain process improvement practices could be reached between managers and consultants.

Since the investigated consultancy projects were implementation-oriented, managers and consultants were concerned about improving shop floor operations and thus, a pilot scheme was proposed by the consultants in both cases to test the performance of process improvement practices. Given the central role played by the owner in the decision-making (Cantu et al. 2009; Desouza and Awazu 2006; Wee and Chua 2013), it was impossible to pilot new practices on the shop floor without his commitment to the investment of necessary facilities and human resources. The results showed financial constraints encountered by the case SME could impede the owner in making a quick decision on securing the additional costs required for the consultancy project. Whilst waiting for the owner's decision, the senior and middle managers tended to move out of the consultancy project by arguing they needed to spend more time carrying out their daily managerial and operational work. As acknowledged by Kipping and Armbrüster (2002), consultants focus on changing management practices in their client organisations, whereas their client managers are more likely to adhere to their traditional ways of working. Carlile (2002), who offers a pragmatic view on knowledge, further points out that knowledge is invested in ways of doing things and successes that demonstrate the value of knowledge. If common interests cannot be reached among individuals, they are less likely to transform their current domain-specific knowledge, even though there are new ways available to perform their

work (Carlile 2002). In this sense, a pragmatic issue was identified from the case study (particularly in Case 1) since the owner did not approve the new pilot scheme and the traditional operational practices were still used by managers and employees on the shop floor.

Instead of solely waiting for the owner's decisions, the consultants (in Case 1) were found to actively negotiate with the owner to obtain the approval of pilot scheme. During their negotiations, the owner was driven to consider the trade-offs between the additional costs needed by the pilot scheme and possible benefits from piloting improvement practices. The consultants continued to emphasise the significant efforts that had been made during previous consulting phases and the need for the necessary executive support to advance the project. The owner's approval for carrying out a simplified version of a pilot scheme suggests a compromise was eventually reached. While the consultants gained approval from the owner, the multiple revisions of implementation guidelines of process improvement practices based on feedback from managers and front-line employees (particularly in Case 2) reflected the iterative nature of KM at a pragmatic boundary. As noted by Carlile (2004), the transformation of domain-specific knowledge at a pragmatic boundary often requires an iterative process of creating new agreements and making changes. The consultant's use of active social liminality practices enabled the trial-and-error problem solving process in the consultancy projects and thereby, supporting the transformation of process practices on the shop floor. Hence, the first research proposition we propose for further empirical testing is:

Proposition 1: The consultants' use of active social and task-related liminality practices effectively facilitates their SME-client to develop syntactic, semantic, pragmatic and iterative capacities required by KM at a pragmatic boundary.

In comparison to Case 1, the consultant in Case 2 had extensive work experience of the client industry. The prior industrial or sector knowledge acquired by the consultant (Richter and Niewiem 2009; Sturdy 2011; Sturdy et al. 2009) helped to develop a shared understanding of process improvement practices with client managers and employees, for example, the language adopted by the consultant to interpret process improvement practices was highly accessible to the client managers and employees. In this case, the learning and implementation of process improvement practices on the shop floor was accelerated since the consultant and middle managers could focus directly on the development of project implementation guidelines rather than the industry appreciation and the learning that had to take place in Case 1. Furthermore, the owner had built trust with the consultant in Case 2 based on their friendship established prior to the project and hence gave the consultant authority to make project-related decisions. The responsibility gained by the consultant also enhanced the effectiveness of KM at the pragmatic boundary by streamlining the decision-making process in the project (e.g. the decision of launching the pilot scheme) and enhancing the iterative processes of piloting process improvement practices, collecting front-line employees' feedback and adjusting the changes on the shop floor. Therefore, our second research proposition is:

Proposition 2: The consultant's prior knowledge of the client's industry and

authority to make project decisions positively mediate the effect of the consultant's use of active liminality practices in developing syntactic, semantic, pragmatic and iterative capacities required by KM at a pragmatic boundary.

6. Conclusion

This study has empirically investigated KM practices in SMEs in the context of the emerging economy of China, which is an under-researched topic in the KM field from a multi-level practice-based perspective. By bringing the concept of liminality to mainstream KM research, this study has provided a novel theoretical lens to investigate the management of knowledge in consultancy projects. It develops Carlile's (2004) framework by identifying the role of liminality practices in facilitating SMEs to transfer, translate and transform knowledge across boundaries in consultancy projects.

This study provides the following practical implications for both SME managers and external agencies, such as management consultants, involved in the project-based work with SMEs. For SME managers, first, since they lack a clear formal guidance on their daily KM practices, management consultants find it difficult to help their SME-clients to carry out learning activities such as problem-diagnosis during the projects. Hence, SME managers need to consider KM more strategically by developing policies or procedures that can direct KM processes (e.g. the ways to share and store knowledge) at the early stage of process improvement projects. Second, the financial constraints encountered by SME managers mean limited budgets may be allocated to develop KM practices. The World Bank (2015) notices SMEs are less

likely to be able to secure bank loans than large enterprises and in fact, more than 50% of SMEs lack access to finance. Therefore, SME managers need to seek alternative ways in which to drive their KM practices, for example, organising and encouraging employees to be actively involved in knowledge sharing activities. Third, (Chinese) SME managers often rely on consultants to diagnose problems and provide solutions. However, the results from this study also show it requires great efforts from both SME managers and their consultants to put the ideas of process improvement into practice (i.e. manage knowledge of process improvement at a pragmatic boundary). Before SME managers engage with consultants, they need to critically review what they require and be willing to participate in an interactive process with the consultants in learning and managing the knowledge of new business improvement practices.

Regarding the implications for external agencies, such as management consultancies, this study echoes Borg and Söderlund (2013) and Sturdy's (2006) studies by showing being involved in project-based work with SMEs as the 'insider-outsider' does not generate a negative experience. The liminality practices adopted by the consultants to help SMEs manage the new knowledge of process improvement at a pragmatic boundary imply that they can choose to play an active part in dealing with challenges when they encounter them during the stages of problem-diagnosis and problem-solving. Here we have noted the value of consultants' investing in the development of long-term and personal relationship with SME managers which can enhance the accessibility to information and effectiveness of KM.

This study is limited by the fact the data are collected from two process

improvement projects undertaken in the context of Chinese SMEs. In addition, we use management consultants as the proxy for other external agencies that can assist KM in SMEs. This may limit the findings being extended to other contexts. These limitations however provide opportunities for future research. It will be important to examine KM in other SME contexts, for example, SMEs in western countries where the organisational culture may be different from Chinese SMEs. The role of other external agencies such as SME supply chain members in helping SME to manage knowledge should also be investigated. Longitudinal case studies and action research are encouraged to further explore possible activities undertaken by consultants and their clients to move in or move out of liminal spaces, and how these activities may influence the management of knowledge in consultancy projects.

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Appendix 1 The number of interviews

Interviewees	Case 1	Case 2
The owner	1 (2 hours)	1 (1.5 hours)
Senior managers (e.g. general managers, deputy general managers)	3 (1.5 hours)	3 (1.5 hours)
Middle managers (e.g. production/operations manager, quality manager, warehouse manager, workshop directors or equivalent)	4 (1.5 hours)	4 (1 hour)
Front-line employees (e.g. supervisor, operator)	12 (1 hour)	15 (0.7 hour)
The consultant	2 (2.5 hours)	1 (2 hours)

Note: () indicates the average duration of interview

Appendix 2 The outline of interview questions

Section 1: Background of the project

- previous experience about conducting quality and process improvement project;
- motivations and purposes of conducting this quality and process improvement project;
- reasons to hire management consultants (for the owner and managers only);
- contextual knowledge base of the client organisation (e.g. work experience, knowledge of technologies, operations and processes in the client organisation) prior to conducting the project (for consultants only);
- preparations of projects (e.g. initial contacts, collection of information);
- summary of key consulting phases and main activities included in each consulting phase;
- summary of key process improvement practices introduced to the organisation;
- views of the KM activities in the client organisation (e.g. whether policies/rules of how to store or share knowledge have been developed).

Section 2: Main challenges of managing knowledge in the consultancy project

- main characters involved in the project steering team and views of their roles at each consulting phase (e.g. key decision-maker and the decision-making process);
- key decision-maker's influences on the consulting activities at each consulting phase;
- main activities and techniques adopted at each consulting phase to create, share,

store and/or use the knowledge of new process improvement practices (e.g. formal meetings, face-to-face communications);

- main problems encountered when introducing new process improvement practices to the client at each consulting phase (e.g. relationships with clients, differences of knowledge base) (for consultants only);
- main difficulties perceived when learning and applying process improvement practices (for the owner, managers and employees only)

Section 3: The approaches adopted to deal with challenges

- examples of main approaches/activities adopted to deal with the identified challenges at each consulting phase (e.g. delivering training courses; organising group meetings);
- reflection on the effect of the adopted approaches (e.g. whether the problem was solved, examples of the significant changes of KM activities in the organisation, impact on the progress of project);
- reflection on the consultants' roles in managing the knowledge of process improvement practices (for the owner, managers and employees only);
- reflection on the roles of management played in terms of managing the knowledge of process improvement practices (for the consultants only).

Appendix 3 The number of follow-on interviews

Interviewees	Case 1	Case 2
The owner	1 (1 hours)	1 (1 hours)
Senior managers (e.g. general managers, deputy general managers)	2 (1 hour)	1 (1 hour)
Middle managers (e.g. production/operations manager, quality manager, warehouse manager, workshop directors or equivalent)	3 (1 hour)	2 (0.7 hour)
The consultant	2 (1 hour)	1 (1 hour)

Note: () indicates the average duration of interview

Appendix 4 Case study protocol

1. Introduction to the case study

1.1 Purposes of case study

This study focuses on the management of knowledge in SMEs. It is noticed that SMEs often need to exploit external sources such as consultants to help them learn new knowledge due to their resource constraints. Hence, this case study aims to investigate challenges encountered by consultants and their SME-clients when new knowledge is introduced through the consultancy project. It also aims to investigate approaches adopted by managers and consultants to deal with the identified challenges.

1.2 The context of case study

The case study will be conducted in the region of China for the following reasons. First, China plays a key role in the world's economy. Second, SMEs are crucial to the development of China's economy. Third, Chinese SMEs have encountered many difficulties during their development. While the use of consultancy has been recommended as a way to help Chinese SMEs learn new knowledge and improve their performance, little research has investigated practical KM issues in consultancy projects that are undertaken in Chinese SMEs.

1.3 Selection of cases

Four criteria should be applied when selecting cases. First, the level of sector knowledge possessed by the consultants should be different, since the literature suggests that these would enable various KM approaches in the projects to be studied. Second, the roles of consultants played in the projects should be different since this allows the practical issues associated with different types of consultants' interventions to be explored. Third, the selected consultancy projects should be at the final stage to ensure access to project documents. Fourth, the SME-client organisations should be willing to grant access to their managers and employees.

2. Data collection procedures

2.1 Sites to be visited

Two consultancy projects undertaken in two Chinese SMEs will be visited. Both of them are located in the Eastern part of China. The contact person in the first

consultancy project is the deputy general manager. The contact person in the second consultancy project is the senior consultant.

2.2 Data collection plan

The main data collection method adopted in this case study is the semi-structured interview. The interviewees are expected to be the owner of the SME, the managers and employees involved in the project and the consultant(s). During the interviews, the interviewees are expected to discuss main challenges they perceived when managing knowledge in the consultancy project and the approaches they adopted to deal with the identified challenges. The data collected from interviews will be analysed and interpreted in Carlile's framework of KM through the theoretical lens of liminality.

Direct observation of project steering team meetings and training courses are expected to be conducted in both cases. During the direct observations, the researcher will mainly focus on observing how the consultant(s) and managers communicate with each other and how they solve the disagreement. The data collected from direct observations will help the researcher to further understand the interactions between consultants and their clients. The data collected from observations will complement and supplement interview responses.

Documents developed and used within the consultancy project, including project plan, training plan, project implementation guidelines and progress reports, are expected to be collected to validate the interview and observation data.

3. Case study report

The purpose of case study is not to simply describe the individual case. The case study report will mainly focus on comparing and contrasting the management of knowledge in these two cases. The case study report is expected to be organised around such topics as challenges of KM in the consultancy project and approaches adopted by the consultant(s) and clients to deal with challenges. In this sense, the individual case is expected to serve as the evidentiary base for this study and appropriate examples from the two cases will be provided under each topic.