EXPLORING KNOWLEDGE VALUE CREATION PRACTICES: AN INTERPRETIVE CASE STUDY

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EXPLORING KNOWLEDGE VALUE CREATION PRACTICES: AN INTERPRETIVE CASE STUDY

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Declaration

The work presented in this thesis entitled "Exploring Knowledge Value Creation Practices: An Interpretive Case Study" is, to the best of the researcher's knowledge and belief, original. I hereby declare that this thesis is my own work and effort and that it has not been submitted anywhere for the award of any academic degree. Where other sources of information have been used, they have been acknowledged in the text by means of references.

Chalee Vorakulpipat

Abstract

The gaining popularity of Knowledge Management (KM) has been reinforced by the quest for innovation and value creation. Value creation is grounded in the appropriate combination of human networks, social capital, intellectual capital, and technology assets, facilitated by a culture of change. It is indicated that the future of KM tends to focus on the study of the impact on people in terms of value or knowledge value creation. Because of this, the positive relationship between KM and value creation has been discussed extensively in the literature. However, the majority of the studies on knowledge value creation have been widely undertaken to highlight several case studies demonstrating success in developed countries, whilst very few studies have been done in the cultural context of developing countries. These studies in developing economies have identified several distinctive features, in particular socio-cultural factors that have an important role and influence in KM practices. A call has been made for further research to explore KM in different organisational and cultural contexts in developing economies. Thailand is an example of a developing country where a number of distinctive socio-cultural features have been identified. It therefore represents an interesting case to conduct a study on the influence of these cultural features on KM practices within an organisational context.

The objective of this empirical study is to explore knowledge value creation practices in a Thai organisation. The research adopts an interpretive stance and employs a case study approach involving multiple data collection methods. It is based on the researcher's personal expertise and close involvement in the selected case study organisation for over a decade. The study characterises Thai distinctive culture in terms of collectiveness, shyness, conscientiousness, and seniority, and indicates that these distinctive socio-cultural features critically influence (a) the social network ties and relationships between employees within and across teams, (b) the resulting level of trust between employees, and (c) the ability to share and create knowledge effectively in the organisational socio-cultural environment. The study is limited to a Thai organisation, but can be generalised to other organisations that exhibit similar characteristics. It provides interesting insights into the socio-cultural factors

affecting knowledge management adoption in a Thai organisation and a foundation to further the research on the validation of the theoretical model that emerged from this empirical study.

CHAPTER 1

Introduction

1.1 Introduction

A knowledge-based perspective of the organisation has emerged in the strategic management literature (Alavi and Leidner, 2001; Nonaka and Takeuchi, 1995). Organisational knowledge is recognised as a key resource and a variety of perspectives suggest that the ability to marshal and deploy knowledge dispersed across the organisation is an important source of organisational advantage (Teece, 1998; Tsai and Ghoshal, 1998). Furthermore, it is widely acknowledged that one of the key sustainable advantages that a firm can have comes from what it collectively knows, how efficiently it uses what it knows, and how readily it acquires and uses new knowledge (Davenport and Prusak, 1998). Traditional organisations are beginning to comprehend that knowledge and its inter-organisational management, as well as individual and organisational capability building, are becoming crucial factors for gaining and sustaining competitive advantages (Preiss et al., 1996). The gaining popularity of Knowledge Management (KM) has been reinforced by the quest for innovation and value creation. The positive relationship between KM and value creation has been discussed extensively in the literature (Chase, 1997; Despres and Chauvel, 1999; Gebert et al., 2003; Liebowitz and Suen, 2000). Davenport et al. (1998) argue that value creation takes place and

is facilitated by (a) creating knowledge repositories, (b) improving knowledge access, (c) enhancing cultural support for knowledge use, and (d) managing knowledge as an asset (Davenport et al., 1998). In this context, KM is perceived as a framework for designing an organisation's goals, structures, and processes so that the organisation can use what it knows to learn and create value for its customers and community (Choo, 1999).

The scope and definition of KM has evolved over the years. At present, it is perceived that there are three generations of KM (Vorakulpipat and Rezgui, 2006a). The first generation takes into account knowledge sharing or "supply-side KM" focusing on IT-driven KM (Koenig, 2002; McElroy, 1999). The second generation emphasises knowledge creation or "demand-side KM" (McElroy, 1999). The third generation tends to focus on the study of the impact on people in terms of value or knowledge value creation (Vorakulpipat and Rezgui, 2006a). Value creation is grounded in the appropriate combination of *human networks* (Wenger et al., 2002), *social capital* (Huysman and Wulf, 2006), *intellectual capital* (Liebowitz and Suen, 2000), and *technology assets* (Alavi and Leidner, 2001), facilitated by a culture of change (McAdam and Galloway, 2005).

It is widely acknowledged that KM has been a centre of economic change and present a high and promising potential for developed economies (Davenport et al., 1998). This is in line with several case studies demonstrating success in developed countries particularly western countries and Japan (Table 1.1).

Table 1.1: Summary of field studies in knowledge management in developed economies

Field study	Summary
KM in Seven-Eleven Japan Corporation (Nonaka et al., 1998)	The results present outstanding success of the company based on the capitalisation of market knowledge, striking a balance between supportive IT and human insight, and achievement of a multi-dynamic approach to knowledge management. The company integrates several interlinked 'ba' and ART systems.
KM practices in four American companies (Davenport, 1997)	The article proposed ten principles of KM, followed by case studied in four American companies. The results shows KM awareness emphasised within the organisations whilst some (though only few) problems are found.
Knowledge sharing in an international organisation, Buckman Laboratories (Pan and Scarbrough, 1999)	The case study shows that management and leadership play a critical role in establishing the multi-level context for the effective assimilation of knowledge management practice in the organisation. A socio-technical perspective is proposed for the implementation process of knowledge sharing.
Cultural barriers to sharing knowledge in five American companies (McDermott and O'Dell, 2001)	Five summary factors to align knowledge sharing with the organisations are derived from the field data: visible connection between sharing knowledge and practical business aspects, style of the organisation, link with core values, human network, and support of people who already share ideas and insights.
Studies of KM in Australia (Zyngier et al., 2004)	The studies exhibit three most important barriers that inhibit KM: lack of time allocated to share knowledge, lack of skills in KM and a lack of understanding of the philosophy and the benefits of KM
KM survey in Europe (Murray, 1998)	The majority of organisations believed that identifying that knowledge existed within the organisation, finding it, and leveraging it was problematic. Personal inertia, lack of self- discipline, motivation and staff turnover were indicated as barriers that inhibit KM.
KM in Software Engineering in Western companies (Rus et al., 2002)	In terms of knowledge sharing and reward systems, the results show that Xerox recommended creating a "Hall of Fame" for people who contribute to solving real business problems and regularly share useful information. At Hewlett Packard, contributors, including readers and anyone who posted a submission, were rewarded with free airline miles. ExpertExchange.com used a point system to reward employees.
Research on KM and value networks (Allen, 2003)	The article demonstrates a case of KM in Xerox. The company has established the Eureka database for storing best practice knowledge. This is facilitated through human networks and communities.
Case study of knowledge sharing in multi-cultural setting in Japan and Western countries (Ford and Chan, 2003)	The results indicate that language differences can create knowledge blocks, and cross-cultural differences can explain the direction of knowledge flows.
Knowledge sharing network in Toyota (Dyer and Nobeoka, 2000)	The case study presents a strong knowledge sharing network in Toyota. Toyota can successfully solve three fundamental dilemmas related to knowledge sharing. Most importantly, production knowledge is viewed as the property of the network.

Nevertheless, it is argued that KM has also become an important ingredient to sustain competitiveness in developing countries (Wagner et al., 2003). Very few articles, unfortunately, have reported KM implementations and strategies in developing countries (Table 1.2).

Table 1.2: Summary of field studies in knowledge management in developing economies

Field study	Summary
KM in China (Burrows et al., 2005)	KM in China is distinctive, constrained somewhat by technological limitations, but influenced more significantly by psychological factors (such as cultural values) among groups and social levels. The Chinese integrated the technological, market-oriented processes used to manage knowledge in the U.S. with the social elaboration of knowledge common in Japan, and tend to manage knowledge more informally and personally than their American and Japanese counterparts, potentially limiting technological innovation and business performance. Internal opportunities for capturing and enriching organisational learning are overlooked by most Chinese firms, especially state-owned ones.
Knowledge sharing in Hong Kong's public sector (Yao et al., 2007)	Knowledge management and knowledge sharing were welcome ideas in the Hong Kong government department. Informal and tacit knowledge sharing took place but the Chinese culture remained as a barrier to knowledge sharing. As this is a study of one department in one particular country, the findings may not be sufficiently generalisable.
KM initiative in Wipro, an Indian software service company (Chatzkel, 2004)	A collaborative environment for continuous learning and performance improvement within the organisation is perceived as an important factor to initiate KM. Wipro focused on four business drivers: collaborative work culture, competitive responsiveness, shorter time to market, and capturing tacit knowledge.
KM in Taiwan pharmaceutical manufacturers (Wang, 2006)	The information cultures of Taiwan pharmaceutical manufacturers are hostile toward KM. In addition, manufacturers are daunted by concerns about the financial investment required, and the compatibility and interoperability of such systems. The findings could be explored in wider organisational contexts and in different information cultures.
KM implementation in the Malaysian telecommunication industry (Wei et al., 2006)	The organisations are aware of the importance of all the KM factors but fall short of implementation. The implemented factors consist of business strategy, organisational structure, and knowledge team. Knowledge audit and knowledge map are perceived as important but are the least implemented factors. Future research can be conducted on other important factors influencing KM implementation such as leadership, organisational culture, measurement, and technology in other industries.
KM practices in Turkish SMEs (Bozbura, 2007)	Turkish SMEs do not like to share knowledge even within the company. The managers are afraid of losing the control of knowledge. However, since they close the information channels, they also prevent the incoming knowledge. Future studies make a comparison in several developing countries.
KM in sub-Saharan Africa (Okunoye, 2002)	The research organisations generally perform well in their efforts in creating, finding and collecting internal knowledge and best practices. However they are weak in adapting and applying the practices to new situations. Moreover, a lot of problems are found such as preference of manual ways of managing documents, lack of trust among teams, lack of KM initiative, low funding, etc. The limitation is that the findings will vary from one organisation to another and their subjective interpretations.

These studies in developing economies have identified several distinctive features, including varying levels of expertise to adapt and adopt technologies, distinctive socio-cultural features, and lack of availability of human and financial resources to nurture KM practices (Okunoye, 2002). A call has been made for further research to explore KM in different organisational and cultural (regional, national, and international) contexts in developing economies. In defining a KM solution, as with any new organisational form, success relies not merely on the introduction and adoption of Information and Communication Technology

(ICT), but also on critically analysing the underlying social and organisational aspects. It is widely accepted that while technology plays an important role in the successful implementation of KM initiatives (Koenig, 2002), a number of socio-cultural and organisational factors have equally an important role and influence (Chaidaroon, 2004), in particular in the cultural context of developing countries.

Thailand is an example of a developing country where a number of distinctive socio-cultural features have been identified (Chaidaroon, 2004). It therefore represents an interesting case to conduct a study on the influence of these cultural features on KM practices within an organisational context. While KM practices in Thailand have only been recently reported in the business and academic press, several private and public organisations have already initiated ambitious KM programmes and initiatives (Vorakulpipat and Rezgui, 2006b). There is an interesting trend in the region to promote a competitive economy through technology and knowledge infused practices at a societal level. For example, the Ninth Malaysian Plan (2006-2010) has as one of its objectives to raise the capacity for knowledge and innovation, whereas the Ministry of Research and Technology (MRT) of Indonesia has identified ICT as a priority field to add value to its industries.

1.2 Objectives

The overall aim of this study is to undertake a critical investigation of the influence of distinctive socio-cultural features on knowledge value creation in a selected Thai organisation. More specifically, the objective is to conduct a theoretical and empirical study that intends to accomplish the following research objectives:

- To contribute to the body of knowledge in knowledge value creation by providing insights into KM adoption practices in a Thai organisation.
- To provide critical analysis of the KM and related literature and understand barriers to KM adoption and the factors that influence their use.
- To generate a theory of KM influence and a list of KM influence variables for validation.
- To investigate the usefulness of grounded theory adoption to develop a theory of KM influence emerged from the empirical data.

1.3 Terms Definition

The following is a definition of terms adapted in this research:

- **Knowledge management:** Any process of sharing, creating, acquiring, capturing, adapting, using, and re-using knowledge.
- **Knowledge sharing:** Any process of sharing knowledge in a physical or virtual context, within or across an organisation.
- **Knowledge creation:** Any process of creating or adapting knowledge in a physical or virtual context, within or across an organisation.
- **Value creation:** Any process of creating value, as subjectively perceived by users, out of existing knowledge practices across an organisation.

1.4 Research Questions

This research was undertaken to explore the influence of distinctive socio-cultural features on knowledge value creation in Thailand. Therefore, the exploration of the KM practices is based on people's perception of value created in an organisation. As such, the following main research questions which form the focus of this study are:

RQ1: Have employees from a selected Thai organisation adopted a culture of knowledge sharing and creation across their organisation?

RQ2: What kind of perceived value is created out of existing knowledge practices across the organisation?

RQ3: How perceived distinctive socio-cultural features influence, and are influenced by, knowledge value creation practices in an organisational context?

Value here is not understood in monetary terms, but rather as subjectively perceived desirable outcomes (such as willingness to share knowledge, social cohesion, motivation, collaboration, etc.). To answer these questions, the research describes the empirical findings derived from the grounded theory study of one specific organisation that implemented KM supported by the use of IT, and then a theoretical framework is developed, conceptualising

the findings. The grounded theory is useful here as it allows a focus on contextual and processual elements that are often omitted in Information Systems (IS) studies that rely on variance models and cross-sectional data (Orlikowski, 1993). The believed outcome is a general conceptualisation of the organisational knowledge value creation covering technical, cultural, and organisational aspects in a Thai organisation that contributes to research knowledge and informs IS practices.

1.5 Contributions to the Body of Knowledge

The study makes two main contributions. First, drawing on the rich data of a Thai organisation, it generates a grounded understanding of the influence of socio-cultural features on KM. The grounded theory allows the identification of patterns in data; by analysing these patterns researchers can derive theory that is empirically valid (Glaser and Strauss, 1967; Martin and Turner, 1986). This is because "the theory-building process is so intimately tied with evidence that it is very likely that the resultant theory will be consistent with empirical observation" (Eisenhardt, 1989). While it is likely believed that building theory from a limited number of cases is susceptible to researchers' preconceptions (Orlikowski, 1993), Glaser and Strauss (1967) argue that the number of cases is not so crucial and a single case can indicate a general conceptual category or property. The iterative comparison within the site, methods, evidence, and literature leads to unfreeze thinking and the potential to generate theory with less researcher bias than theory built from incremental studies (Eisenhardt, 1989). Second, the thesis proposes a model developed from the grounded analysis of gathered primary data evidence from the case study, using social capital and related literature.

The key audience for the study is the KM and interpretive IS research communities, with a particular focus on IS adoption in developing countries. This thesis wishes to contribute to the interpretive case study literature and that dealing with KM/IS adoption. Practitioners may find it useful to take into account the findings reported in the study to implement and adopt KM in their organisation, while researchers may want to further research across different industries or international settings.

1.6 Scope and Limitation

The study is limited to a Thai organisation, but can be generalised to other organisations that exhibit similar characteristics. Therefore, to identify the scope of generalisation of this study, future research is suggested, and may use the same method across different industries or different international settings.

1.7 Conceptual Framework

Figure 1.1 outlines the three main domains: knowledge domain (consisting of KM and IS), research method domain (an interpretive case study), and research contribution domain.

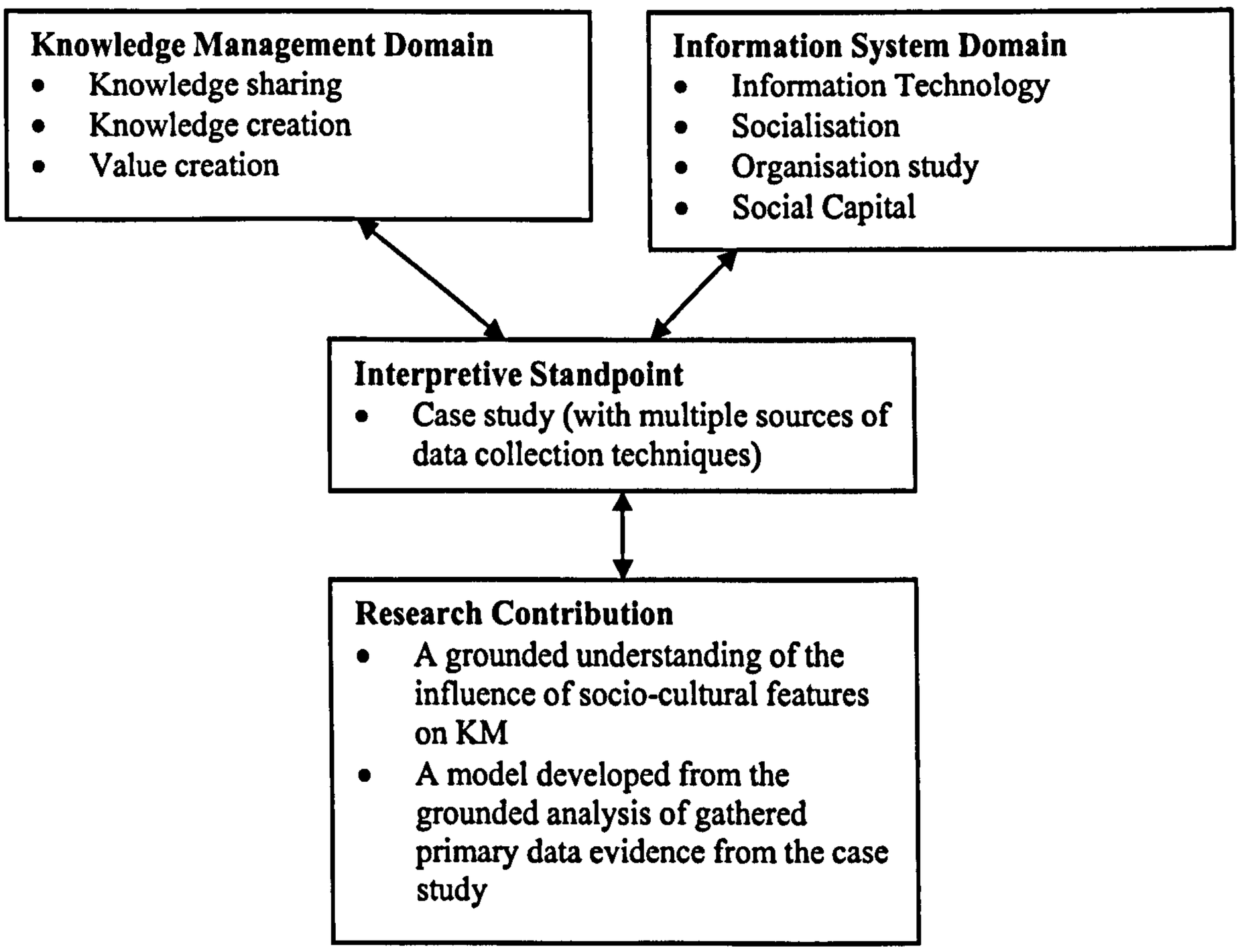

Figure 1.1: Conceptual framework

1.8 Organisation of the Thesis

This research is designed and structured to comprise eight discrete but consecutive chapters. A brief summary of the content of these chapters is described as follows:

Chapter 1 introduces an overview of the study including objectives, terms definition, research questions, contributions, scope and limitations, and conceptual framework.

Chapter 2 reviews previous research related to KM with a focus on recent value creation trends of the KM discipline. The chapter spans a large spectrum of KM research ranging from the "soft" (socio-organisational) to technical dimensions of KM, published in the academic and trade literature.

Chapter 3 reviews previous research on other issues related to the research, including technology and KM adoption in developing countries, distinctive features of Thai culture, technology adoption and diffusion concept, and social capital theory.

Chapter 4 discusses the research methodology of the study. It begins by examining the IS research approach adopted in the study: interpretive case study, followed by the techniques for grounded theory, site selection, data collection, and data analysis. The approach towards the evaluation of the research is also outlined.

Chapter 5 presents the results of the first empirical study by reviewing the KM practices in Thailand. The survey technique used in this stage aims to explore the knowledge sharing maturity and capability of Thai organisations and their readiness to embrace a knowledge creation culture. The survey focuses on a number of organisations drawn from an established taxonomy of organisations in Thailand using the stratified random sampling technique. The outcomes of this stage are to help select case and data collection instruments at the second stage.

Chapter 6 presents the results of the second empirical study and the empirical data from the case study at a Thai organisation, BETA are highlighted to provide the perception about the role and influence of a number of factors in addressing knowledge value creation in the organisation. The site and context upon which the data gathering was based are also described.

Chapter 7 discusses and examines the findings of the research. The social capital and related theory is used to analyse the findings before generating a theory of KM influence and a number of variables for validation.

Chapter 8 summarises the overall research, provides answers for the identified research questions, justifies the contributions, evaluates the research using the criteria outlined in Chapter 4, and offers recommendations for further research in the area.

Appendix A, B, and C are the questionnaires and interview guide used in the research.

1.9 Summary

This chapter presented an overview of the research, including objectives, terms definition, research questions, contributions, scope and limitations, conceptual framework, and organisations of the thesis. The chapter aims at giving the reader a holistic picture before elaborating on the research theme in the subsequent chapters. The literature review on KM will be presented in the next chapter.

CHAPTER 2

Literature Review on Knowledge Management

2.1 Introduction

This chapter provides a review of knowledge management (KM) literature with a focus on recent value creation trends of the KM discipline. The review spans a large spectrum of KM research ranging from the "soft" (socio-organisational) to technical dimensions of KM, published in the academic and trade literature. The chapter begins by introducing KM categories and perspectives and then presenting a taxonomy of KM drawn from an Information Systems (IS) research perspective. This is followed by a review of knowledge management systems (KMS). The chapter then provides a summary of the three main generations of KM (Koenig, 2002; McElroy, 1999; Snowden, 2002). A gap is then identified in current KM evolution theories. This chapter adopts and extends McElroy's (1999) generations of KM by identifying a third generation: Value Creation. Therefore, the following sections adopt McElroy's (1999) KM generations model and present a review of knowledge sharing and knowledge creation with a focus on IT and socialisation. A review of the proposed "third generation KM" (value creation) is then presented. The final section concludes the chapter and presents a summary of key findings from the review.

2.2 Knowledge Management Categories and Perspectives

In recent years, knowledge management (KM) has attracted considerable interest from the academic community. A growing number of organisations have included KM into their strategies and have as a result reported (a) business process efficiency improvements, (b) better-organised communities, and (c) higher staff motivation (Nonaka and Takeuchi, 1995). Knowledge, including knowing and reasons for knowing, has attracted considerable interest from Western and Eastern philosophers (Wiig, 2000). However, knowledge related research has suffered from a lack of integration with other theories. This was a determinant factor in the gradual emergence of a KM perspective as an established discipline (Wiig, 2000).

KM is a broad and expanding topic (Scarbrough et al., 1999). In reviewing the theory and literature of this field (Venters, 2001), it is necessary to commit to an identifiable epistemic flavour of approach. Many such approaches to knowledge management are identified, and have been categorized in various ways (Alavi and Leidner, 2001; Earl, 2001; McAdam and McCreedy, 1999; Schultze, 1998). Schultze (1998) engages Burrell and Morgan's (1979) framework in order to identify a two-fold typology of knowledge within the debate about KM: objectivist and subjectivist. An objectivist approach views knowledge as objects to be discovered (Hedlund, 1994). In identifying the existence of knowledge in various forms and locations, technology is employed in the codification of such knowledge objects (Hansen et al., 1999). In contrast, a subjectivist approach suggests knowledge is inherently identified and linked to human experience and the social practice of knowing, as seen for example in the work of Tenkasi and Boland (1996) and Brown and Duguid (1998). In adopting such a stance, it is contended that knowledge is continuously shaped by the social practice of communities and institutions.

Alavi and Leidner (2001) note that knowledge may be viewed from five different perspectives: (a) state of mind perspective emphasising knowing and understanding through experience and study (Schubert et al., 1998); (b) object perspective defining knowledge as a thing to be stored and manipulated and a process of simultaneously knowing and action (Carlsson et al., 1996; McQueen, 1998; Zack, 1998); (c) process perspective focusing on the application of exercise (Zack, 1998); (d) condition perspective emphasising a condition of information access (McQueen, 1998); and (e) capability perspective viewing knowledge as a capability with the potential for influencing future action (Carlsson et al., 1996). Similarly,

these different views of knowledge lead to different perspectives of KM: (a) information technology (IT) perspective focusing on the use of various technologies to acquire or store knowledge resources (Borghoff and Pareschi, 1998); (b) socialisation perspective focusing on understanding organisational nature (Becerra-Fernandez and Sabherwal, 2001; Gold et al., 2001); and (c) information system (IS) perspective focusing on both IT and organisational capability perspectives and emphasising the use of knowledge management systems (KMS) (Schultze and Leidner, 2002; Tiwana, 2000). This latter perspective forms the focus of this research.

2.3 Taxonomy of KM in Information Systems Research

Schultze and Leidner (2002) provide a taxonomy of published KM research based on a theoretical framework developed by Deetz (1996). This framework is an adaptation of Burrell and Morgan's (1979) paradigms of social and organisational inquiry. Deetz's framework relates to the notions of subjectivity and objectivity in organisational science discourses (Figure 2.1).

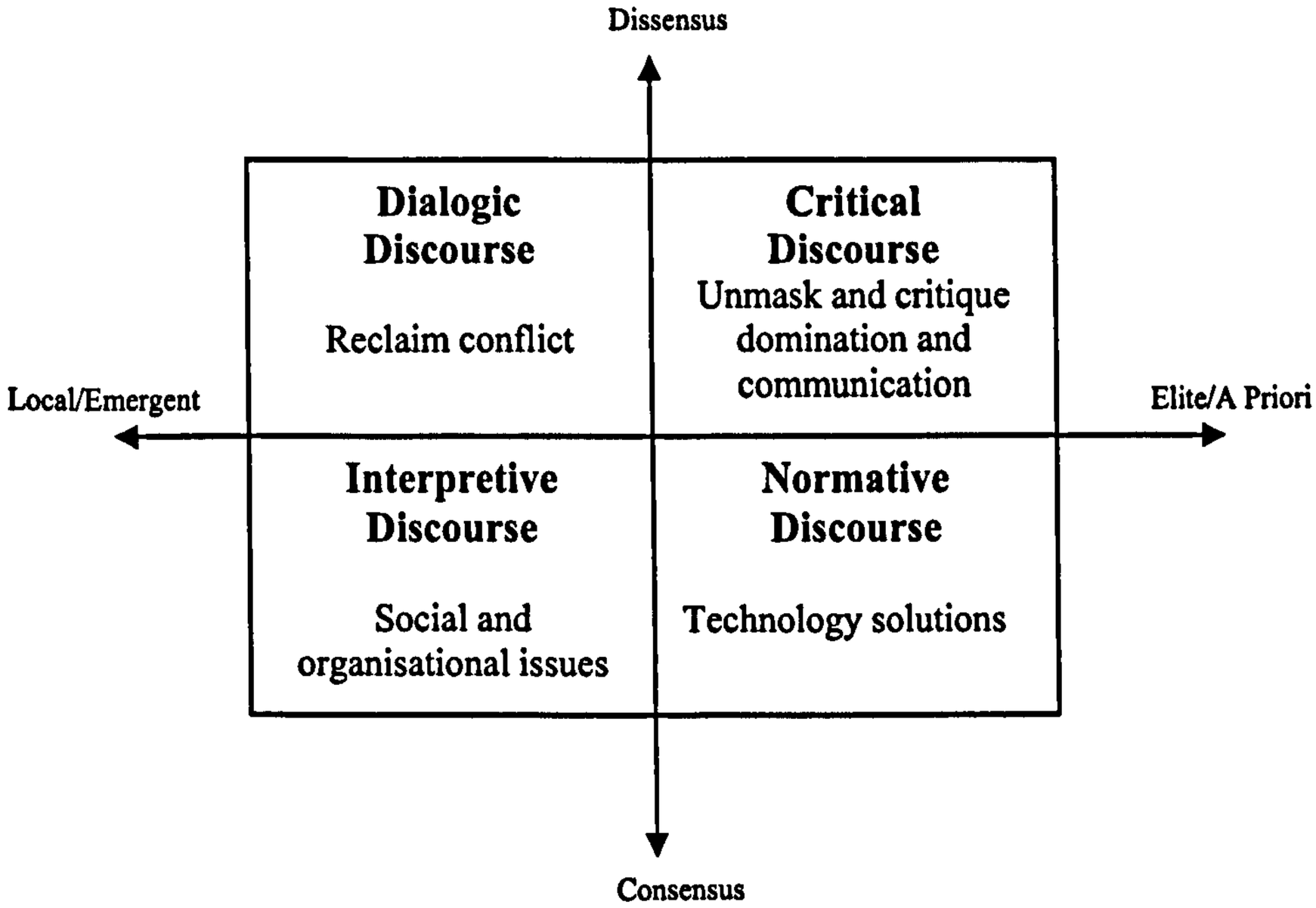

Figure 2.1: Deetz's framework of discourses in organisational science

The framework is structured into four discourses: the normative, the interpretive, the critical and the dialogic. The normative discourse is concerned with codification, normalisation and the search for law-like relationships. As a result, the research findings could be both generalisable and cumulative. The interpretive discourse emphasises the social and

organisational issues. Researchers are assumed to create a coherent, consensual, and unified representation of the organisational reality. The critical discourse aims to expose and challenge the theories. The dialogic discourse bears a number of similarities with the critical discourse, but considers power and domination as situational factors, not owned by individuals.

Most KM articles are classified in the normative discourse. These provide systems to facilitate the storing and transferring of knowledge. Some articles are classified in the interpretive discourse and aim at coordinating collective action in systems of distributed knowledge. Very few articles fall within the critical and dialogic discourses, as it is difficult to identify related themes in Deetz's dissensus discourse (Figure 2.1). As suggested by Schultze and Leidner (2002): (a) the normative discourse is suitable for studying technology solutions for KM, (b) the interpretive discourse is more adept at understanding the implementation and organisational implication of KM initiatives and technology, (c) the critical discourse is well suited to highlighting the social inequities underlying organisational distinction, and (d) the dialogic discourse is best suited for the examination of contradictions in KM.

The chapter adopts an interpretive stance as it aims to provide a holistic understanding and interpretation of organisational KM underpinned by the use of technology.

2.4 Knowledge Management Systems

Knowledge management systems (KMS) refer to a class of information systems applied to managing organisational knowledge (Alavi and Leidner, 2001). That is, they are IT-based systems developed to support and enhance the organisational processes of knowledge sharing, transfer, retrieval, and creation. Many KM initiatives rely on IT as an important enabler, and tend for some of them to overlook the socio-cultural aspects that underpin knowledge management (Davenport and Prusak, 1998; Malhotra, 1999; O'Dell and Grayson, 1998).

The literature discussing applications of IT to organisational knowledge management initiatives reveals three common applications (Alavi and Leidner, 2001): (a) the coding and sharing of best practices, (b) the creation of corporate knowledge directories, and (c) the

creation of knowledge networks. One of the most common applications that falls under category (a) is internal benchmarking with the aim of transferring and sharing internal best practices (KPMG, 1998; O'Dell and Grayson, 1998).

While KMS tend to follow the normative trend, the interpretive approach is best reflected in environments supporting the development of communities of practice (CoP) (Saint-Onge and Wallace, 2002; Wenger et al., 2002). The success of these individually led initiatives has gradually attracted interest from both the research community and corporate senior management staff within and outside these organisations. They relate more generally to groups of individuals within or across organisational boundaries that share a common concern, a set of problems, or a passion about a topic, and who deepen their understanding and knowledge of this area by interacting using face-to-face or virtual means (synchronous and asynchronous) on a continuous basis (Wenger et al., 2002). The gaining popularity of Communities of Practice has been reinforced by the quest for innovation and value creation as it is widely recognised that these only happen when empowered individuals are well connected using a variety of means and communication mediums both inside and outside the organisation.

2.5 Generations of Knowledge Management

The scope and definition of KM has evolved over the years. At present, there are at least three accounts of generations of KM (Firestone and McElroy, 2003):

- The first account is proposed by Koenig (2002). He argues that the first stage of KM evolution focuses on IT-driven KM or knowledge sharing. The use of IT, in particular Internet / Intranet, and tools for knowledge sharing and transfer can create value-added to the enterprise. Moreover, this stage emphasises "best practices" and "lessons learned". On the other hand, the second stage focuses on socialisation issues, including human and cultural factors. This stage stresses the importance of organisation learning applied from the work of Senge (1990), knowledge creation adapted from the SECI model (Nonaka and Takeuchi, 1995), and Communities of Practice (Wenger et al., 2002). This first account suggests that the next generation of KM will focus on taxonomy development and content management.

- The second account is proposed by Snowden (2002). The first stage of his theory emphasises the sharing and transfer of information for decision support. The second stage focuses on processes facilitating tacit/explicit knowledge conversion inspired by the SECI model (Nonaka and Takeuchi, 1995). Snowden (2002) envisions the next age of KM as: (a) knowledge viewed as a thing and a view; (b) centralisation of context, narrative and content management; (c) an understanding of organisations as engaged in sense-making; (d) and scientific management and mechanistic models.

- The third account is proposed by McElroy (1999). He identifies two generations of KM. The first generation focuses on "supply-side KM" or knowledge sharing – It's all about capturing, codifying, and sharing valuable knowledge, and getting the right information to the right people at the right time (McElroy, 1999); while his second generation emphasises "demand-side KM" or knowledge creation. While this definition of the evolution of KM has received a wider acceptance, Firestone and McElroy (2003) argue that this perception of change relates more to the evolution of knowledge processing than to knowledge management.

Firestone and McElroy (2003) argue that the first and second accounts have many weaknesses and are not clear enough to theorize the proposed generations of KM. The difficulties in Koenig's account begin in that the first stage makes no reference to IT support to develop "best practices" and "lessons learned". Furthermore, in stage two, the theory does not provide the connection between (a) CoP and the work of Senge, Nonaka / Takeuchi, and (b) the connection between CoP and knowledge creation and innovation. Lastly, Firestone and McElroy (2003) argue that taxonomy development and content management already exist. Moreover, this is part of coordinating and sharing already existing knowledge. This therefore represents an extension of the first stage, and should not form the basis of the envisioned future stage. The difficulties of the second account (Snowden, 2002) are contended by Firestone and McElroy (2003). The first stage, emphasising information distribution to decision makers, is too narrow. It is similar to Business Process Re-engineering (BPR), and ignores human factors facilitating knowledge sharing. The second stage reveals the misunderstanding of knowledge conversion and knowledge creation. Knowledge conversion in the SECI model is not defined as the whole knowledge creation. In addition, this stage does not provide an impact on KM caused by knowledge conversion. The

provided argumentation (Firestone and McElroy, 2003) raises some serious concerns about Snowden's second account of KM.

These three generations of KM are summarized in Table 2.1. Despite the difficulties in the first and second accounts, all three accounts provide a level of similarity: the first generation tends to focus on knowledge sharing, the second generation on knowledge creation. However, the third generation remains unclear (Firestone and McElroy, 2003). This is a gap that this chapter addresses and discusses in the following sections. The chapter adopts and extends McElroy's (1999) generations of KM by identifying a third generation: Value Creation. The following sections provide a review of each of the three generations of KM.

Table 2.1: Generations of knowledge management

	Koenig's Account	**Snowden's Account**	**McElroy's Account**
1st generation	• Appling IT to knowledge sharing • Best practices and lesson learned	• Distributing information to decision support	• "Supply-side KM" – knowledge sharing
2nd generation	• Human and cultural factors • Organisational learning and knowledge creation	• Tacit/explicit knowledge conversion	• "Demand -side KM" – knowledge creation
3rd generation (future generation)	• Taxonomy development and content management	• Knowledge viewed as a thing and a view • Centralisation of context, narrative and content management • An understanding of organisations as engaged in sense-making • Scientific management and mechanistic models	N/A

2.6 Knowledge Sharing

Knowledge sharing can be considered as the first generation knowledge management and is described as "supply-side KM" as people can acquire supplied knowledge through knowledge sharing systems (Firestone and McElroy, 2003). Moreover, knowledge sharing is not only defined as transmitting knowledge to target receivers, but also absorbing and being used by people. It can be represented as an equation proposed by Davenport and Prusak (1998):

Knowledge sharing (transfer) = Transmission + Absorption (in use)

In terms of IT, knowledge sharing is defined as "IT-based KM" through the use of a number of tools and technologies, including those described in section 3, which enhance productivity and effectiveness (Koenig, 2002).

A shared knowledge space should be provided to exchange explicit knowledge in an organisation (Alavi and Leidner, 2001). The space provided can be considered as either "physical" or "virtual". Although IT is supposed to enable sharing of only explicit knowledge (Roberts, 2000), Bolisani and Scarso (1999) suggest that IT can also enable sharing of tacit knowledge in the form of pictures, drafts, and other means by using adapted computer applications. However, when the tacit knowledge shared is delivered, it still needs to be decoded by the human operators (Bolisani and Scarso, 1999).

In terms of business competition, trading and sharing of knowledge have become increasingly important and have forced organisations to create market spaces and places to promote knowledge sharing related activities (Choo, 2003). Interaction or conversation between people, for example, is often perceived as the simplest approach to transferring knowledge within an organisation. Nevertheless, it may be inconvenient where cultural barriers exist (Davenport and Prusak, 1998). It is argued that to align knowledge sharing with organisation culture, designing and implementing KM to fit the culture can be more effective than altering and changing the culture itself (McDermott and O'Dell, 2001). Moreover, organisational culture is divided into two dimensions: the visible dimension – "thing", and the invisible dimension – "seen but unspoken" (McDermott and O'Dell, 2001). Organisations should make sharing knowledge visibly important by, for example, making it directly part of the business strategy, initiating it obliquely on to another key business, routinizing, matching the organisation's style and aligning reward (McDermott and O'Dell, 2001).

Tacit knowledge is defined as implicit and non-codifiable knowledge that is difficult to share or that is learnt by experience, "learning by doing", and apprenticeship. To succeed in sharing tacit knowledge, it is necessary to share through know-how, the process of demonstration, and through show-how, face-to-face contact between transmitter and receiver. In other words, the transfer of know-how requires a process of show-how (Roberts, 2000).

Despite the tendency to emphasise the role of IT in KM, there is an increase of powerful arguments for a more holistic view which recognises the interplay between social and technical factors (Pan and Scarbrough, 1998). Therefore, a socio-technical approach to knowledge sharing is applied in many organisations. There is an example of a case study of success in knowledge sharing using this approach at Buckman Laboratories (Pan and Scarbrough, 1998). The knowledge architecture was first designed, and then a department was set up with the major responsibility of knowledge transfer. Rules have then been created for the information search system to reduce response time to customers, for example by capturing knowledge into a re-usable form. This approach emphasises the interplay between KMS and the organisational context. It is suggested that management and leadership play a critical role in establishing the multi-level context for the effective assimilation of KM practice (Pan and Scarbrough, 1998).

In human terms, motivation can encourage people to share knowledge. In this case, Osterloh and Frey (2000) define two types of motivation in the firm: extrinsic and intrinsic motivation. First, employees are extrinsically motivated if they satisfy their needs indirectly, especially monetarily. For example, employees who mostly share knowledge win rewards. Second, motivation is intrinsic if an activity is undertaken for one's immediate need satisfaction. In other words, employees have a self defined goal. Employees, for instance, share knowledge in order to practice themselves or to satisfy the need for recognition in the firm. This is in line with a case study of Lotus Development Corporation showing that people who ask previously answered questions are likely to be told where the answer can be found and advised in the future to check the database before asking such questions (McDermott and O'Dell, 2001).

Trust among people can promote knowledge sharing and is important to the exchange of knowledge, "without trust there is no knowledge sharing" (Lee, 2001; Roberts, 2000; Sveiby, 1999). Davenport and Prusak (1998) also highlight trust in knowledge sharing, noting that the transfer of informal knowledge is endangered by a particular American sense of what is and is not "real" work.

Knowledge sharing is a dynamic process or continuous learning, not a static process (Gilbert and Cordey-Hayes, 1996). Therefore, Gilbert and Cordey-Hayes provide a process framework of knowledge sharing. The aim of this conceptual framework is to track the

ability of the organisation to achieve knowledge transfer by investigating the organisational processes that might encourage or prohibit learning. The model leads to the development of a set of routines of knowledge sharing that are reflected in the behaviour of members in organisations. Further research on knowledge transfer in strategic alliances reveals that knowledge variables such as tacitness, asset specificity, prior experience, complexity, partner protectiveness, cultural distance, and organisational distance impact the process of knowledge sharing, but establishing knowledge ambiguity can fully mediate the effects of these variables (Simonin, 1999).

The term "ontology" is now used in the context of knowledge sharing. Gruber (1995) defines ontology as "a formal, explicit specification of a shared conceptualisation," and states the use of formal ontology for specifying content-specific agreements for a variety of knowledge-sharing activities.

An understanding of the concept of knowledge sharing is important because an organisation's achievement depends on its knowledge sharing strategy. Five major points emerging from the review of knowledge sharing can be summarized as follows: (a) IT can enable both explicit knowledge and, to a lesser extent, tacit knowledge sharing, (b) human interaction is the simplest approach to sharing knowledge within an organisation, (c) KM strategies may be adapted to fit with organisational culture, (d) motivation – e.g. monetary rewards, recognition, and praise – can persuade people to share knowledge, (e) trust is an important factor in enabling knowledge sharing.

2.7 Knowledge Creation

Knowledge creation is an organisational, social, and collaborative dynamic process through interaction between tacit and explicit knowledge (Nonaka et al., 2000; Pentland, 1995). Four modes of knowledge creation through the SECI model are proposed (Nonaka et al., 2000). This contrasts with the traditional Western epistemology emphasising the static and non-human nature of knowledge processes. This section presents different knowledge creation models. The SECI model is first presented, and followed by four models adapted from or related to the SECI model. A comparative analysis of these models is provided at the end of this section.

2.7.1 SECI Model

The SECI model (Nonaka et al., 2000) is the spiral, interaction process of knowledge conversion between tacit and explicit knowledge. The knowledge conversion includes four modes: socialisation, externalisation, combination, and internalisation. The socialisation highlights the conversion of tacit to new tacit knowledge through shared experience (e.g. apprenticeship). The externalisation mode focuses on the conversion of tacit knowledge to explicit knowledge by creating concepts articulating tacit knowledge (e.g. metaphor, analogy and model). The combination mode refers to the conversion of explicit knowledge to new explicit knowledge that is more systematic. The internalisation mode refers to embodying explicit knowledge into tacit knowledge through learning by doing.

It is required for organisations to establish place or space, "*ba*", to create knowledge (Nonaka and Konno, 1998). This is a requisite as knowledge cannot be created without context. "*ba*" is a shared place, including physical or virtual, for creating knowledge through human interaction. Four types of *ba* within the SECI process are identified: originating *ba*, dialoguing *ba*, systemizing *ba*, and exercising *ba*. Originating *ba* is a common place for sharing experience through face-to-face interactions. Dialoguing *ba* is a place where mental models and skills are articulated by common terms or concepts. Systemizing *ba* is a place of collective and virtual interaction, where people can have activities through on-line networks or any computer technologies. Exercising *ba* is the place for embodying explicit knowledge through virtual interaction.

Knowledge assets are the inputs, outputs and moderating factors of the knowledge creating process. They are divided into four types: (a) experiential knowledge assets, consisting of the shared tacit knowledge built through organisational experiences; (b) conceptual knowledge assets, consisting of explicit knowledge articulated through images, symbols and language; (c) systemic knowledge assets, consisting of systemized and packaged; and (d) routine knowledge assets, consisting of the tacit knowledge that is routinised and embedded in the actions and practices.

To lead the knowledge creating process, top and middle managers are identified as the key persons to work on the four elements of the process (Figure 2.2). They have to provide the

knowledge vision, develop and promote sharing of knowledge assets, create and energize *ba*, and continue the spiral of knowledge creation.

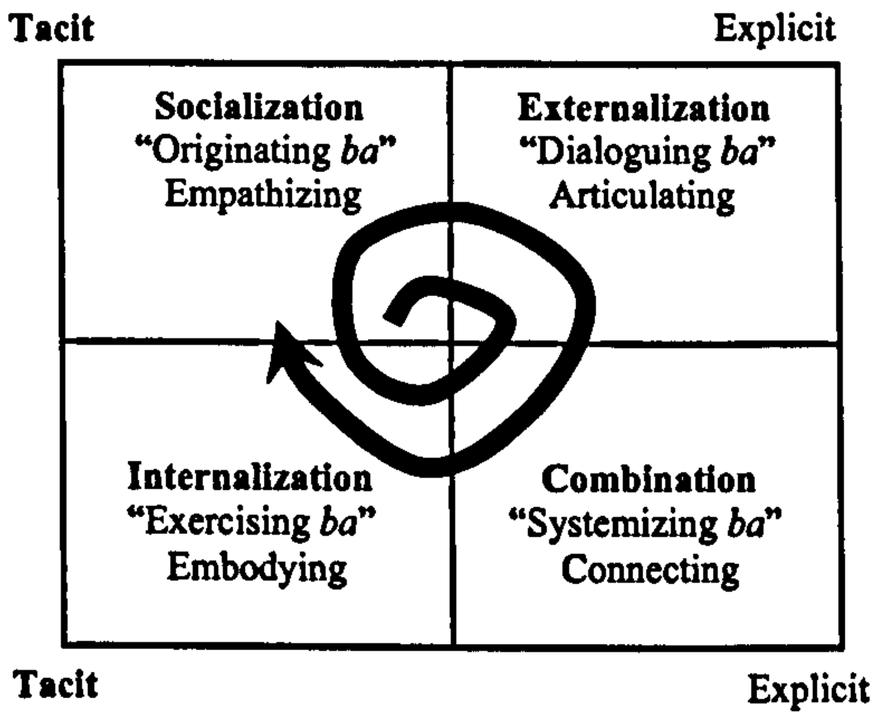

Figure 2.2: SECI process and *ba*

2.7.2 Extended SECI Model

Uotila et al. (2005) designed an extended version of the SECI model to avoid the problem of "the black hole of regional strategy making" that can occur due to the foresight process not rooted deeply enough into already existing structures and competences of a region. Two new knowledge conversion modes focusing on self-transcending knowledge (not yet embodied tacit knowledge) and two new "*ba*s" are added to the extension model, as shown in Figure 2.3. Two additional modes are identified: visualisation and potentialisation. The visualisation mode is the conversion from self-transcending to tacit knowledge through visions, feelings, mental model, etc. This mode takes place in "imagination *ba*". Forecasts, scenarios and expert-based statements can be made. However, in highly complex systems, forecasts are difficult to handle in the long term. A combination of scenarios and expert-based statements may be suitable. The potentialisation mode is the conversion from tacit to self-transcending knowledge by sensing the future potentials and seeing what does not yet exist. The potentialisation process takes place in "futurizing *ba*". Scenarios and expert-based statements may be used in futurizing *ba*.

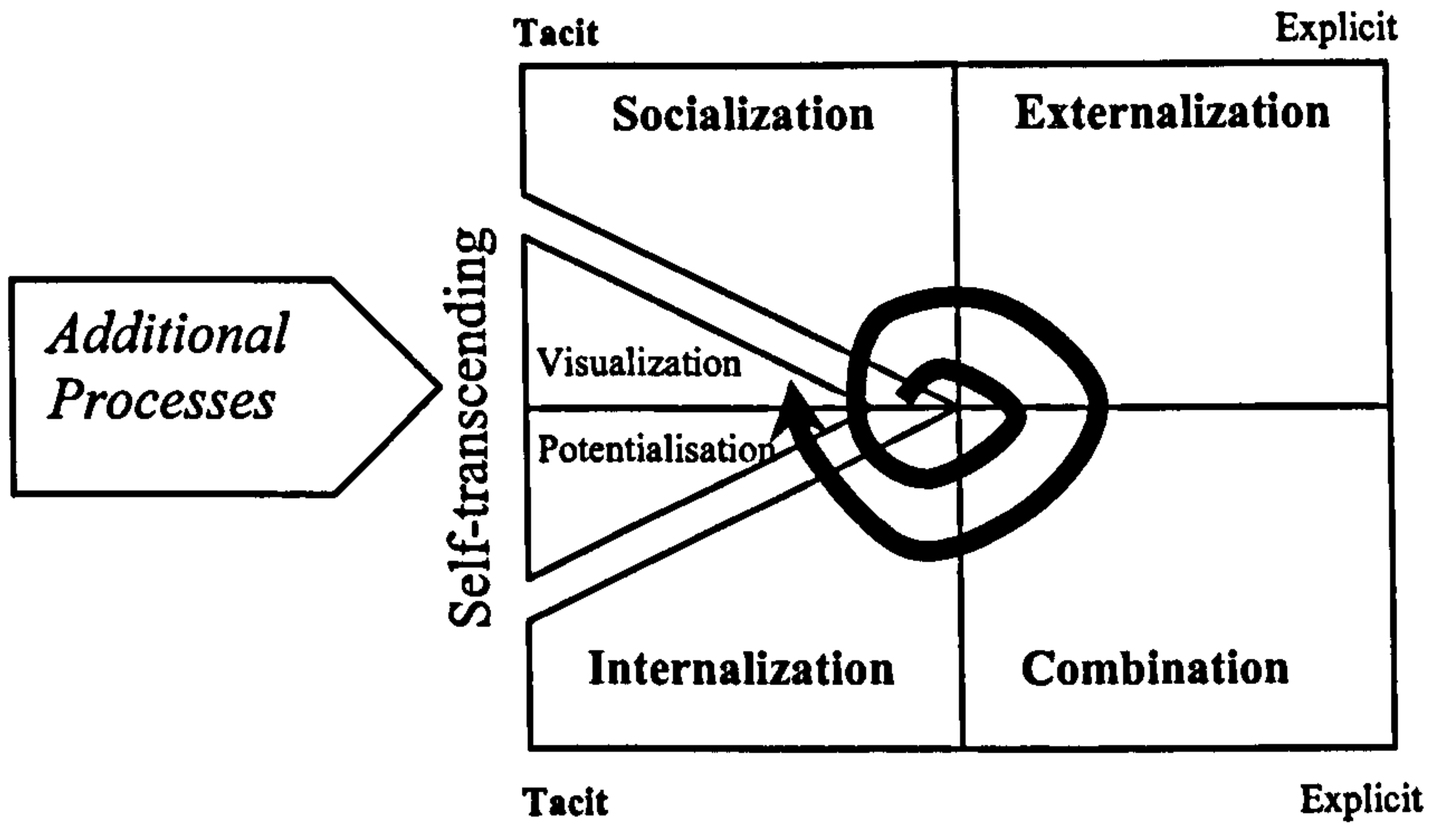

Figure 2.3: Extended SECI model

2.7.3 7C Model

The "7C model" for understanding organisational knowledge creation is proposed by Oinas-kukkonen (2004). The 7Cs (which consist of Connection, Concurrency, Comprehension, Communication, Conceptualisation, Collaboration, and Collective intelligence) play a critical role in the knowledge creation process. The 7C model is described as the dimension of different contexts: technology, language, and organisational contexts (Lyytinen, 1987). In the technology context, Internet "connection" can provide knowledge for several "concurrent" users. In the language context, "comprehending" and "communicating" are introduced as the important factors when information is provided to users. In the organisational context, knowledge "conceptualisation" can articulate knowledge through interaction among people ("collaboration"). These six "C"s lead to a greater sense of togetherness and "collective intelligence".

The 7C model is not linear, but a multiple-cycle spiral process (Figure 2.4). Four key phases or sub-processes driven within the knowledge creation exercise are proposed: comprehension, communication, conceptualisation, and collaboration. Comprehension refers to a process of surveying and interacting with the external environment and embodying explicit knowledge into tacit knowledge by "learning by doing" (similar to internalisation in the SECI model). Communication refers to a process of sharing experiences (similar to socialisation in the SECI model). Conceptualisation refers to a collective reflection process articulating tacit knowledge to form explicit concepts and systemizing the concepts into a

knowledge system (similar to externalisation and combination in the SECI model). Collaboration refers to a true team interaction process of using the produced conceptualisations within teamwork and other organisational processes.

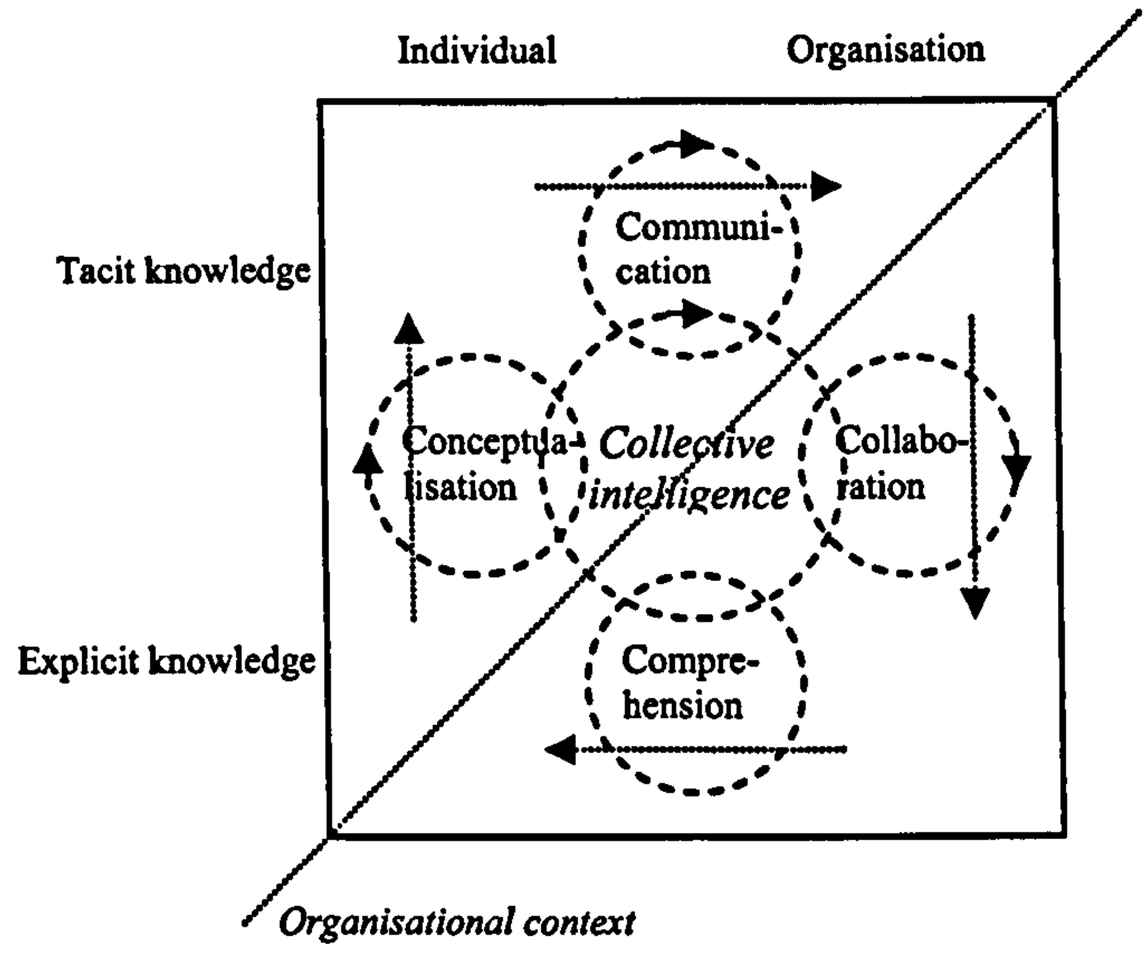

Figure 2.4: 7C model

2.7.4 Combined Research Model

To compete in a dynamic global market, the need for tools and decision making technology increases. Heinrichs and Lim (2005) propose the "combined research model", combining organisational decision models and competitive intelligence tools. Four factors of knowledge creation and strategic use of information competence are identified:

- **Pattern discovery:** pattern discovery drives organisations to create new knowledge from existing knowledge such as past decisions, past solutions, and diagnostic evaluation of past rules and models.
- **Strategy appraisal:** appraising the impact of a strategy is necessary before deciding to continue or develop new niches, and allows organisations to develop an historical knowledge base regarding the success and failure of past strategic decisions.
- **Solution formulation:** formulated solutions are key components affecting insight generation competence and can gain higher confidence of knowledge workers.
- **Insight generation:** Insight generation involves observing and interpreting charts, graphs, tables, and other information to derive meaningful ideas, directions, and

solutions for the organisation. Insights can provide guidance to innovative problem solving and strategic decision-making.

2.7.5 Community-Based Model

From the models mentioned above, Lee and Cole (2003) proposed an alternative model of knowledge creation, the "community-based model". The latter exhibits substantial differences with the SECI model: it does not concentrate on the individual or a firm while the SECI model does. The community-based model focuses on knowledge creators who are talented volunteers and interactions across organisational and geographical boundaries. In other words, the created knowledge is owned by anyone who contributes it. Table 2.2 highlights the major differences between the firm-based and the community-based models of knowledge creation.

Table 2.2: The comparison between the firm-based model and the community-based model of knowledge creation

Organisation Principles	The firm-Based Model	The Community-Based Model
1. Intellectual Property Ownership	Knowledge is private and owned by the firm	Knowledge is public but can be owned by members who contribute it as long as they share it.
2. Membership Restriction	Membership is based on selection, so the size of firm is constrained by the number of employees hired.	Membership is open, so the scale of the community is not constrained.
3. Authority and Incentives	Members of the firm are employees who receive salaries in exchange for their work.	Members of the community are volunteers who do not receive salaries in exchange for their work.
4. Knowledge Distribution Across Organisational and Geographical Boundaries.	Distribution is limited by the boundary of the firm.	Distribution extends beyond the boundary of the firm.
5. Dominant Mode of Communications	Face-to-face interaction is the dominant mode of communication	Technology-mediated interaction is the dominant mode of communication.

2.8 Value Creation: The Third Generation Knowledge Management

The relationship between value creation and KM has been argued by several scholars (Chase, 1997; Despres and Chauvel, 1999; Gebert *et al.*, 2003; Liebowitz and Suen, 2000; Rezgui, 2007b). Moreover, Despres and Chauvel (1999) suggest that knowledge can be described as a source of value creation. Liebowitz and Suen (2000) include value creation into KM

metrics for measuring intellectual capital. In terms of organisation processes, Gebert et al. (2003) suggest that knowledge management processes have inherent value creation capabilities. In addition, Løwendahl et al. (2001) propose a framework for the analysis of value creation and knowledge creation in professional service firms (PSFs).

Value creation is gradually being established as the next generation of KM (Vorakulpipat and Rezgui, 2006a; Vorakulpipat and Rezgui, 2007). Five major factors toward value creation emerge from the literature: (a) human networks, (b) social capital, (c) intellectual capital (d) technology assets, and (e) change processes.

2.8.1 Human Networks

Allen (2003) suggests that organisational learning should be dynamic and that intangible assets and social prosperity are anticipated to create major impacts on KM. For example, the concept of Community of Practice (CoP) (Wenger et al., 2002) is introduced as an effective social activity to share tacit knowledge in Xerox. This had the effect of promoting human networks and motivating people to share and create knowledge.

Intangible assets have the potential to create more value than tangible or physical assets. Three factors of intangibles, consisting of human capital, external capital, and structure capital, are expected to generate future benefits and create sustained organisational and societal values (Allen, 2003; Blair and Wallman, 2001). These also include business relationships, internal structure, human competence, social citizenship, environment health, and corporate identity (Allen, 1999). Once created, intangible and tangible values are included as a part of value networks for creating relationships between people, groups, or organisations.

Human capital can improve value creation in several ways. For example, formal and informal communication using face-to-face (including scheduled meetings) and virtual (synchronous/asynchronous) means (e.g. telephone and e-mail) are perceived as effective to promote knowledge sharing and creation. Whittaker, et al. (1994) show a preference for informal communications (e.g. unscheduled meetings or any face-to-face interactions). Early face-to-face meetings in team work tend to improve the team's project definition (Ramesh and Dennis, 2002), and to enhance the effectiveness of subsequent electronic

communications (Powell and Dent-Micallef, 1999). Therefore, lack of human networks or communication is identified as a problem that may lead to the ineffectiveness of teamwork (Pynadath and Tambe, 2002) and will hinder any knowledge sharing and creation perspective.

2.8.2 Social Capital

The concept of social capital has recently been researched in the context of KM (Cohen and Prusak, 2001; Lesser and Prusak, 1999; Lesser, 2000; Nahapiet and Ghoshal, 1998). The idea of social capital – physical capital, financial capital, and human capital – can be applied to create value-added for firms. Because of its emphasis on collectivism and co-operation rather than individualism, distributed community members will be more inclined to connect and use electronic networks when they are motivated to share knowledge (Huysman and Wulf, 2006). In terms of socio-technical design, KM tools to support social capital are aimed to bridge various social communities. The tools may foster social capital by offering virtual spaces for interaction, providing the context and history of interaction, and offering a motivational element (e.g. score) to encourage people to share knowledge with each other (Huysman and Wulf, 2006). Tsai and Ghoshal's research reveals an association between social capital and firms' value creation (Tsai and Ghoshal, 1998). This relationship is supported by related research (Nahapiet and Ghoshal, 1998). Moreover, in terms of organisational structure, social capital helps people develop trust, respect, and understanding of others, especially in the context of a strong organisational bureaucratic culture. This contributes indirectly to value creation.

2.8.3 Intellectual Capital

Intellectual capital (IC) has enjoyed a very rapid diffusion over recent years and is also a growing area of interest in KM. It encompasses organisational learning, innovation, skills, competencies, expertise and capabilities (Rastogi, 2000). Liebowitz and Suen (2000) exhibit that value creation is used as a KM metric for measuring intellectual capital. The value creation metric includes training, R&D investment, employee satisfaction, relationships development, etc. Nonaka et al. (2000) suggest that learning by doing can embody explicit knowledge into tacit knowledge through Internalisation in the SECI process. Also, training programmes can help trainees understand themselves, and reading documents or manuals can

internalise the explicit knowledge written in such documents to enrich their tacit knowledge base. Adapted training can foster cohesiveness, trust, teamwork, individual satisfaction, and higher perceived decision quality, as highlighted in the literature (Tan et al., 2000; Van Ryssen and Hayes Godar, 2000; Warkentin and Beranek, 1999). In addition, IPR and confidentiality issues should not be overlooked as Denning (1999) suggests that external knowledge sharing poses greater risks than internal sharing as they raise complex issues of confidentiality, copyright, and in the case of the private sector, the protection of proprietary assets. It is suggested that value creation can be driven by intellectual capital, and an intellectual capital management system should be created to measure performance (Bontis et al., 1999).

2.8.4 Technology Assets

Managing and enhancing the organisational processes of knowledge creation, storage/retrieval, transfer, and application have relied on the wide use of Knowledge Management Systems (KMS). This suggests that technology, including KMS, is an essential ingredient to sustain value creation. Applications of IT to organisational knowledge management initiatives has focused on three common applications (Alavi and Leidner, 2001): (a) the coding and sharing of best practices, (b) the creation of corporate knowledge directories, and (c) the creation of knowledge networks. While KMS initiatives rely on IT as an important enabler, they tend to overlook the socio-cultural aspects that underpin knowledge management (Davenport and Prusak, 1998; Huysman and Wulf, 2006; Malhotra, 1999; O'Dell and Grayson, 1998).

Moreover, the future KM can be envisioned as (a) the emphasis on the design of KM technology to fit organisational culture; (b) the ability to embed KM technology in natural surroundings, and be able to retrieve knowledge whenever and wherever it is needed; and (c) the simple and effortless use of technology to create interaction (VISION, 2003). Semantic web, natural language processing, mobility, virtual collaborative workspaces are the important facets for future KM (VISION, 2003). Next generation KM will also be impacted and shaped by changes in IT and artificial intelligence development, and by the changes expected in people-centric practices to support innovative works (Wiig, 1999).

2.8.5 Change Processes

In this context, change management plays an increasingly important role in sustaining "leading edge" competitiveness for organisations in times of rapid change and increased competition (McAdam and Galloway, 2005). The future has only two predictable features – 'change and resistance to change' and the very survival of organisations will depend upon their ability not only to adapt to, but also to master these challenges.

Organisational change can be divided into two issues: IT and human issues. In terms of human issues, adapting organisational policies to motivate employees to share and create knowledge by providing monetary reward or recognition is suggested, as confirmed by Rus, Lindvall et al. (2002). On the other hand, technology adoption in organisations should not be overlooked. Technology Adoption Model (TAM) (Davis, 1989) proposes that perceived usefulness and perceived ease of use influence the use of information systems innovations and that this effect is mediated through behavioural intentions to use. Christiansson (2003) also agrees that study of the change process is necessary to create the requisite organisational and societal values. A KM maturity roadmap is an important milestone to enable organisations to assess the effectiveness of their KM implementations in the future.

2.9 Conclusions

This chapter has presented a discussion of KM, generations of KM (knowledge sharing and knowledge creation, and value creation) based on a review and synthesis of a broad range of relevant literature. The definition of KM has evolved over the years. The chapter defined knowledge sharing as the past generation KM, knowledge creation as the current generation KM, and value creation as the future generation KM. Value creation focuses on the organisational and societal impact of knowledge management. Human network, social capital, intellectual capital, technology assets, and change processes emerge as essential conditions to enable value creation. Focusing on social capital, the chapter refers to collective capabilities derived from social networks. The higher the level of social capital, the more distributed communities are stimulated to connect and share knowledge (Huysman and Wulf, 2006). In terms of technology, members of communities will be more inclined to use adapted KMS when they are motivated to share knowledge with others. KMS that embed social awareness can play an important role in addressing these requirements, promote social

capital in fragmented and distributed networks, and enable KM initiatives in an organisation. However, the organisation's ability to effectively use, acquire, share, apply and create knowledge is more important and should not be overlooked.

KM has major implications in the learning capability of an organisation and its ability to adapt to an ever changing and competitive environment. Therefore, migration from knowledge sharing to knowledge creation and from knowledge creation to value creation is necessary although it may be difficult to negotiate and achieve.

CHAPTER 3

Literature Review on Related Research

3.1 Introduction

In the previous chapter, the overall concept of KM was discussed. This chapter builds upon this to consider other issues which are related to the research. The chapter begins by reviewing literature related to the selected context – developing countries and Thailand. These include technology and knowledge management in developing countries and distinctive features of Thai culture. Then, it reviews theories considered in the research including change management, human computer interaction, diffusion of innovation, technology adoption, and social capital. The conclusions of the chapter are drawn in the final section.

3.2 Technology and Knowledge Management in Developing Countries

It has been highlighted that technology adaptations in developed countries occur continuously in response to misalignments, gradually leading to a successful alignment (Leonard-Barton, 1988). This is in contrast to developing countries which tend to rapidly adopt technology created by developed countries, often, in an ad-hoc way (Archibugi and Pietrobelli, 2003). Developed countries concentrate more than 84% of the world scientific

and technological production (National Science Foundation, 2002). Developing countries have only marginally increased their participation to this, which emphasises the scientific and technological gap that exists with the developed world. Also, in several of the IT installations that were created and adapted for organisations in developing countries, local (regional and national) factors were not taken into account. This has resulted in outcomes that did not fit the needs of the direct beneficiaries in the developing nations (Cyamukungu, 1996).

While the above is applicable to KM, the crucial issue might not relate only to technology but also include other factors, such as cultural-based resistance. "...technology, designed and produced in developed countries, is likely to be culturally-biased in favour of industrialised socio-cultural systems, technology transferred to developing countries meets cultural resistance" (Straub et al., 2001). Moreover, it is reported that there is a significant gap in the understanding and maturity of KM between Asian developing companies and those in developed countries. This can be explained by the fact that Western companies have had KM strategies and initiatives in place for over a decade, while Asian developing companies are still attempting to understand and apply KM concepts (Yao et al., 2007).

As reported in chapter 1, a small amount of KM research has been conducted in developing countries (Bozbura, 2007; Burrows et al., 2005; Chatzkel, 2004; Okunoye, 2002; Wang, 2006; Wei et al., 2006; Yao et al., 2007). It is worth mentioning again here to detail and clarify these previous studies. It is found that these studies in such countries have identified several distinctive features as well as barriers to KM adoption. For instance, KM in China is indicated as distinctive, constrained somewhat by technological limitations, but influenced more significantly by psychological factors (such as cultural values) among groups and social levels (Burrows et al., 2005). Also, another empirical study on KM in Hong Kong shows that informal and tacit knowledge sharing took place but the Chinese culture remained as a barrier to knowledge sharing (Yao et al., 2007). While a case study in an Indian software service company suggests some distinctive, important factors to successfully initiate KM, such as collaborative culture and capturing tacit knowledge rather than explicit knowledge (Chatzkel, 2004). A KM study in Taiwan raises some concerns about the financial investment required and the compatibility and interoperability of such systems, which may result in hostile KM culture (Wang, 2006). A case in Malaysia reports that the organisations are aware of the importance of all the KM factors influencing KM implementation but fall short of implementation (Wei et al., 2006). The results show that knowledge audit and knowledge

map are perceived as important but are the least implemented factors. A case in Turkish SMEs presents interesting and distinctive findings (Bozbura, 2007). Turkish SMEs do not like to share knowledge even within the company, even managers who are afraid of losing the control of knowledge. Moreover, since the information channels are closed, the managers also prevent the incoming knowledge. Finally, the findings of a KM study in sub-Saharan Africa shows several weaknesses in KM initiative in these developing economies, including preference of manual ways of managing documents, lack of trust among teams, lack of KM initiative, low funding, etc. (Okunoye, 2002). Clearly, the limitation of these studies is that the findings will vary from one organisation to another, and the future research is suggested to make a comparison in several developing countries.

3.3 Distinctive Features of Thai Culture

It is reported in Komin (1998) that Thai culture represents a subjugation-to-nature view (Kluckhohn and Strodtbeck, 1961), one of three types of cultural worldview (mastery-over-nature, harmony-with-nature, and subjugation-to-nature) based on the way each culture conceived the relationship between man and nature. Therefore, Thai culture may value being conscientious, humble, and prudent. As a result, they tend not to be quick in expressing their communication behaviours, and may be even less expressive as they believe that there is nothing they can do to escape from the natural laws so they would rather stay calm and accept their fate (Chaidaroon, 2004).

On the other hand, the Americans and most Westerners represent the mastery-over-nature view and many East Asian cultures such as the Japanese, are based on the harmony-with-nature (Komin, 1998). They value being assertive and, thus, direct and expressive style of communication is deemed appropriate for U.S. culture. The harmony-with-nature and subjugation-to-nature cultures may display similar communicative behaviours to each other but based on different views. East Asian culture, which is based on the harmony-with-nature view, may be less expressive than Western culture as people in the East Asian culture hope to maintain the harmony among themselves and nature.

Chaidaroon (2004) proposes that there are three dialectical dimensions that distinguish Thai culture and communication style from the Western (developed countries) counterparts including conscientiousness vs. ambition, receiver vs. sender orientation, and relationship vs.

task orientation. Firstly, Thai culture seems to value conscientiousness while Western cultures focus on ambition. That is, Thai people have developed the communication and decision-making style that values conscientiousness as they do not have to struggle with time and pressure to win over nature. This difference is because of the country's geography. Thai people have lived in a fertile land where the weather is mild all year (Fieg and Mortlock, 1989), while history in the West usually portrays the fight with nature. Secondly, Thai people tend to place high value and responsibility in interactions in the process of receiving messages (Knutson, 2003), as opposed to the Western way. According to (Knutson, 2003), Thai silence is a positive sign of respect. Chaidaroon (2003) argues that Thai people, to gain recognition from others, can sometimes strategically perform shyness or not speaking up. Finally, (Komin, 1990) reports that Thai people placed more emphasis on social relationships (collectivist culture) value than task achievements, as opposed to the Western way. Thai people generally believe that their work will be accomplished smoothly if their good relationship is maintained. In addition, Thai culture is more hierarchical than Western culture (McCampbell et al., 1999). Thus, it may result that Thai culture is high in power distance (Hofstede, 1994) and respect in seniority (McCampbell et al., 1999). Goodman (1991) also argues that in Thai society, younger people must respect older people or those who are in a higher social rank. Based on these results, conducting a case in Thailand is beneficial to further studies in different developing countries and culture.

3.4 Change Management

Change management plays an increasingly important role in sustaining "leading edge" competitiveness for organisations in times of rapid change and increased competition (McAdam and Galloway, 2005). Therefore, it is probably that one of the major concerns facing senior managers is that of effecting significant strategic change in their organisations (Johnson, 1992). The constant need for change and the effective management of such change poses probably the greatest challenge to organisations that they will ever have to face (Goulding, 2007). In essence, change involves the way an organisation adapts to its external environment; and encompasses the behavioural patterns of its employees the representation of which is typically orchestrated through a standard business improvement model (Figure 3.1).

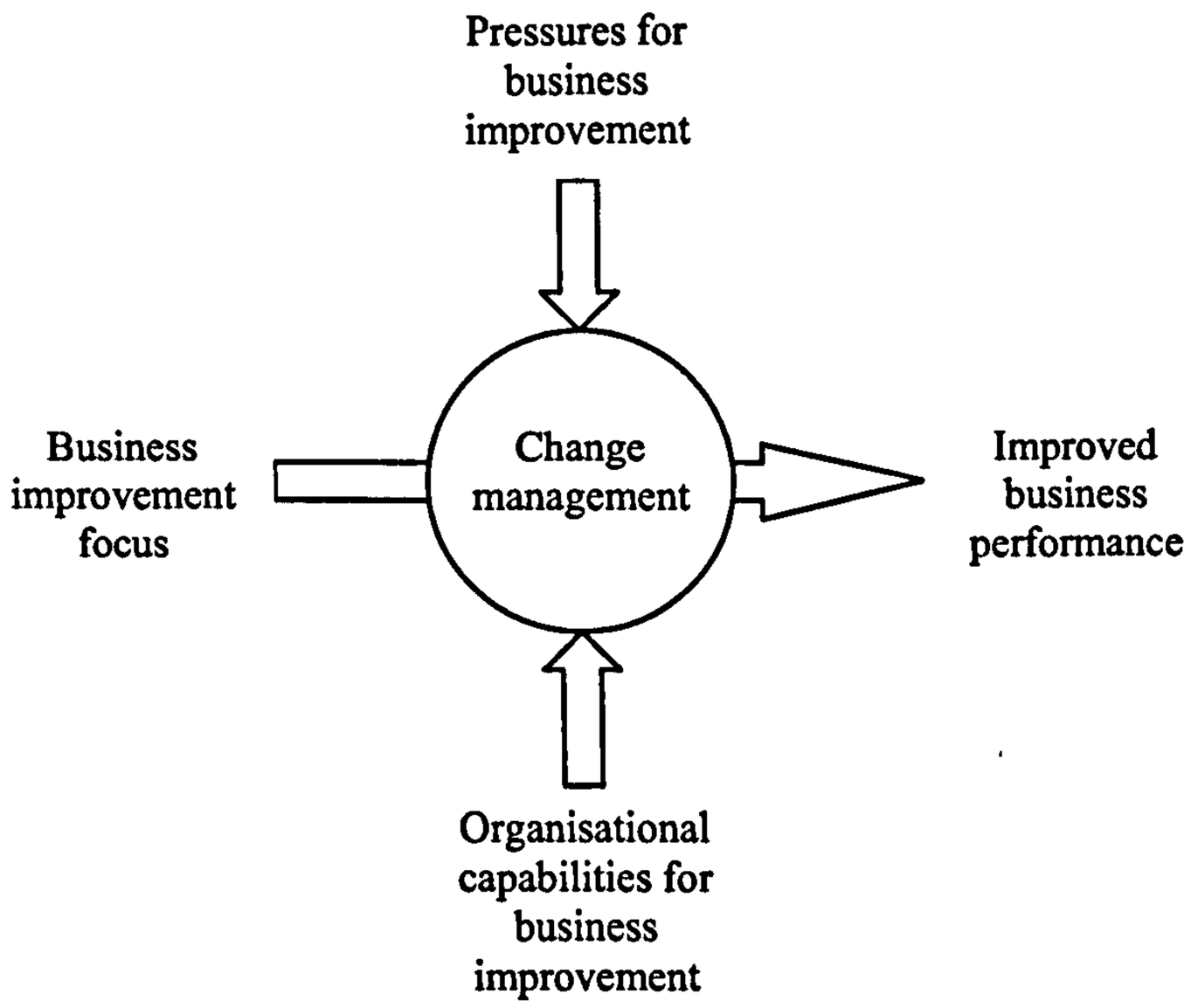

Figure 3.1: Change management – Business improvement model

There are several factors which prevent change taking place effectively (Goulding, 2007).

- Powerlessness prevents people in organisations developing the fresh, appropriate responses needed in conditions of change and uncertainty. Powerlessness may include resistance to change, complaining instead of giving support, competition within organisations, lack of trust and openness, unwillingness to acknowledge development needs, difficulty gaining commitment, tendency to abuse oneself to others, isolation of leaders, and fear and feelings of personal inadequacy.

- Old style leadership discourages people from changing effectively because it does not respect them or their true potential to contribute. In this style the leader typically perceives that the way he/she sees things is right. Hence, he/she never admits mistakes.

- Wanting to stick with what the leader "knows" prevents people to handle the new situations they face with confidence and probably competence. If they can overcome change, there will be tremendous potential for individual and organisational development in the outer circle.

Eccles (1994) suggests that a change champion affects the readiness for an organisation to change. A change champion who is responsible for making change is a vital factor for successful change. When an organisation is going through a change process, it needs champions who possess a special mix of qualities that will push the change along smoothly. It needs change champions who have the ability to overcome the resistance of others, together with the skills to handle the mechanics of the change process. Change champions might be managers, supervisors, consultants, technical specialists, project leaders, union officials or any persons who have special attributes that give them some outstanding quality.

Many organisations find themselves in an almost constant state of change, as they strive to respond to the pressures of the increasingly global, competitive environment in which they exist. Rezgui et al.(2005) suggest drivers for change including:

- Strategic and commercial considerations such as the need to lower costs, improve efficiency, introduce new products and services; such drivers will entail organisational changes including implementing new ways of working, new contractual models, supply chain partnerships, etc.
- Mergers and acquisitions which involve the bringing together, rationalisation and harmonisation of two or more organisations
- The availability of new technologies
- Legislation

Despite the frequency of change, evidence shows that many change projects are unsuccessful (Kotter, 1996). This can be explained by the fact that the many different facets of an organisation are interrelated, so that change to any one aspect affects other aspects (Rezgui et al., 2005). One of the main reasons organisations will experience knock-on effects for the lack of success of change projects is the failure by management to take a strategic approach to change management and to identify the full impact of changes so that these can all be managed. However, another problem can be resistance to change amongst employees in the organisation. At the individual level, organisational change raises concerns e.g. about security, status, skills and job content, and therefore a key element of any change management programme must be an effective communication strategy to provide information about the rationale, process and consequences of the change and, where possible, to allay

employees' concerns. Resistance to change is most likely when change is imposed on individuals. In this situation, individuals frequently perceive neither the need nor desirability for the proposed change. This means that they have little or no motivation to invest in learning the required new skills or to change their established ways of operating. In such circumstances the change is unlikely to generate the positive benefits sought by those driving the changes – unless or until at least some of those who will be affected are in favour of the change.

3.5 Human Computer Interaction

The research involves Human Computer Interaction (HCI) issues related to KM adoption and diffusion. Initial work on HCI has adopted a "human factors" approach where individuals are reduced to being another system component with certain characteristics (such as limited attention span, faulty memory, etc.) that need to be factored into the design equation for the overall human–machine system (Bannon, 1991; Kuutti, 1995). The HCI community has then realised that this form of analysis of the human in his interaction with a system de-emphasises important issues in work design, including individual motivation, membership in a team or community of users, and the importance of the setting in determining human action (Bannon, 1991). HCI has evolved over the years by viewing the user more complexly, as a human in a social system in which the computer plays an increasingly important role (Karat and Karat, 2003). The need for a multi-disciplinary approach has been acknowledged to provide better "contextuality", involving the users and their constructive relation with "systems" (Karat and Karat, 2003; Kuutti, 1995). Moreover, HCI necessitates the development of a general systems model so as to place the work in a wider context (Diaper and Sanger, 2006). The research extends and contributes to HCI research by adopting a holistic perspective where human, organisational, and technical issues are given equal consideration, to provide better contextuality and insight into factors influencing KM adoption. Also, while most related research is conducted in developed countries, the propose research considers HCI in the context of a developing country, Thailand. An overview of the areas of interest to the research is given below.

3.6 Diffusion of Innovation

A number of studies have been reported in the literature describing various theories and models related to the diffusion of innovation in knowledge management and information technology into the organisation (Rezgui, 2007a; Xu and Quaddus, 2005). According to the theory of diffusion of innovation (Rogers, 1995), innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption, whereas diffusion is defined as the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1995). Four elements extracted from the definition, are essential to the diffusion of innovation process, including:

- **Innovation** – an idea, practices, or objects that is perceived as new by an individual or other unit of adoption.
- **Communication channels** – the means by which messages get from one individual to another.
- **Time** – the three time factors are (a) innovation/decision process, (b) relative time with which an innovation is adopted by an individual or group, and (c) the innovation's rate of adoption.
- **Social system** – a set of interrelated units that are engaged in joint problem solving to accomplish a common goal.

However, given that decisions are not authoritative or collective, each member of the social system faces his/her own innovation-decision which Rogers suggests may follow a five stage model:

- **Knowledge** – when people become aware of an innovation and learning about the existence and function of the innovation
- **Persuasion** – when people form a favourable or unfavourable attribute towards the value of the innovation
- **Decision** – when people are involved in activities that lead to a choice to adopt or reject the innovation
- **Implementation** – when people put the innovation to use

- **Confirmation** – when people evaluate the results of the ultimate acceptance or rejection of the innovation

Rogers differentiates the diffusion process from the adoption process in that the diffusion process occurs within society, as a group process; whereas, the adoption process pertains to an individual. Rogers defines the adoption process as the mental process through which an individual passes from first hearing about an innovation to final adoption. Rogers breaks the adoption process down into five stages. These include:

- **Awareness** – the individual is exposed to the innovation but lacks complete information about it.
- **Interest** – the individual becomes interested in the new idea and seeks additional information about it.
- **Evaluation** – the individual mentally applies the innovation to his present and anticipated future situation, and then decides whether or not to try it.
- **Trial** – the individual makes full use of the innovation.
- **Adoption** – the individual decides to continue the full use of the innovation.

As Rogers points out, an innovation may be rejected during any stage of the adoption process. Rogers defines rejection as a decision not to adopt an innovation. Rejection is not to be confused from discontinuance. Discontinuance is a rejection that occurs after adoption of the innovation. Rogers summarises many of the significant research findings on discontinuance. Much discontinuance occurs over a relatively short time period and little discontinuance is caused by supersedence of a superior innovation replacing a previously adopted idea.

It is used to be assumed that mass media channels had direct, immediate, and powerful effects on the mass audience, but the theory argues that, since opinion leaders directly affect the tipping of an innovation, a powerful way for change agents to affect the diffusion of an innovation is to affect opinion leader attitudes. Critics of the diffusion of innovation theory have suggested that it is an overly simplified representation of a complex reality. There seem to be many innovations that are perceived as valuable for the masses, nevertheless the diffusion has been resisted, as in the case of locking certain technologies in place. Successful

efforts to diffuse an innovation in the organisation depend on characteristics of the situation (Rogers, 1995).

Similarly, diffusion of KM tools such as KMS depends on a number of factors (Xu and Quaddus, 2005). Among them perceptions of KMS, including perceived usefulness/benefits, perceived user-friendliness, perceived voluntary use and subject norms are significant factors. The diffusion of KMS does not follow the popular bandwagon-effect of other technology diffusion. The idea of KMS is judiciously conceived, and specific individual, organisational, management, KMS characteristics, and task-complexity factors play significant roles in affecting the usefulness of KMS and ultimately its diffusion.

3.7 Technology Adoption

While diffusion of innovation theory (Rogers, 1995) describes transition processes and mechanisms through Rogers's stage model of innovations in organisations (Rogers, 1995), the theory does not define causality among factors to predict successful transition of a technology (Rezgui, 2007a). That is, the theory has a number of the caveats that may influence innovation adoption rates. For example, people often adapt technology to their own needs, thus the innovation seems to actually change in nature from the early adopters to the majority of users.

User acceptance is often the pivotal factor determining the success of failure of an IS project (Davis, 1989). There is a study that suggests a different way to ensure the success of technology acceptance. Davis (1989) introduces the Technology Acceptance Model (TAM), which is one of the most widely applied theoretical models in the IS field (Lee et al., 2003). TAM is defined as an information systems theory that models how users come to accept or reject information technology and how user acceptance is influenced by system characteristics. The model argues that end-user acceptance and use of information systems innovations is influenced by their beliefs regarding the technology. In particular, it proposes that perceived usefulness and perceived ease of use critically influence the use of information systems innovations, identified as important user acceptance criteria by previous research (Davis, 1989). It also suggests that this effect is mediated through behavioural intentions to use (Davis, 1989), shown in Figure 3.2.

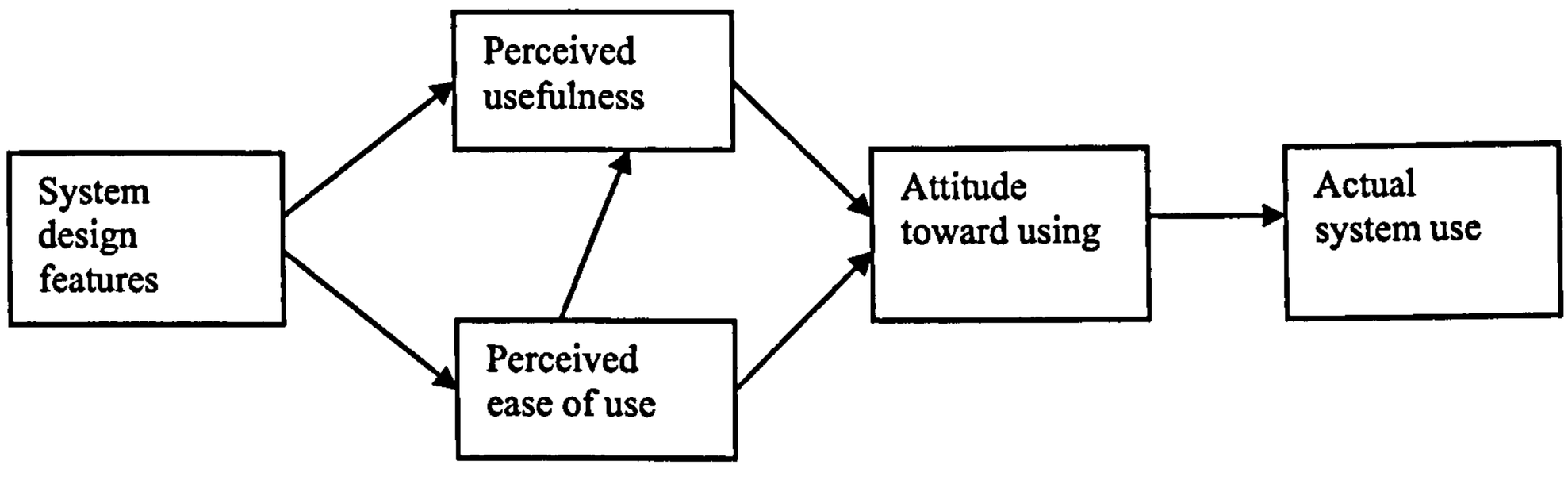

Figure 3.2: Technology acceptance model

The model highlights the critical role of extrinsic motivation and, in particular, expectations of task-related performance gains in end-users' adoption and use of IS innovations (Davis, 1989). Attitude toward using is a function of two beliefs: perceived usefulness and perceived ease of use. Perceived usefulness is defined as "the degree to which an individual believes that using a particular system would enhance his or her job performance." Perceived usefulness is defined as "the degree to which an individual believes that using a particular system would be free of physical and mental effort." Hence, perceived ease of use has a causal effect on perceived usefulness. System design features directly influence perceived usefulness and perceived ease of use. System design features have an indirect effect on attitude toward using and actual stage behaviour through their direct effect on perceived usefulness and perceived ease of use.

TAM may serve as a foundation for research of KMS user acceptance (Money and Turner, 2004). Relationships among primary TAM constructs are in substantive agreement with those characteristic of previous TAM research, while significant positive relationships between perceived usefulness, ease of use, and system usage are consistent with previous TAM research (Money and Turner, 2004). It is suggested that the considerable body of previous TAM related information technology research may be usefully applied to the KM domain where interdependent social processes that require knowledge creation, storage and retrieval, transfer, and application are required for effective organisational functioning (Money and Turner, 2005).

Ericsson and Avdic (2003) introduce another KMS acceptance model, namely Requirement of Acceptance Model (RAM). It argues that acceptance of KMS is dependent on perceived relevance, systems accessibility, and management support. Further, it argues that implementation of systems is largely a process of acceptance where the requirements of acceptance are attained. Finally, it argues that to achieve the requirements of acceptance, implementation should be iterative and cooperative between users and developers by continually developing, implementing, and testing prototypes.

Technology acceptance models can be applied to the technical issues of KM, as above. However, this model – with its original emphasis on the design of system characteristics – does not account for social influence in the adoption and utilisation of new information systems (Davis, 1989). Furthermore, It has been reported that when the models are applied to collaborative systems, it is often observed that the belief structures (perceived ease of use and perceived usefulness) are not stable, and that the influence of these belief structures act in combination with the effect of social influences to determine the use of the system (Easley et al., 2003).

It is recommended to further research on technology acceptance, and further research may consider the role of additional variables within TAM (Davis, 1989). Venkatesh and Davis (2000) propose TAM2, an extension of TAM, incorporating additional theoretical constructs spanning social influence process (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result, demonstrability, and perceived ease of use). The study suggests that both social influence process and cognitive instrumental process significantly influence user acceptance.

An appropriate technological choice and effective management strategy are critical success issues in technology adoption and its models have promise as a practical tool for user acceptance testing. Given the large investment at sake when developing new systems, it is desirable to forecast user acceptance as early as possible in the design process (Davis, 1989). Similarly, once the technology is adopted, it needs to be deployed in the organisation as quickly as possible in order to gain benefits before it is obsolete. However, technologies are implemented within a social context, which includes different variables such as economic, political, cultural, and behavioural, which are unique for each society (Stoneman and Kiederen, 1994). Taking into account only the physical variables of the adopted technology,

without considering other socially related issues, may not satisfy the requirements of the organisation, which may have negative effects on the success of technology adoption and increase the risks of failure for subsequent deployment (Harris and Davison, 1999).

3.8 Social Capital

While TAM is a notion of technology adoption, social capital is applied as a core concept in business, economics, organisational behaviour, political science, and sociology, defined as the advantages created by a person's location in a structure of relationships (Burt, 2005). The term "social capital" initially appeared in community studies, highlighting the central importance – for the survival and functioning of city neighbourhoods – of the networks of strong, crosscutting personal relationships developed over time that provide the basis for trust, cooperation, and collective action in such communities (Jacobs, 1965). Also, as reported in Nahapiet and Ghoshal (1998), social capital is defined as the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. It thus comprises both the network and the assets that may be mobilised through that network (Bourdieu, 1985; Burt, 1992).

Social capital resides in relationships, and relationships are created through exchange (Bourdieu, 1985). The pattern of linkages and the relationships built through them are the foundation for social capital. Therefore, social capital can be created and sustained through exchange and in which, in turn, social capital facilitates exchange. For example, where parties trust each other, they are more willing to engage in cooperative activity through which further trust may be generated (Fukuyama, 1995; Putnam, 1993; Tyler and Kramer, 1996). In social systems, exchange is the precursor to resource combination. Thus, social capital influences combination indirectly through exchange (Nahapiet and Ghoshal, 1998).

Social capital has many different attributes (Nahapiet and Ghoshal, 1998), and Putnam (1995) has argued that a high research priority is to clarify the dimensions of social capital. Focusing on the role of social capital in creating and sharing knowledge as well as intellectual capital, Nahapiet and Ghoshal (1998) suggest that social capital should be considered and analysed in terms of three clusters including:

- **Structural dimension** – refers to the overall pattern of connections between actors – that is, who you reach and how you reach them (Burt, 1992). It concerns the properties of the social system and of the network of relations as a whole. The term describes the impersonal configuration of linkages between people or units.
- **Relational dimension** – refers to the kind of personal relationships people have developed with each other through a history of interactions (Granovetter, 1992). This concept focuses on the particular relations people have, such as shared trust, respect, friendship, norms, obligations, and identification, that influence their behaviour. It is through these ongoing personal relationships that people fulfil such social motives as sociability, approval, and prestige.
- **Cognitive dimension** – refers to resources providing shared representation, interpretations systems of meaning among parties (Cicourel, 1973), whereas Hazleton and Kennan (2000) adapts cognitive dimension to the new content dimension defined as the ability to access and use social capital through exchanging knowledge, information, identify problems and solutions, and manage conflict.

Adler and Kwon (2002) also introduce another three-dimensional framework, in which they use the classification of opportunity, motivation, and ability, the similarity with Nahapiet and Ghoshal's classification. The two classifications are brought in line with each other (Huysman and Wulf, 2006).

The concept of social capital has lately been adopted within the discipline of KM in terms of human, organisational, and technical issues (Adler and Kwon, 2002; Cohen and Prusak, 2001; Huysman and Wulf, 2006; Lesser, 2000; Nahapiet and Ghoshal, 1998), and is often approached as consisting of the three dimensions above (Huysman and Wulf, 2006). A focus on social capital in relation to knowledge sharing shifts the attention from individuals sharing knowledge to communities as knowledge sharing entities (Huysman and Wulf, 2006). In communities, people not only invest in their own learning but also in the learning of others (Huysman and Wulf, 2006). Therefore, shared practice, the driving forces within communities and the key conditions that help communities stay active are mutual trust, a sense of mutuality and recognition by peers (Lesser, 2000); in other words ,a high degree of social capital.

Emphasising social capital as the key ingredient to KM also relaxes the managerial and technological bias. Technology for KM will likely be more in line with people's opportunity, motivation, and ability to share and create knowledge. People will be more inclined to use KM tools (such as KMS or groupware) when they are motivated to share knowledge with others, they are able to share knowledge, and they have the opportunity to share knowledge (Wasko and Faraj, 2005).

To promote knowledge-friendly practices, social capital is perceived as an extension of human capital (Huysman and Wulf, 2006), resulting in perceived knowledge values consisting of the development of trust, social cohesion and motivation within the organisation (Vorakulpipat and Rezgui, 2006a). Clearly, it is important to acknowledge social capital when investing in KM and recognise that the higher the level of social capital, the more (distributed) communities are stimulated to connect and share knowledge (Huysman and Wulf, 2006).

3.9 Knowledge Management Capability and Maturity Model

Currently KM is in search of continuous process improvement mechanisms, in order to improve business process. Likewise software development has been in search of process improvement frameworks in the past decade. The Capability Maturity Model (CMM), developed by the Carnegie Mellon University, is one of the most widely adopted process improvement initiatives, within the software industry.

CMM is intended to be used as a guideline to help software organisations improve the maturity of their software process (Paulk et al., 1995). CMM comprises five levels of software process maturity, prioritizing improvement actions for increasing software process maturity. The five levels include: (1) initial level for a "chaotic" software organisation, (2) repeatable level for an organisation establishing basic project management processes, (3) defined level for an organisation in which the software process is more documented, standardised, and integrated, (4) managed level for an organisation in which the software process and products are quantitatively understood and controlled using detailed measures, and (5) optimizing level for an organisation which improves the process continuously (Figure 3.3).

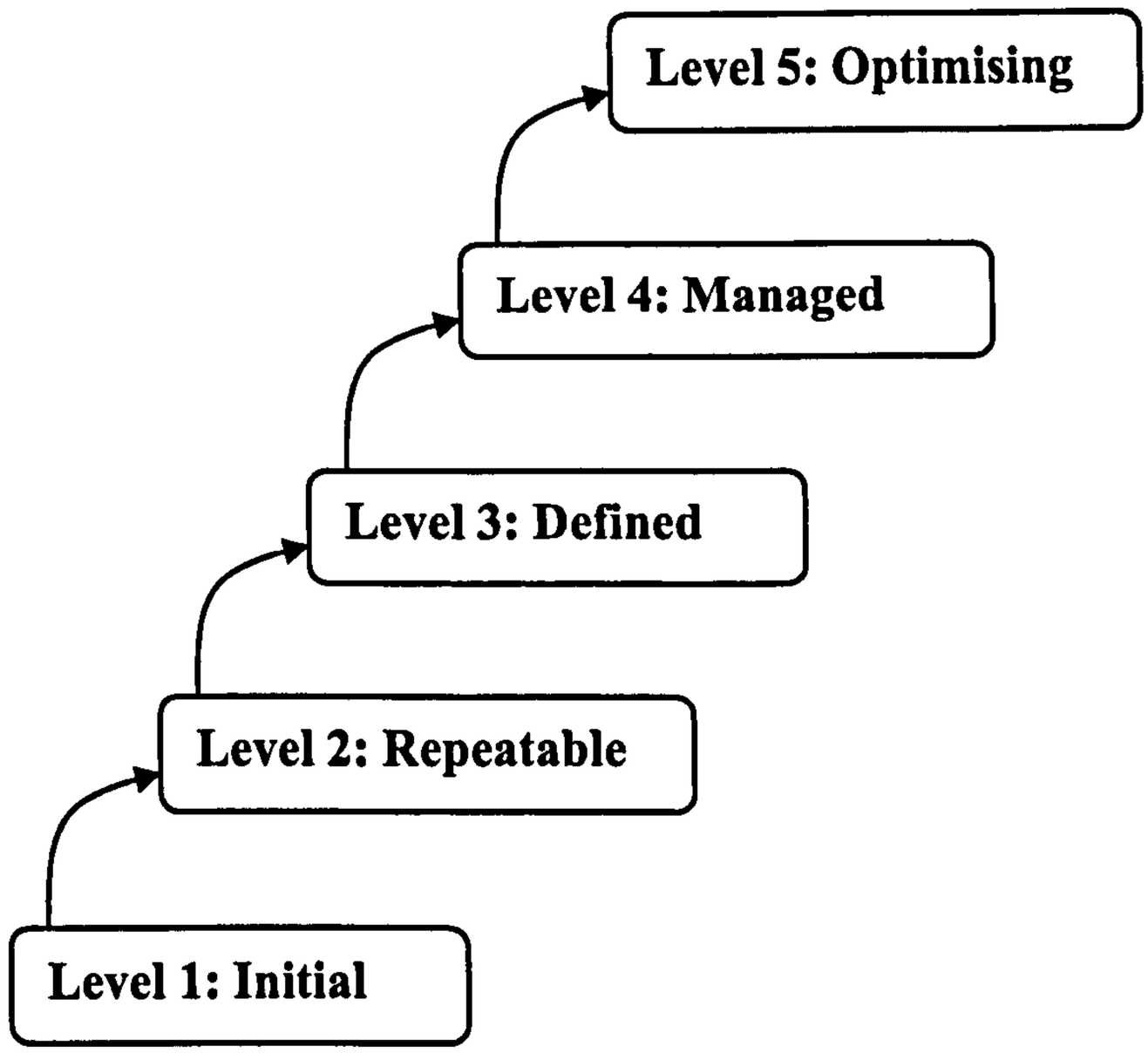

Figure 3.3: The capability maturity model: Five levels

The internal structure of CMM consists of maturity level, key process area, and maturity question. Each CMM level, except level 1, is decomposed into several key process areas that an organisation should focus on to improve their process, and key process areas identify the issues that must be addressed to achieve a maturity level. Each key process area is composed of several key practices that contribute to achieving its goals. Maturity questions are presented as a key indicator to initiate the investigation of an organisation's software capability.

A narrative synthesis approach is used to synthesise criteria to achieve each maturity level in the research as this approach is particularly suitable when data collected from literature and empirical studies are in both quantitative and qualitative forms (Cassell and Symon, 1994). The maturity level consists of a number of key process areas mentioned above. Each key process area is composed of several key practices that contribute to achieving its goals. Maturity questions are presented as a key indicator to initiate the investigation of an organisation's knowledge creation capability. Each key process area is likely to be rated as not satisfied (fail) or satisfied (pass) in a validation template. All key process areas in a maturity level must be satisfied in order to move up to a higher level.

Many of the basic process improvement concepts in CMM appear generic and could potentially be applied in other industries (Sarshar et al., 1999). Therefore, it is probable that CMM could be applied in KM. Several articles (Choy et al., 2006; Davenport and Prusak, 1998; Nonaka and Takeuchi, 1995; Tiwana, 2000; Yeh et al., 2006; Zack, 1998) have reported KM implementations and measurements for an organisation. However, no studied have provided a framework for assessment of KM process, and validation of KM maturity and capability. A call has been made for further research to comprehensively propose a framework for measuring KM capability and maturity, in particular knowledge sharing, knowledge creation, and value creation. In addition, the further research needs to investigate whether the CMM framework and concepts can be reused in KM.

3.10 Conclusions

This chapter presented a review of literature related to the study, including technology and knowledge management in developing countries, distinctive features of Thai culture, change management, human computer interaction, diffusion of innovation, technology adoption, and social capital. The main objective of this chapter was to establish a theoretical background and to gain the necessary knowledge of the research topic to undertake the proposed study in a systematic manner. This chapter is also necessary as it helps the researcher to review and consider a number of theories related to the research before choosing the particular one to further the discussion (detailed in the discussion chapter).

The next chapter introduces the research methodology for the fieldwork, theory development in the thesis, and the evaluation of the research.

CHAPTER 4

Research Methodology

4.1 Introduction

This chapter is concerned with the approach to this research. It is divided into two main parts – one focusing upon the philosophical paradigm and the other, methodology and design. It presents an overview of the research methodology as well as the data gathering instruments employed in the study and their advantages and disadvantages. It provides a general overview of the stages of the study and discusses the sampling procedure and the data analysis process employed at each stage. Finally, there is a discussion of the evaluation of the research.

4.2 Philosophical Paradigm

All research is based on some underlying assumptions about what constitutes valid research and which research methods are appropriate (Myers, 1997). The conduct of IS research involves three possible philosophical stances based on the underlying research epistemology: positivist, interpretive, and critical paradigm (Oates, 2005; Orlikowski and Baroudi, 1991). It is worth noting the following:

4.2.1 Positivist Paradigm

Positivist paradigm focuses on objectivity, measurement and repeatability. It is premised on the existence of a priori fixed relationships within phenomena which are typically investigated with structured instrumentation (Orlikowski and Baroudi, 1991). It is noted that much of IS research reflects positivistic orientation (Orlikowski and Baroudi, 1991). Assumptions and hypotheses are developed and can be "verified" or "falsified". This enables replication of the study to different subjects, and the drawing of inferences and comparison.

Positivism is fundamentally concerned with the view that true knowledge is scientific, in the sense of describing the coexistence and succession of observable phenomena (Bullock et al., 1988). It underlies what is called "the scientific method", the approach to research in the natural sciences, while it is not always suited to studying the social world, especially in IS research (Oates, 2005). The characteristics of the positivist paradigm are the following (Oates, 2005):

- **The world exists independently of humans:** There is a physical and social world that exists "out there", not just in minds, to be studied, captured and measured (e.g. the law of gravity).

- **Measurement and modelling:** The researcher discovers this world by making observations and measurements and producing models (hypotheses, theories) of how it works.

- **Objectivity:** The researcher is neutral and objective, an impartial observer. Facts about the world can be discovered independently of the researcher's personal values and beliefs.

- **Hypothesis testing:** Research is based on the empirical testing of theories and hypotheses, leading to confirmation or refutation of them.

- **Quantitative data analysis:** There is often a strong preference for mathematical modelling and proofs, and statistical analysis. The use of mathematics provides a logical, objective means of analysing observations and results.

- **Universal laws:** Research looks for generalisations that can be shown to be true regardless of the researcher and the occasion.

4.2.2 Interpretive Paradigm

As the positivist paradigm was developed for studying the natural world and is less suited to studying the social world, researchers have developed an alternative research paradigm called the interpretive paradigm. The interpretive approach assumes that researchers understand and interpret from their own frame of reference as they interact with the world around them (Orlikowski and Baroudi, 1991). Opposite to the positivist approach, the reality is socially constructed rather than objectively determined.

Interpretive studies do not prove or disprove a hypothesis or theory, but try to identify, explore, and explain how all the factors in a particular social setting are related and interdependent. They also look at how the people perceive their world (individually or in groups) and try to understand phenomena through the meanings and values that the people assign to them. In IS research, the aim is to produce a rich understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context (Walsham, 1993). It tends to create an organised discovery of how human agents make sense of their perceived worlds, and how those perceptions change over time and differ from one person or group to another (Checkland and Holwell, 1998). The characteristics of the interpretive paradigm are the following (Oates, 2005):

- **Multiple subjective realities:** There is no single version of the truth. What researchers take to be real or knowledge is a construction of their minds, either individually or in a group. Different groups or cultures perceive the world differently.

- **Dynamic, socially constructed meaning:** Whatever reality is, for an individual or a group, it can only be accessed and transmitted to others through yet more social constructions such as language and shared meanings and understanding. These differ across groups and over time.

- **Researcher reflexivity:** Researchers are not neutral. Their own assumptions, beliefs, values and actions will inevitably shape the research process and affect the situation.

- **Study of people in their natural social settings:** Research is aimed at understanding people in their world, not in the artificial world of a laboratory as in most experiments.

- **Qualitative data analysis:** There is often a strong preference for generating and analysing qualitative data. However, some researchers can also use quantitative data collection like surveys in an interpretive way.

- **Multiple interpretations:** Researchers expect that they will not arrive at one fixed explanation of what occurs in their study. Instead they will offer more than one explanation, and discuss which, if any, seems the stronger because there is more evidence for it.

4.2.3 Critical Paradigm

The critical approach focuses on identifying and challenging assumptions behind ordinary ways of perceiving, conceiving, and acting, recognising the influence of history, culture, and social position on beliefs and actions, imaging and exploring extraordinary alternatives, and being appropriately sceptical about any knowledge or solution that claims to be the only truth or alternative (Alvesson and Deetz, 2000). Interpretation and understanding are not enough, thus critical researchers seek to identify power relation conflicts and contradictions, and empowering people to eliminate them as sources of alienation and domination (Oates, 2005). As opposed to interpretivists, critical researchers tend to dominate their experiences and ways of authority and analyse the patterns of power and control that regulate and legitimise particular ways of seeing their world (Oates, 2005).

4.3 Research Approach

It was found that over 20 years ago, 97% of IS research articles used a positivist approach (Orlikowski and Baroudi, 1991). However, since then there has been growing interest in a range of non-positivist (including interpretive) approaches (Mingers, 2001). Mingers (2001)

confirms that this has appeared in the editorial policy of some of the main IS journals, notably MISQ (Lee, 1999; Walsham, 1995a) and a literature survey (Nandhakumar and Jones, 1997) found that an interpretive methodology is increasingly broadly used.

This research aims to investigate people's perception of knowledge value creation in a particular Thai organisation. The researcher thus needs to gain an in-depth knowledge of KM developed in the particular location, and the point of view of human perception concerning the success factors to sustain organisational value creation. Thus, an interpretive approach is selected to take into account the research questions. This research needs the study of people in their natural social setting and the researcher reflexivity. The researcher worked for the unique IT research organisation in Thailand for over decade and took part in many projects. He has had many experiences in the selected organisation; indeed he already knew the organisational culture, people behaviour, and how to handle any problem and improve the process of knowledge management. It is unnecessary to prove or disprove a hypothesis, but the researcher uses his experiences to examine and investigate a phenomenon of KM in a Thai context. As a result, interpretive research is chosen instead of positivist and critical research.

Interpretive field studies that collect such data can be broadly classified as "interpretive case studies" (Walsham, 1995b). In this research, an interpretive case study aims to understand human thought and action in social and organisational contexts and to produce deep insights into IS phenomena (Klein and Myers, 1999). There is an increasing work in the IS literature based on this approach, interpretive case study (Orlikowski, 1991; Walsham and Sahay, 1999). However, there are significant differences of methodology and theory under the broad interpretive case studies. The remainder of this section describes the approach adopted in the research and the reasons for the choices.

This study uses a single case study. The number of cases is not so crucial and a single case is possible to indicate a general conceptual category or property in the study (Glaser and Strauss, 1967). A case study approach is well suited to IS research (Paré, 2001). It is widely used in qualitative information systems studies and can be applied in positivism and anti-positivism investigations (Myers, 1997; Orlikowski and Baroudi, 1991). The case study in the research aims to provide in-depth analysis of the selected organisation (BETA) for which

KM is perceived as essential. The selected research units involve a number of knowledge-intensive production departments, which comprise several high-profile research teams.

4.3.1 Methodology

Grounded theory approaches are becoming increasingly common in the IS research literature because the method is extremely useful in developing context-based, process-oriented descriptions and explanations of the phenomenon (Myers, 1997) (see an example of MISQ best paper of the year 1993, Orlikowski, 1993). The research methodology in this research was based on grounded theory (Glaser and Strauss, 1967), with an aim of generating a descriptive and explanatory theory of the organisational value creation in KM perspective. This approach has been effectively used in organisational KM research (Dingsøyr, 2002; Fagrell and Kristoffersen, 1999; Jafari et al., 2007; Kalling, 2003; McAdam, 2000; Stenmark, 2001).

The approach was adopted in this study for three primary reasons (Cadili and Whitley, 2005; Orlikowski, 1993). Firstly, grounded theory "is an inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data" (Martin and Turner, 1986). This approach seemed to be particularly fit with this study because theory of organisational knowledge value creation in Thailand has not been established. Although the implementation of KM has been done in a few developing countries (see examples in Chapters 1 and 3), these cases are less applicable to organisational KM in overall developing countries, and to the case of a Thai IT context in particular.

Secondly, grounded theory facilitates "the generation of theories of process, sequence and change pertaining to organisations, positions and social interaction" (Glaser and Strauss, 1967). Unlike traditional research, data are interrogated in the early stages of data collection for an understanding of the phenomenon (Glaser and Strauss, 1967; Strauss and Corbin, 1998). The research connected the grounded theory derived from the data with aspects of existing formal theory, in this case from social capital, technology adoption, and organisational culture.

Finally, there are few guidelines for analysing qualitative data (Miles and Huberman, 1994) and it has been argued that grounded theory approaches are particularly well suited to dealing with the type of qualitative data gathered from interpretive field studies (Martin and Turner, 1986; Oates, 2005). The research aims to develop a description and explanation of the phenomenon leading to theory building rather than an objective description. Therefore, it seemed that the study would benefit from the systematic set of guidelines offered by a grounded theory approach.

To answer the questions (in Chapter 1), the research describes the empirical findings derived from the grounded theory study of one specific organisation that implemented KM supported by the use of IT, and then a theoretical framework is developed, conceptualizing the findings. The grounded theory was useful here as it allows a focus on contextual and processual elements that are often omitted in IS studies that rely on variance models and cross-sectional data (Orlikowski, 1993). The believed outcome is a general conceptualisation of the organisational knowledge value creation covering technical, cultural, and organisational aspects in a Thai IT organisation that contributes to research knowledge and informs IS practices.

4.3.2 Research Design

A research design is a logical plan of getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions (answers) about the questions (Yin, 2003). It will form a structure that will guide the research through the research process.

The research is divided into two stages. The first stage aims to explore overall KM practices in Thailand prior to conducting a case study in a specific organisation. It took place in the UK and Thailand. This stage in UK will focus on the review of literature and the taxonomy of organisations in Thailand by using documentation whilst in Thailand a set of initial survey questionnaires was initially sent to a randomly selected equal number of organisations based on the taxonomy of organisation in Thailand, detailed in Chapter 5, using the stratified random sampling technique. The questionnaires were distributed by postal mail and by e-mail as the Internet survey can avoid low response rates and slow response times

(Oppenheim, 1992; Zhang, 2000). Then the survey's findings were analysed in order to select data collection instruments for the second stage's case study.

In the second stage (case study), the research context used for the study is BETA. BETA (a pseudonym) is a Thai IT research organisation which conducts a large amount of IT research. It was founded over 20 years ago and employs more than 600 people, most of whom work in R&D and are highly educated. Production departments (R&D departments), which comprise several high-level research teams in BETA, were therefore selected to be research units. The details of BETA will be presented in the next section.

As the second stage aims to investigate overall KM practices and to explore value creation capabilities in a Thai IT organisation, covering technical, cultural, and organisational aspects, it focuses on whether employees from BETA have reached the right level of knowledge sharing and creation maturity across their organisation, and what kind of perceived value is created out of existing knowledge practices across the organisation.

The research design is illustrated in Figure 4.1.

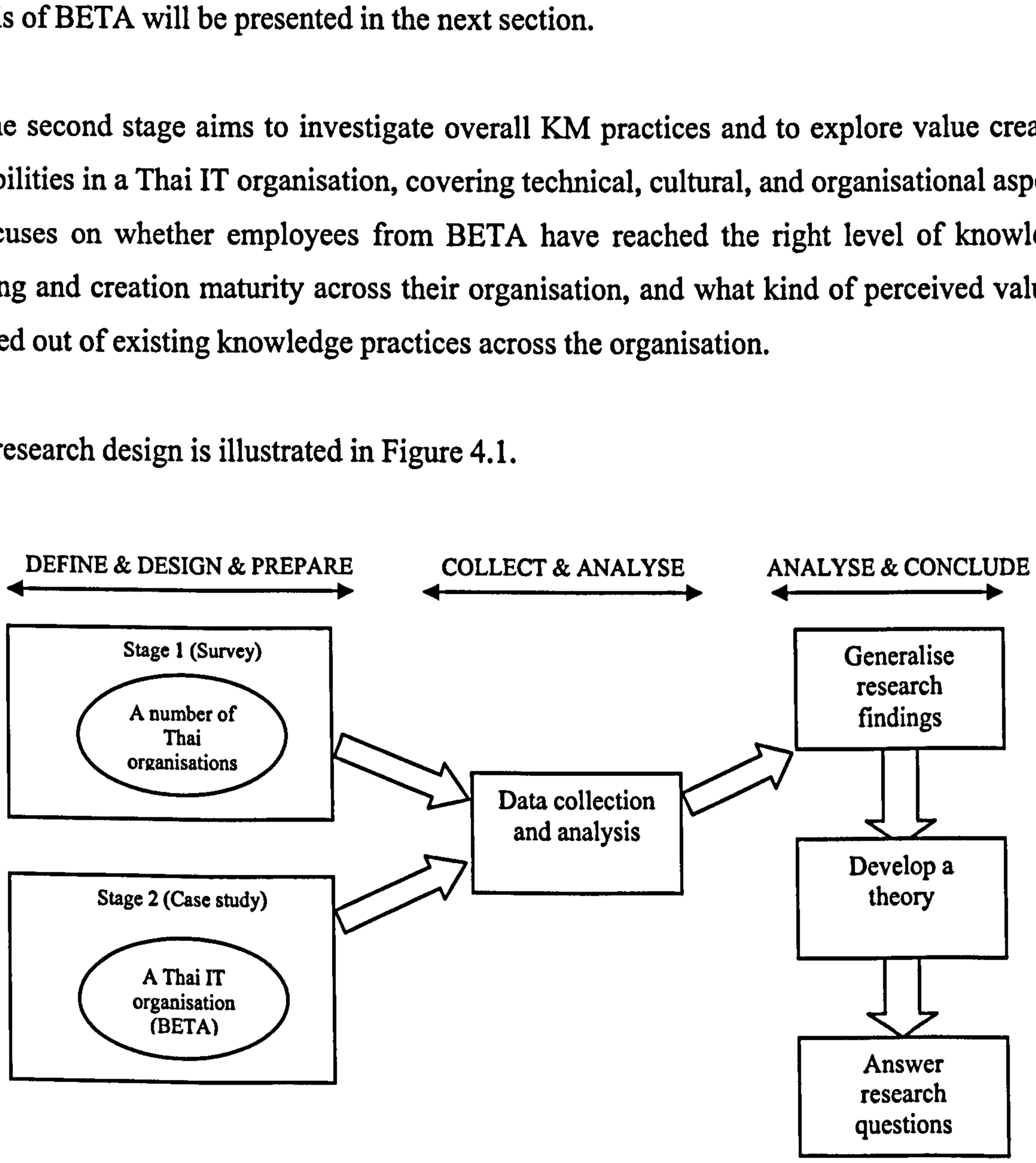

Figure 4.1: Research design

4.3.3 Site Selection

BETA was selected for the investigation in a case study because of the researcher's personal expertise and close involvement in IS and KM implementation in this organisation for over a decade. Indeed, the researcher has, over the years, acquired substantial personal knowledge of the organisation's culture and work environment. Therefore, the organisation welcomed the researcher to conduct this in-depth case study, and was willing to provide information openly and support for the researcher. The researcher's own experience in BETA as well as understanding of Thai culture has been greatly beneficial to this interpretive case study.

BETA was founded over 20 years ago. It employs more than 600 people, a majority of which is highly educated and works in R&D production departments. It has initially acted as a research supplier to Thai industry for over a decade. Following an increasing demand for R&D, BETA has transformed itself from a supply-driven to a demand-driven organisation. This demand-focused strategy has helped BETA address and meet the needs of Thai organisations more effectively. In the late nineties, the management initiated a large KM programme. In the first stage, a collaborative system was deployed and adopted to help staff collaborate more effectively while promoting knowledge-friendly practices. Also, physical and virtual social spaces have been provided for sharing knowledge. Later, the management deployed a knowledge repository system to encourage staff to codify tacit knowledge and experience into a re-usable form. A number of incentives have been introduced, including monetary rewards and recognition to motivate people to share and create knowledge.

4.3.4 Data Sources

While the interest and investment of KM study in developing countries has been rising, the generalisations of the studies have been exhibited ambiguously. A large survey of KM practices in Thailand was therefore conducted prior to starting the investigation in BETA as mentioned above. The survey aims to develop an overall understanding of KM practices in Thailand. The survey questionnaire was conducted over three months targeting Thai organisations drawn from various sectors of the economy based on the taxonomy of Thai organisation. The researcher has surveyed 28 organisations, selected using the stratified random sampling technique. The use of quantitative data (survey questionnaires) need not imply the acceptance of a positivist or objectivist approach and such data can be interpreted

in the social context of the phenomenon under investigation (Mingers, 2001). It is noted that positivist research and interpretive research are not indicated as quantitative research and qualitative research respectively (Myers, 1997; Oates, 2005). Although a survey questionnaire is usually used as an instrument for positivist research, the resulting survey data has been analysed with an interpretive stance that factors in the researcher's experiences, understandings, and beliefs about the phenomenon under investigation. As argued by Mingers (2001), the analysis of survey data helped select the research instruments for the case study (BETA).

In BETA (the second stage), data were collected through a variety of methods: questionnaire, semi-structured interview, observation, and documentation. These instruments are employed in sequence from conducting an analysed case study questionnaire then following up with in-depth interviews to better understand and interpret the results (Carlson and Davis, 1998; Markus, 1994; Ngwenyama and Lee, 1997). Although grounded theory is suitable for qualitative data like interview (Strauss and Corbin, 1998), Oates (2005) argues that grounded theory is probably fit with quantitative data (from questionnaire). The data triangulation technique "is particularly beneficial in theory generation as it provides multiple perspectives on an issue, supplies more information on emerging concepts, allows for cross-checking, and yields stronger substantiation of constructs" (Orlikowski, 1993).

The process of data collection, coding, and analysis is iterative (Glaser and Strauss, 1967). The early phases of the case study at BETA are more open-ended, and later phases are more structured. Eisenhardt (1989) notes that overlapping data analysis with data collection can allow researchers to take advantage of flexible data collection and make adjustments freely during the data collection process. Data collection focused on the topic of work environment and teamwork, KM, requirements for ICT support, and barriers. The researcher explored all four production departments perceived as "core" departments (regardless of administrative and support departments which are a minority of the organisation). The case study at BETA in the second stage was divided into two phases.

The first phase was conducted by using quantitative and open-ended questionnaire as it allows respondents to elaborate their own ideas and thoughts regarding KM issues. One hundred and thirty anonymous questionnaires were sent to employees of the production departments by email, in order to investigate overall KM practices within the organisation.

Then, the questionnaire data were analysed iteratively in an interpretive way by using pattern coding (Miles and Huberman, 1994) in order to help the researcher develop an in-depth interview guide and select interviewees at the second stage. Next, the researcher developed a formal, semi-structured, in-depth interview guide to collect more critical data. Twelve top managers and key persons of production departments were selected as interviewees because they have permission to provide critical (or sensitive) data and constructive comments. The interviewees were not people who completed the questionnaires before. Tape recording was used for 9 interviewees, while others felt more inhibited in their opinions when being recorded. During the entire study, documentation about the organisation was examined, and organisational culture and use of IT were observed, in the mode of "direct observation" (Yin, 2003).

The research uses a combination of methods embodying different paradigms (quantitative and qualitative) (Mingers, 2001; Ormerod, 1995). Hence, survey questionnaires (quantitative) and an interpretive case study research approach (qualitative) are adopted in the research. Mingers (2001) confirms that the use of quantitative data (survey questionnaires) need not imply the acceptance of a positivist or objectivist approach and such data can and should be interpreted in the social context.

As above, a case study approach is particularly well suited to IS research (Paré, 2001), and is widely used in qualitative information systems studies and can be applied in positivism and anti-positivism (Myers, 1997; Orlikowski and Baroudi, 1991). In addition, the strength of the case study is to capture 'reality' in greater detail and to analyse more variables than is possible using any other approaches (Galliers, 1992). The different research methods are then linked together in a systematic way by using frameworks of "multi-method" research (Mingers, 2001). The research situation is conceptualised in terms of a research-content system (RCS) (Checkland, 1981) focusing on the particular site, which could be one organisation (or more). It will generally be a complex interaction of people, social practices, ideas, knowledge and technology.

To combine the methodologies, Mingers' (2001) frameworks show that it is necessary that a research study be concerned with a combination of aspects of a research situation that needs to be addressed. The survey method is used to collect data about a research situation, and then such data is analysed to understand the structures that underlie and generate case study

instruments (questionnaire, interviews, observation, and documentation) (Mingers, 2001). The case study aims to provide in-depth analysis of a selected organisation (BETA) for which knowledge management is perceived as essential. The research methods are employed in sequence with results from conducting a statistically analysed survey questionnaire then following up with in-depth interviews, and observation to better understand the results (Carlson and Davis, 1998; Markus, 1994; Ngwenyama and Lee, 1997). There are two main reasons for supplementing quantitative survey data with qualitative case study: (a) to develop contextual richness that is valuable in model building, and (b) to improve internal validity and interpretation of quantitative findings through triangulation (Gable, 1994).

IS research is much more than simply the development of computer-based business systems, as it also concerns itself with human communication that encompasses the diversity of research traditions (Mingers, 2001). Therefore, IS research is put in a position similar to other management areas such as organisational studies, also characterised by a plurality of research methods, called "multi-method research" (Mingers, 2001). There are several advantages to multi-method work including (a) triangulation—seeking to validate data and results by combining a wide range of multiple sources, (b) creativity—discovering fresh or paradoxical factors that stimulate further work, and (c) expansion—widening the scope of the study to take in wider aspects of the situation (Tashakkori and Teddlie, 1998). Because of this, the research involves gathering data from various sources of qualitative and quantitative evidence (Kaplan and Duchon, 1988; Yin, 2003). The instruments used are summarised in Table 4.1.

Table 4.1: Instruments used for the data collection procedures

Instrument	Purpose	Respondent profile
1. Survey questionnaires	• Capture snapshots of practices, situations, and views at a particular point in time.	• Employees of a number of Thai organisations. • Employees of a selected production department at BETA.
2. Interview	• Focus directly on case study topic • Provide perceived causal inferences	• Heads of production departments, an IT department, and KM department at BETA.
3. Direct observation	• Cover events in real time and cover context of event.	N/A
4. Documentation	• Corroborate and augment evidence from other sources.	N/A

4.3.5 Data Analysis

Data analysis for the case study at BETA took place after each phase of the data collection. During the first phase (questionnaire), the iterative approach of data collection, coding and analysis tended to be open to various interpretations and more generative than the latter phase (interview, observation, and documentation), which was more focused on developing the evolving categories, properties and relations. This concept was guided by grounded theory (Strauss and Corbin, 1998), initially to narrow the area of study and develop a more focused research question, and later with the aim of adding to a relevant body of theory from the findings of the case study. This approach has been effectively used in organisational research (Cadili and Whitley, 2005; Orlikowski, 1993; Pettigrew, 1990).

This analysis used iterative pattern coding (Miles and Huberman, 1994), aiming to assign units of meaning to the descriptive or inferential information compiled from qualitative data and to summarise segments of data. Data units identified as belonging to emerging data patterns are then aggregated into thematic groups. Each group is given an initial code that describes it. Initial codes are called "pattern codes". These codes are refined through an iterative reading and analysis process. After coding, a display of conclusions from a case study was created to know clearly and to explain what is going on, why and how things occur, and to distinct indicators or components. A checklist matrix was chosen to analyse the data on a major variable since the components are not necessarily ordered. The researcher created variables as a key factor extracted from the sentences remarked as a pattern code, and then compared weakness, strength, and needs on the variables by looking across a row.

Redefining the concepts derived from the data from multiple sources by re-sorting and re-analysing them to take account of the richer concepts and more complex relations constitutes the framework. This iterative process only finishes when it becomes clear that further data no longer triggers new modifications to the data categories and emerging theory, that is, the research has reached "theoretical saturation" (Strauss and Corbin, 1998). This ability to incorporate unique insights during the study is one of the benefits of grounded theory. Eisenhardt (1989) perceives it as "controlled opportunism", where researchers can "take advantage of the uniqueness of a specific case and the emergence of new themes to improve resultant theory" (Eisenhardt, 1989).

Problems of construct validity are addressed by the use of the aforementioned variety of sources of information. The development of converging lines of inquiry in this manner is known as "triangulation", and is generally considered as a process of using multiple perceptions to clarify meaning and verifying the validity of an interpretation (Stake, 2000). Data triangulation (Figure 4.2) is chosen to analyse data collected from multiple sources, and corroborate qualitative with quantitative results (Yin, 2003).

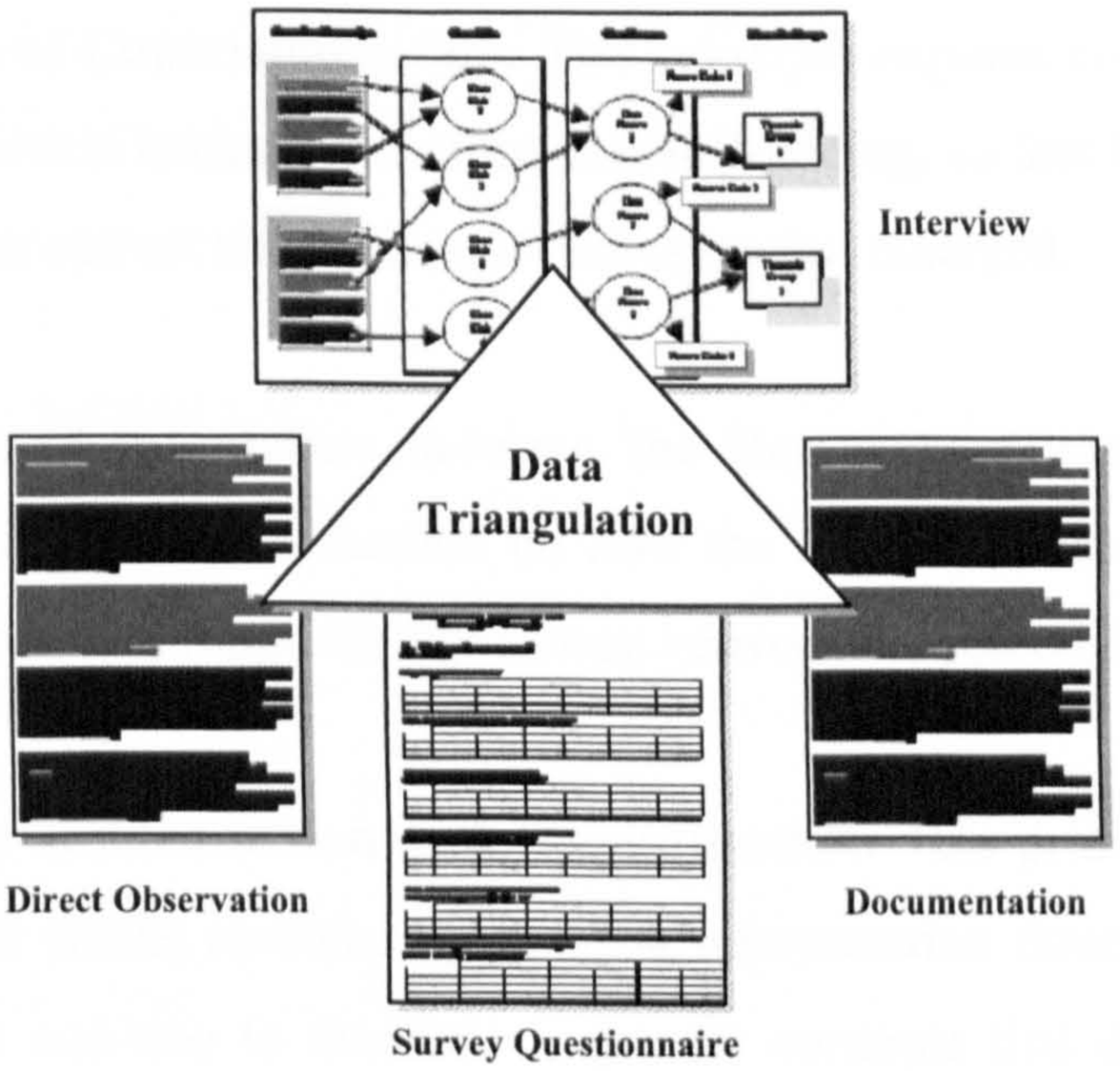

Figure 4.2: Data triangulation from the multiple sources

4.4 Evaluation of the research

There has been some interest in recent years in the interpretive IS research community on appropriate ways to justify the methodological approach adopted in a particular study (Walsham, 2006). This section introduces the principles used to guide the conduct, and perform the evaluation of the study. There have been at least two sets of criteria by Golden-Biddle and Locke (1993) and Klein and Myers (1999), adopted and mentioned in IS literature (Walsham, 2006; Walsham and Sahay, 1999). However, the latter is rather more comprehensive (Walsham, 2006). Therefore, the set of principles for conducting and evaluating interpretive research offered by Klein and Myers (1999) are adopted in the study. The following principles (Klein and Myers, 1999) are described here and then used to evaluate the study in the concluding chapter:

- **The Fundamental Principle of the Hermeneutic Circle:** This principle is foundational to all interpretive work of a hermeneutic nature and is in effect a meta-principle upon which the following ones expand. The idea of the hermeneutic circle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form.

- **The Principle of Contextualisation:** This principle requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged.

- **The Principle of Interaction between the Researchers and the Subjects:** This principle requires critical reflection on how the research materials (or "data") were socially constructed through the interaction between the researchers and participants.

- **The Principle of Abstraction and Generalisation:** This principle requires relating the idiographic details revealed by the data interpretation through the application of principles one and two to theoretical, general concepts that describe the nature of human understanding and social action.

- **The Principle of Dialogical Reasoning:** This principle requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings ("the story which the data tell") with subsequent cycles of revision.

- **The Principle of Multiple Interpretations:** This principle requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study.

- **The Principle of Suspicion:** This principle requires sensitivity to possible "biases" and systematic "distortions" in the narratives collected from the participants.

4.5 Summary and Conclusion

This chapter presents research designs and methodology for this thesis. This study was mainly divided into two stages: survey of KM practices in Thailand and case study in a selected organisation, BETA. The purpose of dividing the study into two stages is to provide a large picture of the subject under investigation prior to producing rich insights into the phenomena. Despite the fact that a large number of IS studies have adopted the positivist stance for over decade, this chapter notes that non-positivist stance like interpretive stance is gaining ground in mainstream IS research.

An interpretive case study was the main research methodology selected, as it aims to understand human thought and action in social and organisational contexts and is appropriate for conducting research in the information systems domain. The research methodology in this research was based on grounded theory in order to generate a descriptive and explanatory theory of the organisational value creation in KM perspective. In order that the insights and theory were allowed to emerge, the methodology itself was emergent and has been characterised as a form of bricolage. This has involved multiple data collection techniques and data triangulation is chosen to analyse such data from multiple sources, and corroborate qualitative with quantitative results

CHAPTER 5

A Survey of Knowledge Management Practices in Thailand

5.1 Introduction

The objective of this chapter is to present data of a survey of KM practices in Thailand, and in particular to explore the knowledge sharing maturity and capability of Thai organisations and their readiness to embrace a knowledge creation culture (the first stage). The chapter also aims to compare the differences of the basis of KM practices between the Western (from literature) and Thai organisations. The gap between the two phenomena results in the needs for conducting further KM research within a Thai setting to provide an insight into KM practices in Thailand (the second stage). The survey focuses on a number of organisations drawn from an established taxonomy of organisations in Thailand using the stratified random sampling technique. The chapter begins with an introduction to the survey in Thailand including research methodology, site selection, and random sampling technique. It then is followed by the results of the survey. The results are then discussed and the comparison of KM practices between the Western and Thai organisations is presented at the end of this section. This chapter provides the basis for the second stage of the empirical study (case study), presented in the next chapter.

5.2 An Overview of the Survey

In order to address the research objectives, an interpretive stance (Orlikowski and Baroudi, 1991) is adopted. A survey questionnaire was developed and adapted documentation gathered from Thai governmental agencies to support the survey. The questionnaire was divided into six parts: information technology, teamwork and communication, knowledge management culture, barriers/problems, expected organisational changes, and anticipated impact. The survey involves both open-ended questions and scaled-response items. The stage one questionnaire may be found in Appendix A. A set of questionnaires was distributed to a randomly selected equal number of organisations based on the taxonomy of organisation in Thailand, including (a) public sector: ministry and department, public enterprise, and independent public agency (http://www.thaigov.go.th), and (b) private sector: international company and local company, using the stratified random sampling technique (Figure 5.1).

The survey questionnaire was sent to both IT and non-IT departments by postal mail and e-mail, as Internet surveys can avoid low response rates and slow response times (Oppenheim, 1992; Zhang, 2000).

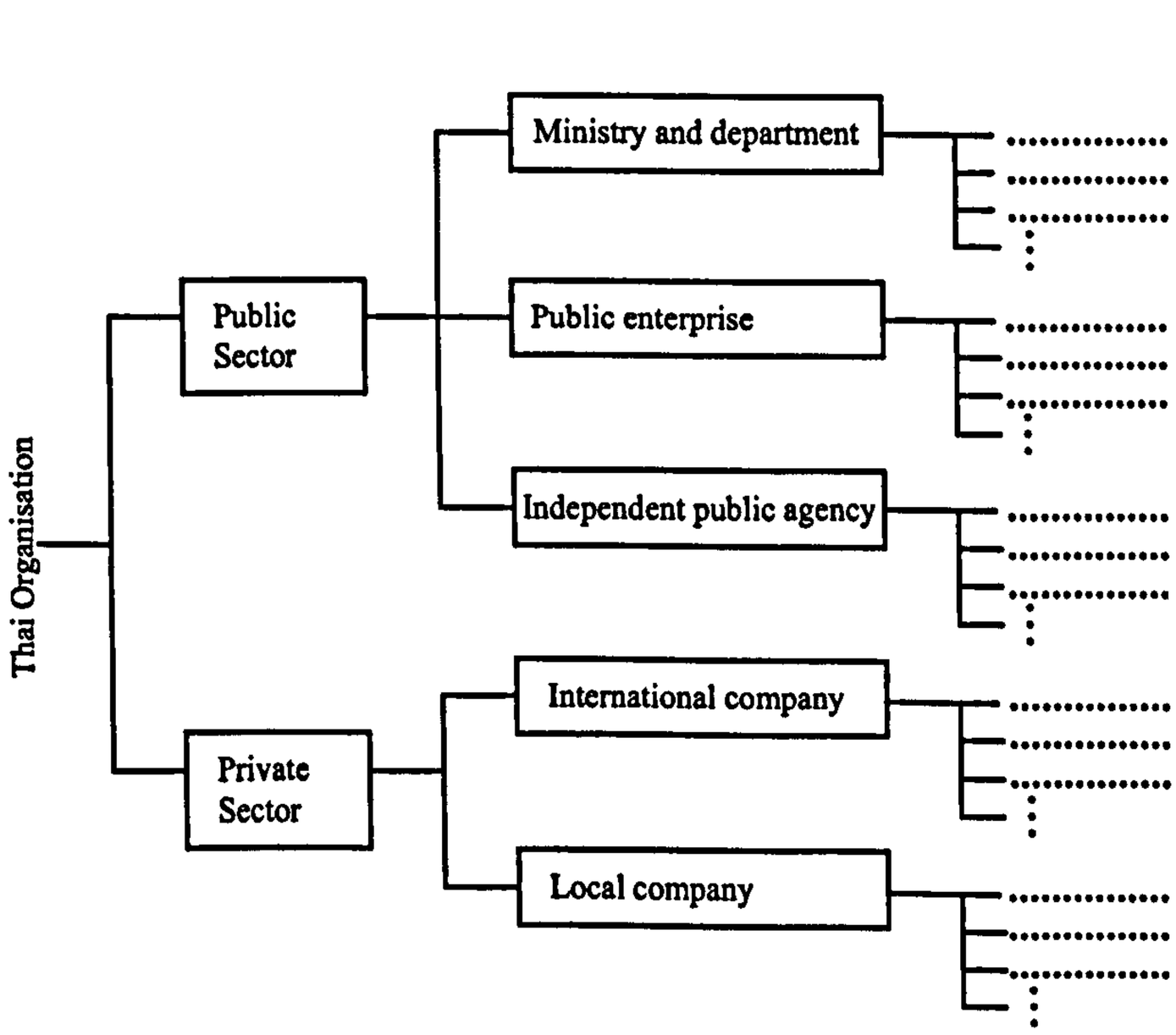

Figure 5.1: The taxonomy of organisations in Thailand

5.3 Results

Fifty six questionnaires were sent to 28 organisations (two per organisation). In total, 39 questionnaires were returned and analysed, representing a response rate of 70%. Over 60% of the respondents were technologists who worked in IT departments and have used computers for more than 10 years, and the rest of the respondents worked in Human Resource and other non-IT departments. The results are explained below.

5.3.1 Information Technology

The results show that more than 90% of the respondents use computers on a regular basis to support their business processes. 80% of the respondents exhibit good levels of confidence in their ability to use computers. This can be explained by the fact that a large majority (almost 90%) of the respondents indicated that computer and software training is widely available in their organisation, and have identified training as an essential aspect of their career path. Although most organisations use Internet and Intranet for communication and collaboration purposes, only 30% of the employees are exposed to these technologies. 70% of the respondents use groupware to support collaboration for intra-organisational purposes. The key groupware functionality used on a regular basis includes: discussion/forum, workflow, role access control, and full text search. Most respondents have expressed a preference in migrating to web-based groupware as this gives them the ability to access information and knowledge from outside the remit of their organisation.

5.3.2 Teamwork and Communications

Telephone and e-mail methods are used to communicate within and across teams. Over 50% of the respondents have expressed a preference for traditional face-to-face communication, such as scheduled meetings, as opposed to other means, including voice mail, notice board, and instant messaging. In fact, a majority of respondents mentioned face-to-face meetings as essential in order to develop trust amongst employees.

5.3.3 Current Knowledge Management Culture

More than 50% of the respondents have identified and acknowledged knowledge sharing practices and processes in their organisation, in particular local companies and international

companies. Less than half of the respondents indicated that supporting manuals detailing knowledge sharing procedures are available in their organisation. However, only 12% of the respondents indicated that their organisation provides knowledge sharing related training courses. Although less than 50% of the respondents share knowledge regularly using formal and informal methods, about 90% of the respondents acknowledged the importance of knowledge sharing and exhibit a strong awareness of benefits brought by this practice. 40% of the respondents have been exposed to major changes related to the introduction of knowledge sharing policies in their organisation over the last two years. They have in their majority welcomed the introduced changes. Hence, an interesting proportion (38%) of the respondents exhibits a positive attitude to change. More than 80% of the respondents feel happy with sharing knowledge internally and externally, but a small minority have expressed concerns about exposing corporate and personal knowledge to people outside the organisation, and have argued about the importance of intellectual property rights and the safeguard of the corporate intellectual capital. The following reasons that militate against knowledge sharing have been given: (a) IPR and confidentiality concerns, (b) reliability and validity of shared knowledge, (c) lack of reward system to motivate knowledge sharing. In relation to the organisational structure, a large number of public sectors have been identified as 'bureaucratic' and 'hierarchical', while international and local companies tend to exhibit a 'participatory' and 'innovative' culture supportive to employees.

More than 70% of the respondents share experience by face-to-face interaction and attend formal meetings. Respondents (55%) prefer to exchange knowledge face-to-face in office and public spaces (e.g. staff cafeteria). In relation to the use of reward systems, some organisations provide financial rewards, while others use recognition, and in particular promotion. The latter is highly valued by a majority of respondents.

Finally, 56.4% of the respondents, particularly in international and local companies, independent public agencies, and public enterprises, have clearly indicated that their organisation succeeded in achieving and implementing a knowledge sharing culture, while 41%, mainly from the public sector, have reported either a lack or failure in establishing a knowledge sharing culture.

5.3.4 Expected Changes of the Organisation

Formal communication such as training, meeting, documentation, and computerised communication represent some of the important needs expressed by respondents. Face-to-face interaction and learning by doing have also been identified as important. The majority of respondents expect development/empowerment, recognition, and monetary reward systems to improve their level of motivation to create knowledge. Conversely, they disagreed in their majority with the introduction of a penalty system.

The introduction of the Internet and Intranet has been welcomed and appreciated by most respondents. Conversely, a majority of respondents have expressed concerns about the introduction of Extranets and mobile (wireless) technology due to security, confidentiality, and IPR issues. The features of discussion/forum, review system, workflow, save search results, auto finding experts, and portal are expected to be included in knowledge management environments.

Software scalability and reliability have been identified as important issues. Same importance is given to accessing reliable and up-to-date documents across the organisation.

5.3.5 Anticipated Impact

The results present the impacts of knowledge management in three aspects: human aspects, performance/quality aspect, and knowledge creating and sharing aspect. New forms of working and communication are mostly expected to improve social cohesion, while increased reuse of best practice and existing knowledge is expected to improve performance and process effectiveness. A majority of respondents have highlighted the need for shared best practice databases to foster and promote knowledge sharing.

5.3.6 Barriers/Problems

The gathered data helped identify the barriers preventing employees to share / create knowledge in their organisation. IT strategy, Intellectual Property Rights, reluctance to contribute, lack of IT support, non-supportive environment / culture, and hardware/software prohibitive cost, are the major problems faced by most respondents. They have raised negative issues in relation to the bureaucratic and hierarchical culture in their organisation.

5.4 Discussion

The questionnaire results indicate an overall good awareness of the respondents about the role of information technology in facilitating knowledge management, as is the case in western organisations (Numprasertchai and Kanchanasanpetch, 2005; Orlikowski and Robey, 1991; Rezgui et al., 2005). Alavi and Leidner (2001) suggest that advanced information technology (e.g. the Internet, Intranet, Extranet, groupware systems) could be used to systematise, enhance, and expedite large-scale intra- and inter-firm knowledge management. While the introduction of Internet-based technologies has been welcomed, concerns have been raised about possible knowledge protection problems related to information security and confidentiality when deploying Extranet and mobile technologies. Trust and confidence in the technology therefore, can only be achieved when suitable and dependable 'working' infrastructures have been implemented, tested, and validated in a real-world context. This can also be overcome through adequate training. Furthermore, gathered data suggest that adapted training can foster cohesiveness, trust, teamwork, individual satisfaction, and higher perceived decision quality, as highlighted in the literature (Kaiser et al., 2000; Tan et al., 2000; Van Ryssen and Hayes Godar, 2000; Warkentin and Beranek, 1999).

Collaboration through groupware is overall highly valued, and the following functionality has been described as important to nurture knowledge sharing: discussion forums, document management systems, and role access control, as confirmed in related literature (Ellis et al., 1991; Poltrock and Grudin, 1995).

In terms of communication, formal and informal communication using face-to-face (including scheduled meetings) and virtual (synchronous / asynchronous) means (e.g. telephone and e-mail) are perceived as effective. Conversely, several authors (Whittaker et al., 1994) argue that informal communications (e.g. unscheduled meetings or any face-to-face interactions) are more effective than formal methods of office communications. In fact, early face-to-face meetings in team work tend to improve the team's project definition (Ramesh and Dennis, 2002), to foster socialisation, trust, and respect among team members (Maznevski and Chudoba, 2001; Suchan and Hayzak, 2001), and to enhance the effectiveness of subsequent electronic communications (Powell and Dent-Micallef, 1999).

Further to the ICT issues that have been mentioned, an important number of respondents expressed concerns about the bureaucratic and hierarchical culture in their organisation. It was suggested that 'participatory' type of culture, with a flat structure, open communication channels, and participation and involvement in decision-making, enhances sharing of information and facilitates team cohesion, which in turn promotes trust. This, as reported in (Kayworth and Leidner, 2000), contributes to improve employees' overall satisfaction and job effectiveness.

In terms of the use of reward systems to promote knowledge sharing, Thai employees tend to show a positive attitude to the introduction of monetary and non-monetary reward systems to motivate people to share and create knowledge. They also have expressed strong resistance to the introduction of any penalty system. This corroborates similar findings in western countries (Rus et al., 2002). Xerox recommended creating a "Hall of Fame" for people who contribute to solving real business problems and regularly share useful information. At Hewlett Packard, contributors, including readers and anyone who posted a submission, were rewarded with free airline miles. ExpertExchange.com used a point system to reward employees. Answerers received the points from askers and the askers fed back information that indicated whether the expert's answer was satisfying or not. Moreover, some organisations reward employees with bonuses (Simons, 1990). However, in several instances in western contexts, bonus award is identified as important while non-monetary reward is shown to be ineffective (Nonaka et al., 2000). Also, some recommend the application of both rewards and sanctions to overcome resistance (Pan and Scarbrough, 1999).

The gathered data suggests that enthusiasm for learning is important. Formal training and sharing experience, for example, are learning methods expected by Thai organisations. This is in line with a study showing that Thai students were taught to harvest tacit knowledge from learning by doing and learning from mistakes (Numprasertchai, 2005). Nonaka et al. (2000) also emphasised that 'learning by doing' can embody explicit knowledge into tacit knowledge through Internalisation in the SECI process. Therefore, it is not simple to transfer and create tacit knowledge unless people always learn and practice themselves.

Many respondents highlighted the need for a shared project knowledge base as a best practice and a new form of human working and communication. This, as noted in the literature (Crampton, 2001; Suchan and Hayzak, 2001), improves communication and cohesion

amongst the members of a team, and promotes shared language and mental models across the organisation. This is also in line with a study (Allen, 2003) reporting about the future of knowledge in Xerox. The latter have established the Eureka database for storing best practice knowledge. This is facilitated through human networks and communities.

The results also reveal that problems related to ineffective IT strategy, lack of management of IPR issues, reluctance to contribute, lack of IT support, non-supportive culture, and hardware/software prohibitive cost act as inhibitors to the development of effective knowledge management practices. This corroborates related findings from Thai researchers (Numprasertchai and Kanchanasanpetch, 2005) who have reported about the prohibitive cost of deploying a knowledge management system. Also, Numprasertchai (2005) explained that people recognised the advantages of knowledge sharing and creation. Nevertheless, they were not willing to take part in this activity because they felt that after knowledge was transferred to others, their influence and value would decrease in their organisation. This raises the issue of employees concern about losing "expert" status when sharing knowledge (Rus et al., 2002). Some western organisations encourage individual cultures rather than cooperative cultures. Moreover, employees fear that sharing negative lessons learned could cause more disruptions than advantages.

Numprasertchai (2005) suggests that it is the responsibility of an organisation to encourage people to share and create knowledge. An organisation, for instance, may set up a policy for knowledge sharing or develop an adapted reward system.

Western organisations and Thai organisations differ slightly in their perception of knowledge management as illustrated in Table 5.1.

Table 5.1 Differences in the basis of knowledge management practices

Issues	Western organisations	Thai organisations
Use of information technology	• Internet / Intranet / Extranet • Mobile technologies • Groupware	• Internet / Intranet • Small use of Extranet and Mobile (wireless)
Communication	• Electronic communication • Informal/unscheduled meeting	• Electronic communication • Formal/scheduled meeting
Problems	• Abundance of IT driving KM • Difficulty of codification of tacit knowledge • More exploration than exploitation • More demand than supply	• Lack of IT support • Lack of IT strategy • Concern about IPR • Financial scarcity
Reward system	• Money (most effective) • Recognition/praise • Development and empowerment	• Development and empowerment • Financial reward • Recognition/praise
Reasons why reluctant to share knowledge	• Concerns about losing "expert" status. • More individualism than cooperative work • Concerns about sharing negative lessons learned	• Concerns about IPR and confidentiality • Concerns about reliability of knowledge shared • Rewards not provided

5.5 Conclusions

The primary objective of this survey is to review current KM practices in Thailand prior to conducting a case study in a specific Thai organisation in the second stage of the whole research. The survey findings help select data collection instruments for the case study. The empirical results have been presented. The major findings of the survey can be summarised as follows:

- All Thai organisations use information technology as an instrument for achieving important objectives in their communication strategy. Employees use computers regularly at work, and training is provided to everyone in most organisations. While there is a growing awareness in the role of IT to nurture KM, only high-tech and international organisations (referring to Figure 5.1) exhibit real knowledge sharing practices.

- Groupware has been identified as a key technology to create a shared workplace that supports collaboration in a work group over space and time, and facilitate knowledge sharing. The basic features of groupware should include features supporting team

communication (e.g. discussion forums, real time interaction), a document management system, enabled through role-based access facilities. The latter feature points to the importance of IPR, information security and confidentiality to Thai employees.

- Most employees perceive the Internet as a unique opportunity to support knowledge. This emphasises the ubiquitous dimension of knowledge sharing while pointing also (previous point) to the need to safeguard corporate knowledge.

- E-mail and telephone are primarily used to communicate at work. However, traditional face-to-face methods of interaction such as scheduled meetings are also essential in sharing experiences and tacit knowledge.

- Most Thai organisations attempt to increase their employees' awareness of knowledge management and to motivate them to share, create, and use knowledge. They are eager to become part of knowledge networks.

- Employees expect rewards for sharing and creating knowledge. Monetary reward is the most highly expected. Some prefer recognition and praise awards. However, sanctions should be avoided by the fact that they seem to cause more disruptions than advantages.

- Reluctance and resistance to share knowledge represent the highest risk identified by most respondents. While the implementation of a knowledge sharing culture is desirable, the respondents have acknowledged the financial implications for facilitating this in terms of training, and the provision of adapted IT systems and solutions.

KM has major implications in the learning capability of an organisation and its ability to adapt to an ever changing and competitive environment. It is clear that organisational KM is a popular topic in Thailand. The research suggests that despite being a third country, Thai organisations have understood the strategic importance of KM and are willing in their majority to engage in the knowledge society. The differences of the basis of KM practices

between the Western and Thai organisations presented have confirmed the needs for a deep understanding of KM in Thailand, leading to conducting the second stage's case study. Moreover, the empirical results show that KM has been importantly influenced, and may be achieved when underpinned by IT. Thus, it is recommended that the second stage's case study be conducted in an IT organisation or hi-tech environment in Thailand (including facilities and people) where most people may exhibit KM awareness. The data collection guide (e.g. survey questionnaire question and interview guide) takes into account the major findings of the survey.

The findings and discussion in this chapter provides the basis for the second stage's case study. After the case study, critical factors to the implementation of any KM solution in Thai organisations will be finally discussed and formulated in the discussion chapter (Chapter 7).

The next chapter will present data from the second stage's field study of knowledge value creation at a Thai IT organisation – the interpretive case study at BETA.

CHAPTER 6

Knowledge Value Perception: an Interpretive Case Study at BETA

6.1 Introduction

In the previous chapter, the results of the Thailand survey were presented. The main results highlight the perception about the role and importance of KM in sustaining competitiveness within Thai organisations, and the other findings concern the various levels of awareness about KM that differ depending on the profile of the organisation. Hence, the criteria for selecting the case study are a hi-tech organisation which exhibits the right attributes to investigate the perceived value of KM. The aim of this chapter is to provide a background, research methodology, and results of the case study of a Thai hi-tech organisation, BETA (the name of the organisation has been disguised). The overall objective of this chapter is to describe the site and context upon which the data gathering was based. This chapter is organised into three main sections. The first section discusses the background of BETA and the KM initiative. The second section deals with the case study description including unit of analysis and data collection procedures. The last section reveals the results analysed by using Miles and Huberman's technique (Miles and Huberman, 1994) within the inductive, iterative process of grounded theory.

6.2 Background of BETA

BETA was founded over 20 years ago. It employs more than 600 people, the majority of whom are highly educated and work in R&D production departments. It has initially acted as a research supplier to Thai industry for over a decade. Following an increasing demand for R&D, BETA has transformed itself from a supply-driven to a demand-driven organisation. This demand-focused strategy has helped BETA address and meet the needs of Thai organisations more effectively. In the late nineties, the director initiated a large KM programme involving managers and senior employees mainly from R&D departments. Junior employees were not involved or consulted in the KM planning process. This program led to an establishment of a KM team having a responsibility for implementing KM and building KM awareness in the organisation. The goal of this programme has been set to sustain individual and business performance through knowledge sharing and creation supported by technology and staff development.

Before this, the organisation had an ad-hoc KM initiative prior to deploying their new KM programme as they used FTP servers to store knowledge. However, these ad-hoc practices caused several problems: (a) there was no centralised knowledge storage system as FTP servers were owned and managed by each department, (b) the system was used for file storage only, but did not support people collaboration, and (c) the system was not user-friendly. KM in the past was described as knowledge storage rather than knowledge sharing and creation, and employees and managers had very little awareness of KM. Hence, in the first stage of the KM initiative, a collaborative system was deployed and adopted to help staff collaborate more effectively while promoting knowledge-friendly practices. Also, physical and virtual social spaces have been provided for sharing knowledge. Later, the management deployed a knowledge repository system to encourage staff to codify tacit knowledge and experience into a re-usable form. A number of incentives have been introduced, including monetary rewards and recognition to motivate people to share and create knowledge.

6.3 Case Study Description

BETA, which conducts research in Information Technology, was selected for the investigation in a case study as the researcher believes that BETA has experience in KM implementation and development. Also, the site selection depends on easy access and the

researcher's own experience because of the personal expertise and close involvement in IS and KM implementation in BETA for over a decade. The researcher, acting as an observer in this case study, has had several roles relating to IS and KM such as Knowledge Management System (KMS) developer, system analyst, computer programmer, helpdesk staff, and research paper author. Therefore, the researcher has, over the years, acquired substantial personal knowledge of the organisation's culture and work environment. Therefore, the organisation welcomed the researcher to conduct this in-depth case study, and was willing to provide information openly and support for the researcher.

This research uses a single case study. The number of cases is not so crucial and a single case is possible to indicate a general conceptual category or property in the study (Glaser and Strauss, 1967). A case study approach is well suited to Information Systems research (Paré, 2001). It is widely used in qualitative information systems studies and can be applied in positivism and anti-positivism investigations (Myers, 1997; Orlikowski and Baroudi, 1991). The case study aims to provide in-depth analysis of the selected organisation (BETA) for which KM is perceived as essential. The selected research units involve a number of knowledge-intensive production departments, which comprise several high-profile research teams.

In BETA, data were collected through a variety of quantitative and qualitative methods: questionnaire, semi-structured interview, observation, and documentation. These instruments are employed in sequence from conducting an analysed case study questionnaire then following up with in-depth interviews to better understand and interpret the results (Carlson and Davis, 1998; Markus, 1994; Ngwenyama and Lee, 1997). The grounded theory is perceived as useful in this case study as it allows a focus on contextual and processual elements that are often omitted in IS studies that rely on variance models and cross-sectional data (Orlikowski, 1993). The believed outcome is a general conceptualisation of the organisational knowledge value creation covering technical, cultural, and organisational aspects in a Thai IT organisation that contributes to research knowledge and informs IS practices. Although, grounded theory is suitable for qualitative like interview (Strauss and Corbin, 1998), Oates (2005) argues that it is possibly fit with data from questionnaire. The data triangulation techniques "is particularly beneficial in theory generation as it provides multiple perspectives on an issue, supplies more information on emerging concepts, allows for cross-checking, and yields stronger substantiation of constructs" (Orlikowski, 1993).

Data collection and analysis took place in two main phases: during the first phase (questionnaire), the iterative approach of data collection, coding and analysis tended to be open to various interpretations and more generative than the latter phase (interview, observation, and documentation), which was more focused on developing the evolving categories, properties and relations. The process of data collection, coding, and analysis is iterative (Glaser and Strauss, 1967). The first phase is more open-ended, and later phase is more structured. Eisenhardt (1989) notes that overlapping data analysis with data collection can allow the researcher to take advantage of flexible data collection and make adjustments freely during the data collection process. Data collection focused on the topic of work environment and teamwork, KM, requirements for ICT support, and barriers. The researcher explored all four production departments perceived as "core" departments (regardless of administrative and support departments which are a minority of the organisation).

6.4 Phase 1: Overall Knowledge Management Practices

The first stage of the field study was conducted by using quantitative and qualitative open-ended questionnaire as it allows respondents to elaborate their own ideas and thoughts regarding KM issues. The questionnaire may be found in Appendix B. During this phase, overall organisational KM culture was observed, in the mode of "direct observation" (Yin, 2003). In the mean time, to investigate the knowledge value perception from employees, one hundred and thirty anonymous questionnaires were emailed to employees of four production departments (R&D departments) selected using the stratified random sampling technique because the population consisted of a number of subgroups or strata that differed in the characteristics being. Ninety-one questionnaires were sent randomly to selected people of all four production departments. Seventy-one completed questionnaires were returned and analysed, representing a response rate of 78.02%. The quantitative data were triangulated with the qualitative and the whole data were analysed qualitatively by using Miles and Huberman's pattern coding (Miles and Huberman, 1994). The data were analysed iteratively in order to help the researcher develop an in-depth interview guide and select interviewees at the second stage. The questionnaire is structured into four parts: work environment and teamwork, knowledge management, requirements for ICT support, and barriers.

As mentioned in Chapter 4 (Research Methodology), pattern coding technique (Miles and Huberman, 1994) will be used through iterative data analysis. Iterative pattern coding, aiming to assign units of meaning to the descriptive or inferential information compiled from the interview transcript and to summarise segments of data, has been used to analyse the data. Data units identified as belonging to emerging data patterns are then aggregated into thematic groups. Each group is given an initial code that describes it. Initial codes are called "pattern codes".

6.4.1 Results

The qualitative responses have been analysed to the questionnaire and used as a basis to identify the pattern codes. The initial pattern codes are refined through an iterative reading and analysis process and resulted into seven pattern codes: knowledge sharing, training, information technology, teamwork, motivation, technology adoption, and KM barriers. The pattern codes thus developed are shown in Table 6.1, and elaborated in the following sub-section.

Table 6.1: Pattern codes in phase 1

Thematic Group 1: Knowledge Management	
Data Pattern 1	Overall Knowledge Management
Data Pattern 2	Training
Data Pattern 3	Information Technology
Thematic Group 2: Organisation Culture	
Data Pattern 4	Teamwork
Data Pattern 5	Motivation
Thematic Group 3: KM Barriers	
Data Pattern 6	KM Barriers

6.4.1.1 Overall Knowledge Management

In terms of KM practices, over 90% of the respondents rely on knowledge to carry out their tasks and processes. As BETA is a leading research organisation, it has conducted a large number of projects on modern technology, especially electronics and computer technology. Therefore it is necessary for the researchers on these projects to require specific knowledge and consistent organisational processes to underpin their research. Also, it is observed that they place much reliance on state of the art knowledge to enhance the organisation as well as themselves. The goal of KM is perceived to sustain individual and business performance

through knowledge sharing and creation. This is in line with the fact that most Thai companies (10 of 19 respondent companies) have identified and acknowledged KM practices and processes.

The respondents were presented with several forms of knowledge, including personal knowledge (representing experience), project knowledge (representing technical report), corporate knowledge (representing research product, documentation, and organisational process), and industry knowledge (industry need, competition, and trade). A majority of respondents value these forms of knowledge as essential for their work. They perceive that acquiring personal and project knowledge help to develop their learning skills. Moreover, exchanging this knowledge (personal and project knowledge) with others within and across the organisation results in an increase of organisational productivity (corporate knowledge) and sustainability of competitive advantage (industry knowledge). This is in line with the following results reporting that 85% of the respondents share knowledge within a team, while a minority of the respondents share knowledge across teams. However, it is often observed that the respondents do not disseminate their knowledge to other projects or organisations, resulting in loss of benefit to the organisation. As the respondents indicate that they do not have close relationships with other teams, they experience difficulties in communicating with people who are not well known, in particular those who are in higher positions.

The majority of the respondents class the knowledge that they use as specific knowledge rather than general knowledge since most of them, who are highly educated, are working on a number of IT-related projects which require specific skills. For example, when an employee attends a training course in a specific technology related to a project, he/she needs to share the knowledge acquired from the training course with other project members in several forms of knowledge such as technical report, informal forum, and internal formal training, as it is difficult for them to acquire this specific knowledge from other sources by themselves. 80% of the respondents perceive a difference between data, information, and knowledge, and they also agree that "data" is interpreted to provide "information" from which "knowledge" emerges. More than 60% of the respondents describe "knowledge" as fact of knowing and understanding through experience and study, and an object to be stored and manipulated. This is because (a) they express a preference for face-to-face interaction for sharing knowledge, leading to strong social relationship and (b) they are aware that they are motivated to store their knowledge items in a KMS because of the policy to control

knowledge. Therefore, they highly value both explicit knowledge (stored knowledge items) and tacit knowledge (experience). On the other hand, less than half of the respondents identify "knowledge" as a process of simultaneously knowing and acting, a condition of access to information, and an organisational capability to use information. It is because the organisation may not have a consistent KM process and employees probably describe KM process as only how to store explicit knowledge in a system. It is perceived that in the beginning stage of KM managers do not attempt to make the KM process more complicated, resulting in confusion and resistance. Employees are required to produce knowledge items or documents related to the ongoing or completed research and their own experience, such as technical reports, papers, patents, and prototypes, and to share this knowledge through physical context (e.g. meeting, informal forum, cafeteria, etc.) and virtual space (e.g. a knowledge repository system, a KM portal, etc.). This is the mechanism used to acquire and store knowledge and also to claim rewards. However, some employees seem to resist this mechanism as they prefer to keep their knowledge on their own personal computer. The reward system sometimes tends to be not valued as the rewards provided are insufficient to satisfy them.

70% of the respondents recognise that the organisation tends to exhibit a knowledge sharing culture supportive to employees. As mentioned above, they are aware that the management seems very enthusiastic about the KM programme to build employees' awareness including KMS development, KM policy, KM forum, and reward system. Hence, an interesting proportion (more than 75%) of the respondents exhibits a positive attitude to knowledge sharing in their organisation. This concurs with the results reporting that more than half of the respondents are willing to make their new knowledge available to others in a shared database, and the majority of the respondents express that the idea of internally shared knowledge is very supportive. Some respondents have expressed strong concerns about sharing their knowledge, arguing about confidentiality implications and Intellectual Property Rights (IPR) issues as they fear that their knowledge will be stolen or given away to others. Some have perceived that shared knowledge is owned by individuals, and should not be given away to others. Consequently, this leads to another concern about the fear of losing one's expert status after sharing knowledge. That is, they are worry that their reputation of creating the original knowledge will be shared with one who recreates this knowledge. Other issues of concern by the minority of the respondents include reliability/validity of knowledge shared, and rewards provided.

Over 75% of the respondents express a preference in knowledge sharing in an informal context. This can be explained by the fact that a large majority of the respondents prefer sharing knowledge in a traditional context, through face-to-face interaction, to sharing in a virtual context supported by technology because of the need for facial emotional expression that results in strong relationship and trust development. Furthermore, it is observed that virtual interaction often causes misunderstanding and confusion because this type of communication cannot deliver everything people need such as emotion and trust, which form the basis of knowledge sharing among individuals. This is perceived by the majority of the respondents to constitute a generalisable knowledge-sharing pattern. The majority of the respondents (55%), especially junior employees who are very new to KM, perceive that knowledge sharing instructions or guidelines in the organisation are not clear enough. This is because KM in BETA is at an early stage of development, and KM process and policy are revised very frequently. Furthermore, the formal instructions and guidelines in the form of documentation are never produced and provided to employees. Some employees, therefore, are sometimes confused, and do not even know why they have to store knowledge in the system.

There have been major knowledge sharing changes within the organisation recently. 70% of the respondents believe that these changes have been caused by policy changes and executives' directives. After KM gained an important role in Thai industries, the executive recognised the need for KM to be adopted in the organisation. Therefore, it was necessary to initiate KM and build employees' awareness. KM was then advertised to employees through several channels such as KM portal, meeting, and manager's directive. Employees appear to have undergone a change in attitude; they now have a responsibility to share knowledge with others and to store knowledge items in the system. The majority have welcomed the introduced changes, though there was some resistance to the change by a small minority of the respondents.

Knowledge sharing methods such as storing knowledge in the intranet, using a dedicated software application (e.g. a shared database), and distributing knowledge through paper communication (e.g. newsletters) represent some of the important needs expressed by the respondents. These simple knowledge sharing methods are expressed as more important needs than other methods involving extensive or advanced use of technology. This represents

a technology adoption problem including (a) a lack of skill in using advanced technology, (b) resistance to using the technology provided, and (c) refusal to learn the new technology. These equate to the sequence difficulties in relation to change management. The result is that the organisation cannot change people's attitude towards technology adoption, and cannot make an improvement via KM that is underpinned by advanced technology.

In terms of knowledge creation, 70% of the respondents show that their job involves creating new knowledge. Most respondents perceive that the ability to access knowledge both within and outside the organisation, and interaction with both internal and external colleagues, can help them to enhance knowledge creation. In a virtual context, web access offers immense possibilities for sharing and creating external knowledge, whilst in a physical context they express a preference to participation with people from different organisations in training or seminars to exchange a broad range of knowledge. Similar to knowledge sharing, a large majority of the respondents prefer creating knowledge in a traditional context – through face-to-face interaction –to a virtual context supported by technology. They perceive that strong relationships and social capital, constituted from face-to-face interaction, can break barriers them and convince them to create and exchange knowledge. The traditional approach is seen as an effective learning method as two-way communication allows people to interact with one another in the same context, whereas virtual learning is a one way communication lacking human interaction. This is perceived by the majority of the respondents to constitute a generalisable knowledge-creation pattern.

Finally, a large majority of respondents expect improvements in human capital management, overall knowledge sharing policies, and communication and relationships, whilst IT improvements seem not to be their major concerns. Overall, more than 55% of the respondents have clearly indicated that their organisation succeeded in achieving and implementing a knowledge sharing culture, while 32% have reported either a lack or failure in establishing a knowledge sharing culture. Those who acknowledge the success of the KM initiative agree with KM policy, participate in KM activities, and especially are satisfied with the rewards or positive feedback they receive. Those who disagree include senior employees who have high expectations for KM success and are not satisfied with the current outcomes of the KM initiative. It is perceived that those who have no response to this question do not believe that the KM is a success, but they are reluctant to indicate the failure. Based on the

researcher' experience, it is perceived that most employees believe that the KM initiative was not succeeding at the time of the study because of several KM barriers. This will be addressed below. It is strongly believed that the contradictory results, showing a positive opinion, are expressed by the most junior employees who feel embarrassed at pointing out the organisation's failures. Moreover, about 50% of the respondents feel that their line manager and the managers within their organisation adequately promote knowledge sharing, yet an equal number disagree. These results indicate that the respondents believe that their organisation has demonstrated its readiness to initiate KM practices and build KM awareness, but equally they recognise the need for further improvements, as mentioned above.

6.4.1.2 Training

Formal and on-the-job training, and learning from documentation are the preferred methods to promote knowledge sharing. Formal training is perceived as the most effective method for the organisation as it is observed that people can absorb information effectively, in the appropriate context, and it encourages face-to-face interaction among colleagues. The majority of the respondents have recently attended training courses, especially ICT-related training in groupware, computer use, and specific software. Furthermore, such training methods are perceived to foster cohesiveness, trust, teamwork, individual satisfaction, and higher perceived decision quality. This is because it allows discussion and furthers social relationship between the trainees, leading to the creation of a broad range of information and knowledge to be used for future work. Nevertheless, a large majority (71%) of the respondents are not offered a clear training programme from the organisation. Training courses are not provided to everyone and the training timetable is not planned in advance. Moreover, the organisation normally gives priority to senior employees when deciding on the selection of trainees, and junior employees agree with this. In relation to virtual learning, some respondents have expressed a preference to access information, knowledge, and services over the web, including access to document management functionality, e-learning and e-training systems to support self-learning over space and time. The introduction of solutions supporting ubiquitous access to information and knowledge resources have been welcomed and appreciated by most respondents as they are able to access to the systems from outside the organisation or after office hours.

6.4.1.3 Information Technology

As BETA is a leading IT organisation, the employees use computers on a regular basis and have great computer-using skills. The results show that the respondents use computers mainly for: (a) creating documentation via office automation software (including word-processing) to store, create, and share explicit knowledge; (b) communication purposes via virtual spaces by using groupware (including e-mail and some limited form of workflow support); (c) searching information and making transactions across the web. This confirms that both the organisational and KM processes have been reinforced by information technology and computer networks. Due to the IS policy, initiated by the management, communication migrated to a paperless system many years prior to the KM initiative. The paperless system is perceived to reduce delivery time and prevent delays or loss of documents in transfer. Currently, this paperless system seems to be formally and fully accepted in practice. In compared with the results of the Thailand survey, presented in the previous chapter, this is completely different from the situation in other public sector and non-IT organisations that rely on paper-based communication. The majority of the respondents perceive that they get very good support in terms of technology use.

In terms of collaboration software, the survey indicates that 70% of the respondents often use groupware to support collaboration for intra-organisational purposes and the functionality including discussion forums, document management systems, and role access control, has been described as important to nurture knowledge sharing and creation. Hence, they perceive that groupware functions are effective in promoting knowledge sharing. Overall, collaboration through groupware may result in effective knowledge sharing and creation. Most respondents express that access to knowledge-friendly applications in the organisation is easy and nobody feels that it is inconvenient to use.

In terms of advanced technology, most respondents have expressed a preference in the ability to access information and knowledge over the web, e-learning and e-training systems to support self-learning over space and time, and document management systems. Moreover, the introduction of solutions for ubiquitous access like the Internet and Intranet has been welcomed and appreciated by most respondents. However, only a minority of the respondents are familiar with the standards for communication (e.g. XML), object-oriented interoperability (e.g. OMG/CORBA), semantics, classification, meta-information, and

workflow, and components are not well-known by the majority of the respondents. Moreover, some advanced technologies such as web services, distributed databases, mobile/wireless infrastructures, and virtual workspaces/environments are not widely used in the organisation. As the use of these advanced technologies are limited to only specialist employees for specific research, the majority of employees do not see any necessity for these technologies for KM and other purposes. Therefore, they are not enthusiastic to learn them, resulting in a lack of advanced technology adoption for KM in the organisation.

In terms of technology adoption, a minority of employees, who are perceived to be old or long-time employees, still resists the introduction of new and advanced IT systems to support teamwork and enhance organisational processes. This results in data redundancy and an unnecessary increase in helpdesk workload. In particular, a majority of respondents have also raised concerns about the management push to use open source software (e.g. OpenOffice word processor). This push is motivated by the cost reductions afforded by open source software against the expensive licenses required for commercial tools. Commercial tools, however, seem to be preferred because of their ease of use and familiarity. Furthermore, whilst it is of course illegal, pirated versions of commercial software tools can be purchased readily at street stands and shops. Some employees use such pirated commercial software at home, but are forced to use open source software at work, which naturally leads to comparison between these two software types. This then plays a role in the rejection of open source software as commercial solutions are cheaply available. It is, therefore, felt that the problem of open source software adoption constitutes a real barrier to personal and organisational development, as ICT generally plays an important role in BETA's business processes. The suggested solution is to provide a training programme for the adopted technology (such as open source software). Such a programme would encourage the employees take the opportunity to learn the new technology and to discuss it with their colleagues and trainers.

Finally, computer use has become part of the employees' daily routine. The respondents use computers at work on a daily basis for search results, information and relevant news, personal profit, and personal learning space. The advantage of this is that it helps them to develop knowledge creation skills such as learning by reading documentation and learning by doing. On the other hand, they do not indicate user-interface customisation as a necessary feature for KM practices, as it cannot help employees share or create more knowledge.

6.4.1.4 Teamwork

The results indicate that more than 95% of the respondents work in a team and almost 60% who are senior or long-term employees are involved in more than one team at a time as it is a requirement that most employees carry out more than one project concurrently. This is perceived to result in social relationship among employees within and across teams. 67% of the respondents (those who are senior or long-term employees) have different roles and responsibilities within each team and 81% are consulted about the team they are asked to join. Moreover, communication among different teams is also important. The majority of the respondents (60%), mainly senior employees, express the need for collaboration across teams as the projects in BETA generally require a broad range of knowledge and experience from employees from different departments. A further advantage is that it is a great opportunity for those from different teams to get to know one another, which results in closer collaboration in further projects. This confirms that task achievement in BETA relies on knowledge sharing and creation within and across teams. E-mail, telephone, scheduled meetings, informal gatherings, and instant messaging methods are used to communicate within teams. The same methods, with the exception of instant messaging, are welcomed for communication across teams. The respondents perceive that instant messaging is not generally used across teams because there is lack of close relationships among people from different teams, thus they have a preference for face-to-face or voice communication. This also enhances efficiency of the process of knowledge sharing and creation. Overall, both virtual and face-to-face means are generally used to communicate within and across team.

A majority of respondents perceive their teamwork culture to be bureaucratic, though it does promote employee participation. It relies on the fact that most Thai organisations, in particular the public sector, have a complex hierarchical structure with too many levels, which leads to a bureaucratic culture. However, this bureaucratic culture is a real barrier that inhibits knowledge sharing and creation in BETA. Most employees find it difficult to elaborate their criticisms to people who are at a higher level. If they feel that the process is too complicated, and that it is risky to receive negative feedback, they will keep quiet. Alternatively, if they choose to voice their criticisms, they fear that their superiors may lose confidence and faith in them, leading to resentment and personal barriers.

Finally, only 40% of the respondents consider team working to be effective in the organisation, with an equal number of the respondents taking the opposite view. It is perceived that the positive opinions are expressed by junior employees who are not deeply involved in team working, while the negative beliefs are exhibited by senior employees who are key people with great responsibility within the teams. They have raised a number of factors that they feel inhibit team working, including: (a) lack of appropriate choice of communication method to fit the context, leading to time-consuming problems and misinterpretation among the team, (b) lack of contribution and motivation, and (c) conflicting cultures (or the co-existence of several schools of thought) reflected in working procedures (staff have been educated in various parts of the world).

6.4.1.5 Motivation

Reward systems have recently been introduced to motivate staff to share and create knowledge. Rewards, including the financial incentives, staff development and empowerment, and recognition, have been suggested by management as effective factors that can contribute to improving staff motivation levels and knowledge sharing. Monetary reward systems are used in the organisation to improve motivation to sharing knowledge, as opposed to rewards in the form of development/empowerment and recognition. This is in line with the survey mentioned in the previous chapter reporting that Thai people expect rewards for sharing and creating knowledge. The organisation provides a knowledge repository system to store explicit knowledge. When employees upload academic papers to the system, assigned committees will validate the papers and calculate scores. At the end of each year, the scores will be summed and used to determine monetary rewards for each employee. Despite this, many employees are not satisfied with the monetary reward offered by the organisation due to insufficient financial incentives. While there is a distinct preference for monetary rewards, Thai employees do also value recognition and praise. They perceive that recognition and praise can help them gain respect among colleagues and get to know one another more easily. Overall, most Thai organisations attempt to increase their employees' awareness of the importance of knowledge, and various means are employed to motivate them to share, create, and use knowledge. However, punishments are undesirable as they are perceived to cause more disruptions than advantages. The employees therefore try to avoid any high-risk activities or uncertainties that may cause punishment.

6.4.1.6 KM Barriers

Finally, the gathered data helped identify barriers preventing employees to share / create knowledge in their organisation. These include:

- Non-supportive organisational structure (bureaucratic and highly hierarchical structure) causes a large gap between young and senior staff and results in an increase of the risk of message distortion.
- Lack of personal incentives or provision of rewards makes employees inert and reluctant to contribute any KM activities. Few employees express a preference for the monetary rewards, seeing them as ineffective because the monetary reward provided is insufficient for their needs. Alternatively, rewards in the form of recognition and praise can give satisfaction to employees and help them to gain respect and create relationships.
- Intellectual Property Rights (IPR) concerns caused by employees who fear that their knowledge will be stolen, can inhibit knowledge sharing and creation.
- Reluctance to contribute is caused by the fear of losing one's expert status.
- Software limitations and hardware / software prohibitive costs result in lack of effective communication and technology adoption problems (the adoption of open source software). In terms of barriers caused by specific ICT tools, open source office tools are perceived to be a KM barrier because of difficulty and unfamiliarity, resulting in the time-consuming process of knowledge sharing and creation. Incompatibility also presents a problem. For example, a document created in an open source tool cannot be shared with organisations which generally do not use open source office tools.

6.4.2 Summary

After coding, a display of conclusions from a case study was created to understand the current situation clearly in terms of why and how things occur, and to reveal indicators or components. A checklist matrix was chosen to analyse the data on a major variable since the components were not necessarily ordered. The researcher created key factor variables extracted from the pattern codes, and then compared weakness, strength, and needs on those variables by looking across a row. Table 6.2 below shows the checklist matrix.

Table 6.2: Checklist matrix of phase 1

Thematic Group	Data Pattern	Results
Knowledge Management	Overall Knowledge Management	• Sharing knowledge by informal or traditional face-to-face interaction is preferred to virtual means (supported by technology).
	Training	• Formal and on-the-job training, and learning from documentation are preferred methods, respectively, to promote knowledge sharing. • Some respondents have expressed a preference to access information, knowledge, and services over the web.
	Information Technology	• The respondents use computers mainly for (a) office automation purposes (including word-processing), (b) groupware-related needs (e-mail and some limited form of workflow support), and (c) web access. • A minority of employees still resist the introduction of new IT systems to support teamwork and enhance organisational processes. • A majority of respondents have also raised concerns about the management push to use open source software (e.g. OpenOffice word processor) motivated by software cost reductions.
Organisation Culture	Teamwork	• The majority of respondents work in a team. • A majority of respondents perceive their teamwork culture as bureaucratic but promotes employees' participation. • Virtual and face-to-face means (including E-mail, telephone, formal and informal meetings) are used to communicate within and across teams.
	Motivation	• Rewards in the form of staff development, recognition, and praise have been suggested as effective factors that can contribute to improve staff level of motivation to share knowledge while financial rewards seem not to be valued as the rewards provided are insufficient.
KM Barriers	KM Barriers	• KM barriers include non-supportive organisational structure, lack of personal incentives, Intellectual Property Rights (IPR) concerns, reluctance to contribute (due to the fear of losing one's expert status), software limitations, and hardware / software prohibitive cost.

6.5 Phase 2: Focused Knowledge Management Practices

The purpose of phase 2 is to study in-depth KM practices in BETA. This phase is more focused on developing the evolving categories, properties and relations, and is more structured in data collection than phase 1. This concept was guided by grounded theory (Strauss and Corbin, 1998), initially to narrow the area of study and develop a more focused research question, and later with the aim of adding to a relevant body of theory from the findings of the case study. Data gathered from phases 1 and 2 would complement each other and help to generate a theory. Data triangulation "is particularly beneficial in theory generation as it provides multiple perspectives on an issue, supplies more information on

emerging concepts, allows for cross-checking, and yields stronger substantiation of constructs" (Orlikowski, 1993).

The results that emerged from phase 1 helped the researcher to develop an in-depth interview guide and to select interviewees for phase 2. The researcher developed a formal, semi-structured, in-depth interview guide to collect more critical data. The interview guide may be found in Appendix C. Twelve top managements and key personnel of production departments were selected as interviewees. The selection process followed a technique of theoretical sampling (Strauss and Corbin, 1998) and was motivated by the perceived ability of the interviewees to provide critical (or sensitive) data and constructive comments. The interviewees were not involved in Phase 1 and have therefore not completed the questionnaire. Tape recording was used for 9 interviewees, while others felt more inhibited in their opinions when being recorded. During the entire study, documentation about the organisation was examined, and organisational culture and use of IT were observed, in the mode of "direct observation" (Yin, 2003).

6.5.1 Results

The process of KM in the organisation developed from data collected from employees and managers is shown in Figure 6.1. This process is adapted from a process of organisational change around CASE tools using grounded theory, developed by Orlikowski (1993). The categories and concepts in the figure emerged from the data analysis by using pattern coding techniques of qualitative analysis and the figure shows how the various categories interact with one another. The pattern coding here is processed iteratively. However, the researcher does not claim that the concepts and interactions here are exhaustive, but they should be modified for further research on organisational KM.

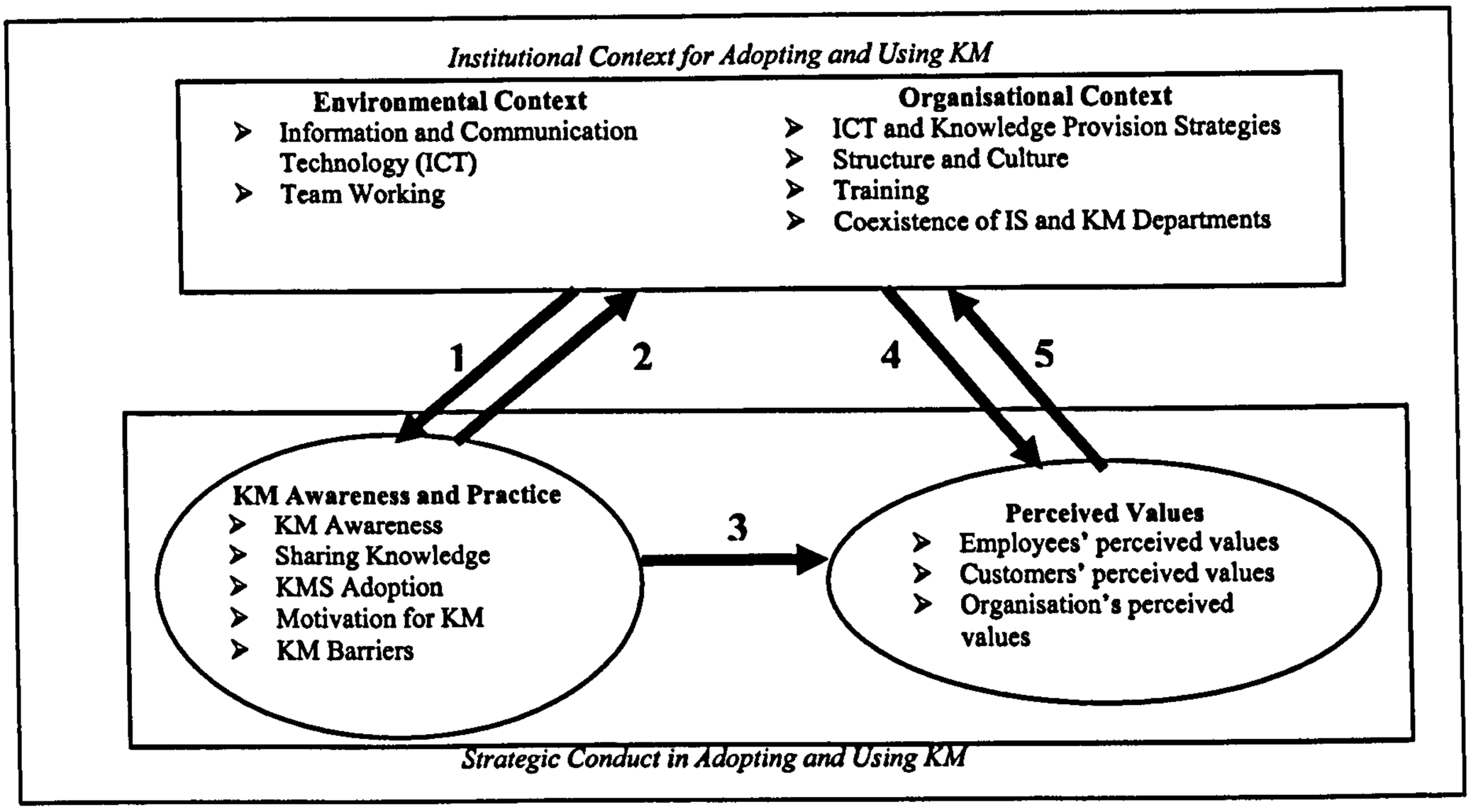

Figure 6.1: Process of organisational knowledge management

The process is influenced by the structurational premises that human action and institutional contexts including environmental and organisational contexts, interact over time (Orlikowski and Robey, 1991). Initially, employees and managers, influenced by their environmental and organisational contexts (arrow 1), recognised the importance and needs for KM and a KMS adopted and adapted in the organisation. To deal with the perceived importance and needs, the executives chose to build awareness of KM and invest in a KMS. This is perceived to promote knowledge sharing underpinned by the strategies of KM motivation. It is therefore necessary for employees and managers to be aware of the barriers that inhibit KM awareness, KMS adoption, knowledge sharing, and KM motivation. Similarly, employees and managers reinforce the environmental and organisational contexts (arrow 2). The actions of KM awareness and practices result in perceived values of employees, customers, and organisation (arrow 3). These actions are influenced by the environmental and organisational contexts in which they occur (arrow 4). Similarly, the actions will either reinforce or change the environmental and organisational contexts (arrow 5). The pattern codes derived from this process are depicted in Table 6.3.

Table 6.3: Pattern codes in phase 2

Thematic Group 1: Environment Context	
Data Pattern 1	Information and Communication Technology
Data Pattern 2	Team Working
Thematic Group 2:Organisational Context	
Data Pattern 3	ICT and Knowledge Provision Strategies
Data Pattern 4	Structure and culture
Data Pattern 5	Training
Data Pattern 6	Coexistence of IS and KM Departments
Thematic Group 3: KM Awareness and Practices	
Data Pattern 7	KM awareness
Data Pattern 8	Sharing knowledge
Data Pattern 9	KMS adoption
Data Pattern 10	Motivation for KM
Data Pattern 11	KM barriers
Thematic Group 4: Perceived Values	
Data Pattern 12	Employees' perceived value
Data Pattern 13	Customers' perceived value
Data Pattern 14	Organisation's perceived value

The data gathered in phase 2 are analysed and presented below according to each data pattern.

6.5.1.1 Information and Communication Technology

Analysis of the interview transcripts indicate that employees have a good overall awareness of the needs for the ICT adopted in their organisation. As the executives have attempted to migrate to a knowledge-friendly organisation underpinned by IT practices, there is a high computer-to-staff ratio (1 to1 for employees and 2 to 1 for managers). Many interviewees disclose that computers are used to create awareness of ICT and increase productivity. However, the researcher acting as an observer notes that the use of computers for initiating KM probably does not succeed in creating the expected organisation value because:

- Employees use computers for capturing and archiving knowledge within their own computers, but not sharing knowledge with others. They perceive that they have the freedom to manage knowledge that is directly relevant to them, resulting in knowledge stored in their own computers only.
- Employees perceived that all organisation processes should be underpinned by IT practices. They therefore completely rely on computer technology, and this leads to them usually being "stuck" in front of their computer, resulting in lack of human networks and social capital.

The KM programme was led by management with no consultation with staff. This has resulted in various interpretations and expectations about the KM initiative: managers are motivated by a desire to control knowledge while employees are motivated by the will to improve their own knowledge management needs.

The researcher observes that management thinks that they will encounter no resistance as Thais in general tend not to discuss decisions originating from management. However, although most employees follow this policy, it is perceived that there is an underlying disagreement about this because of IPR, security, and confidentiality constraints. This results in employees' unwillingness to share knowledge. That is, knowledge is not well prepared before storing it in the KMS and sharing it with others. This policy is considered to be appropriate overall. However, further improvements in practice are needed.

In terms of technology adoption, the results indicate that ease of use is the most important factor to all staff in selecting technology. This factor is perceived to reduce time, to improve productivity, and in particular to avoid risk and problems. The researcher discloses that the meaning of ease of use is defined in a different way by employees and managers. From an employee's viewpoint, ease of use means "familiarity" and "simplicity". Employees argue that a process of learning unfamiliar and complicated system is time consuming. For example, employees use Microsoft Office in preference to OpenOffice, an open source solution, because they have been familiar with Microsoft Office for almost 20 years since their organisation was founded, while OpenOffice has been introduced recently. On the other hand, the managers describe ease of use as costless software (open source software) as they have to purchase licenses for the software used across the organisation, while employees can purchase these almost free from the street and any shop although it is against the law. Hence, this leads to the drive for adopting open source, as mentioned in phase 1. Furthermore, managers mentioned "look" and "feel" as a factor in software selection. This relies on the fact that managers are not involved in the in-depth use and development of technology, thus they judge technology by user-friendly interface instead of familiarity and ease of use. However, this perception may create resentment to employees, especially to application developers. They argue that it could not make sense that they spend over 50% of the entire project time developing and amending only the "look" and "feel", in order to satisfy the managers.

The management drive for technology adoption is not supported by an effective training programme to address staff concerns. Due to the prohibitive cost of software / hardware, managers perceive that technology cost reduction combined with perceived usefulness, are the most important factors for technology selection. Familiarity and simplicity tend to be ignored, and all employees are expected to have to learn and adapt to the technology provided by the organisation by themselves. It is not possible to offer the training courses on the provided technology (such as open source) to everyone. These factors are perceived as benefiting the organisation as a whole as opposed to individuals. Management perceives corporate knowledge as providing a competitive advantage to the organisation. The researcher discloses that this policy fails to increase productivities due to a time-consuming learning process.

The interviewees highlight that communication beyond time and space supported by technology (internet, intranet, extranet) is indicated to improve work performance and reduce time as employees can work and learn at any time, including from home. Intranets and Extranets are highly valued as they promote flexible working, including access to document repositories and knowledge. The researcher reveals that this can also result in a number of social disadvantages, including:

- Lack of social-oriented communication that is essential to develop trust amongst employees.
- High task orientation that results in effectiveness without efficiency.
- Inappropriate time management between social life and work.

The researcher notes that the above disadvantages are also caused by the attempt to replace traditional communication (such as face-to-face method) with virtual methods underpinned by technology. It is very difficult to change an organisation's culture. It is suggested that this failure can be solved by adapting the (ICT) strategy to the (Thai) culture instead of the (Thai) culture to the (ICT) strategy. That is, technology should be adopted as a tool to enhance the overall organisational processes whilst retaining the current human networks and social-oriented communications. For example, the primary purpose in adopting an email system is to reduce delivery time and prevent delays or document loss in transfer (such as for sending

files, announcements), rather than to replace a formal meeting or face-to-face interaction. Staff should not be forced to use virtual communication supported by technology if social-oriented communication is needed.

6.5.1.2 Team Working

The researcher observes that teamwork among employees seems to be a common characteristic in the organisation, therefore strong social relationships among employees is a critical factor to achieve their work. Bureaucratic (hierarchical) organisational structure is perceived to inhibit positive social relationship among employees, in particular when teams involve members at various levels of the organisational structure. A number of socio-emotional factors, including fear of speaking in public and respect for old age, seem to inhibit teamwork effectiveness as people usually believe that they should act in a receiver role in their team and should not elaborate and argue their own ideas against those of older or senior staff.

Managers, however, feel that bureaucratic and participatory culture must be blended together and underpin team working. Promoting an appropriate teamwork environment and atmosphere helps staff reduce fears and gain confidence by encouraging them to contribute effectively through constructive comments to managers or team leaders. One manager suggests a solution to this concern:

"... The problem is that my employees are very nervous to present their ideas to people. This is a Thai behaviour. But if I force them to do, they can do. In our meeting, I always allow my employees to question and discuss my ideas. I hope they, especially young employees, will be familiar and brave enough to talk with me."

One manager confirms that employees have been supportive of teamwork in the organisation:

"We work together and always keep an open mind. If I work on Project A, and my colleagues work on Project B, I will go to see what they are doing and they can also come to my desk and discuss their work with me."

However, teamwork is probably inadequate in some situations. One manager gave an example:

"If I want to sharpen a piece of iron, I prefer do it by myself. I don't need any assistance from anyone. In Thailand, everyone wants to take part in any activities. In fact, some works may not need too many people... A benefit of an individual work is that you can control yourself, and others cannot control you... I am not saying that teamwork culture is not good, but it depends on the type of work."

The above results show a good overall awareness of the importance of teamwork. In fact, the researcher observes that teamwork does not succeed in practice. Instead, teamwork may cause conflicts among team members because of the following issues:

- As Thai public sectors have an education-based (besides seniority-based) promotion system rather than performance-based system, highly educated staff are generally promoted to high positions such as management. It seems that the highly educated staff usually act as senior staff who are presumed to be decision makers in the team, though their junior employees disagree. Thus, there is sometimes a controversy surrounding this promotion system, and junior staff members offer the criticism that those who are in a high position are likely to connect with egocentricity and arrogance.
- The ideas are always finalised by only senior members. Young members usually keep quiet, as they worry about the negative impact if they criticise the ideas expressed by their elders.
- They are familiar with individual work rather than team work.
- They are reluctant to participate in teamwork as they perceive that the work can be achieved without them.

The organisation needs several improvements in its teamwork. As Thai people have the sense of a non-changeable participatory culture always appearing in social contexts (outside the organisation or after office hours), but not emerging at work, these improvements should not be cultural changes, but attitude changes. Thus, it is necessary to connect the strength of

participatory culture in social contexts with work. Although this solution is costly and time-consuming, it leads to effective teamwork and strong relationships in the organisation.

It can be concluded that teamwork success depends on strong relationships among team members. Bureaucratic and participatory culture can be blended together to reduce personal barriers between senior and junior staff, as mentioned above. Moreover, it is necessary to change personal attitude towards teamwork. For example, a reduction in the egocentricity and arrogance of senior staff would result in a more relaxed team atmosphere, and junior staff may feel brave enough to speak up more readily among their team members.

6.5.1.3 ICT and Knowledge Provision Strategies

The organisation had an ad-hoc KM initiative prior to deploying their new KM programme as they used FTP servers to store knowledge, owned and managed by each department, resulting in a lack of a centralised knowledge storage system. As a result, employees and managers experienced difficulties storing their knowledge items in the FTP servers, as the system was not user-friendly and was difficult to use. KM in the past was described as knowledge storage rather than knowledge sharing and creation, and employees and managers had very little awareness of KM. After KM became an important role in Thai industries several years ago, the executive initiated ICT and knowledge provision strategies. The strategies were perceived to make improvements in the entire organisational and KM processes underpinned by ICT, such as increases in productivity, decrease of staff loss problems, time reduction, safety of document delivery, data security, staff satisfaction, motivation, etc. Therefore, many systems have been migrated to a paperless or electronic system. Groupware or KMS was introduced to store knowledge and build virtual spaces for human networks and social capital. Moreover, these virtual spaces such as online discussion forum help shy people to gain confidence.

Employees perceive that the organisational policy to control knowledge by forcing employees to store their knowledge items within a centralised KMS seems to generate resentment, as employees believe that this is time-consuming. They prefer to self-manage their knowledge within their own computers for their own benefits. Attempts to reduce software costs by promoting free software or open source software seem to inhibit

productivity as such software is difficult to use and is resisted by some employees. However, they follow these organisational policies although such policies seem to generate resentment to anyone who disagrees. This is because they want to avoid any unexpected problems such as punishment in the form of warning, demotion, salary reduction, etc. However, as these ICT and KM policies keep changing and the decision making regarding punishment is subjective, there is no report that those who are against the policies are punished.

The managers perceive that promoting a centralised KMS seems to provide greater value for the organisation, in particular in the context of staff loss. Adequate investment and support in KM (financial support, KM policy, KMS, reward system) may result in an increasing KM awareness and interest from employees across the organisation. Management has a policy to promote open source as opposed to commercial ICT products. A top-down approach to KM improvements is usually perceived to lead to better results with greater longevity.

Overall, the researcher notes that the policy to control knowledge looks quite promising and does provide great value for the organisation, in particular in the context of staff loss. However, the policy succeeds in knowledge storage, but fails in the attempt to enhance knowledge sharing and creation. It is observed that the knowledge items stored in the system are never reused by other employees since they do not trust the quality and validity of the knowledge items. There is a lack of a system to evaluate the quality and validity of the knowledge items because of financial problems, lack of skills, and lack of human resources. One manager reveals a rough guide to evaluate the quality of knowledge:

"We categorise knowledge items into several groups such as international publication, domestic publication, product innovation, process innovation, and patent. We just assume that knowledge in the same group has the same quality. In the future, we hope that our system will be able to check the quality throughout the text"

The development of a system to evaluate the knowledge quality is suggested to build up trust in the knowledge items. Moreover, this system should be blended fruitfully with motivation, for example an appropriate reward system such as recognition, and training courses.

Finally, although KM has been developed for several years, the researcher perceives that KM is still in its early stage. ICT cannot be adopted successfully to enhance knowledge sharing

and creation because of lack of contribution, trust, and financial support. Also, there seems to be a strong belief that technology will solve the KM problems of BETA, whilst a number of important socio-cultural factors seem to be overlooked by management.

6.5.1.4 Structure and Culture

Employees perceive that the dominant bureaucratic (hierarchical) structure within the organisation may inhibit effective communication and employees' participation and contribution. This is reflected in existing working procedures (e.g. reporting layers) and may generate conflicting cultures. The sense of participatory culture always appears in social contexts (outside the organisation or after office hours).

The managers, however, perceive that bureaucratic (hierarchical) structure is widely accepted in Thai organisations, and it is a non-changeable organisational culture. Although bureaucratic (hierarchical) behaviour is dominant within the organisation, management feel that promoting participation promotes a sense of participatory cultures, removes fears/personal barriers, and engenders gains in confidence. Over-concerns about respect fro the old are perceived as a problem for young managers as employees tend to have more respect for older managers. Yet managers accept that this is a key and non-changeable feature of Thai culture. One young manager said:

"...Another problem is related to respect for old age. They [Employees] may not respect me, but I don't care...My previous boss is very old, like my father. When he spoke, everyone listened to and believed him. But if I do the same, someone [who is older than the manager] may not listen to me... However, because this concern is very important for Thai culture, I should not take it too seriously."

Another manager confirms:

"Employees don't have lunch along with managers in a cafeteria, because there is a barrier between employees and managers, and this casual discussion during lunch time will become a more serious and formal one. For example, in a cafeteria, employees try to avoid having

lunch with me. They will be ready to go away and leave me alone if they know I am going to join them at the same table."

Based on the researcher's over ten years experience in the organisation, it is noted that bureaucratic culture is a real character of Thai culture, appearing in almost all Thai firms, in particular in public sectors. This culture results in respect for old age or people who are of higher social rank. Although the majority of employees and managers expressed concerns about this culture leading to KM barriers, the researcher notes that these barriers can be removed by using the following perceived solutions:

- Young employees take the attitude that giving constructive comments in a diplomatic way convinces senior staff to compromise. This relies on the fact that politeness and good manners in all circumstances are used as a means of achieving objectives.
- Similarly, it is perceived that if senior managers reduce their egos, young employees will be brave enough to speak up.
- A combination of bureaucratic and participatory culture within an appropriate environment causes a better relationship between young and old staff.

6.5.1.5 Training

Employees perceive that formal training courses seem to be the most effective training method as it encourages a lively interaction among trainers and audiences, and it creates strong relationships amongst employees during and after the training. On the job training and learning from documents are perceived as fairly effective methods, but there are some limitations. For example, (a) it is a one-way communication that lacks people interaction and (b) it requires a number of skills such as self-learning skill, computer skill, reading skill, etc.

The managers perceive that fostering a learning organisation culture promotes employee development. A variety of training methods such as formal training courses, on the job training, and learning from documents can encourage staff to develop their self-learning skills. Formal training is not always adequate as the incurred cost is sometimes too high. Therefore, the process of trainee selection must be carefully considered, and sometimes the process is inadequate and unfair. Informal internal training (such as an informal forum during

tea break) seems to be increasingly promoted as it allows people to exchange knowledge within a casual environment to bridge a large gap between employees and managers. This training is organised by the organisation, so the cost is very small compared to a formal training. However, either formal or informal training would be ineffective if most trainees do not give any responses to trainers such as not asking any questions and keeping quiet because they are nervous when speaking in public.

One manager emphasised the need for training courses:

"I need more training courses. I would invite people from our partner companies to attend the training courses with us as well, so they will do any activities with us and will know us more than the past. Also, they will know what we are doing. Then, they will share knowledge with us. Finally, it will result in knowledge sharing across organisations."

The researcher has experienced that despite high cost, a formal training is the most effective approach to share and create knowledge. As Thai people are perceived to act in a "receiver" role, they can acquire knowledge effectively in a training course. Also, they express a preference for sustaining a relationship with other trainees and trainers after the training course. However, an informal internal training method suggested above, seems inappropriate for acquiring explicit knowledge as learners need to pay a lot of attention. Although in an informal context people are perceived to remove personal barriers, and to create stronger relationships than they do in a formal training course, they easily lose concentration on the study because of the unsuitability of the environment for study. Other methods like on the job training and learning from documents are also effective for employees and managers who have high self-development skill, but these types of methods are time-consuming.

6.5.1.6 Coexistence of IS and KM Departments

Employees perceive that the IS department should be responsible for the control of the KMS, as this would facilitate its adoption by employees. Bridging the gap between the IS staff and the KM team is important as the IS staff (a majority of whom are young people) feel reluctant to talk openly with the KM team members (led by top management). Outsourcing a

KMS development should be avoided as the outsourced system may conflict and not be able to link with existing systems.

The managers, however, perceive that the KM team is responsible for control of the KMS, while the IS department is in charge of maintenance of technical aspects only. The IS staff should not be involved in KM implementation, except for technical maintenance; otherwise the KM team may loose importance and status. Outsourcing a KMS development is recommended, as system stability is a key factor. The managers appear to ignore the difficulties of linking between the outsourced system and the existing systems as they believed that the IS staff should be in charge of ensuring that the two systems are made compatible.

Based on the above results, the researcher expresses concerns about the conflict between the IS and the KM department, leading to the failure of the coexistence of these two departments because of the following issues:

- If the KMS is fully controlled by the KM team, it may result in technical problems.
- If the KMS is fully controlled by the IS team, it may result in misconceptions about KM implementation.
- The outsourced KMS cannot be linked properly with the existing systems
- The outsourced KMS cannot be upgraded or modified by the IS team because the IS team does not understand the source codes developed by the outsourcing company.
- The enormous ego of older KM managers results in the IS team's resistance to contribution to the KMS development.

The researcher notes that the different perceptions between employees and managers result in several problems. It can be implied that most problems are related to ego, leading to the resistance to managers. The researcher suggests that coexistence of IS and KM departments is very important as KMS is generally supported by IS development. Therefore, it would be better if the organisation decides to merge the KM and IS departments into one. It is perceived that in this case working within a team causes fewer problems than working across teams.

6.5.1.7 KM Awareness and Practice

Recognising the importance and needs for KM and KMS leads to KM awareness and practice: KM awareness, sharing knowledge, KMS adoption, motivation for KM, and KM barriers.

6.5.1.8 KM Awareness

Employees perceive that KM is understood as involving the management of user experiences, documents, best practice, and codified knowledge items. KM practices are perceived as important and effective only if they are of direct use to employees. The researcher highlights that KM practices are resisted if it is felt that they benefit the organisation as opposed to the employees.

The managers perceive that encouraging employees to codify their tacit knowledge is perceived as a good activity for raising KM awareness. Increased use of KMS and stored (created) knowledge items are perceived as good indicators of KM successes in the organisation. Persuading employees to understand that KM is part of their job responsibilities is the most effective mean to promote KM awareness. One manager gave an example to help employees create KM awareness:

"We started this strategy by giving a notebook to our staff to write anything they want. This is not just a normal notebook, but it is our KM initiative... They have to record everything that they do everyday. They can bring their notebook with them anywhere, and write down any new knowledge that they receive. For example, having a notebook in a meeting is better than having nothing. This means they have a tool to store knowledge. Also, this can practice their writing skill. I believe that transferring tacit to explicit knowledge is very necessary. This is a fundamental KM strategy proposed by the director."

The organisation has an overall good awareness of KM practices. However, there are some limitations that may have caused only a gradual improvement in KM over the last two years. These limitations, based on the interviews and direct observation, revealed the following issues:

- Employees do not see any value in KM practices if they are not satisfied with the KM outcomes provided by the organisation, such as rewards, recognition, training courses, etc.
- Managers tend to be tied to knowledge storage rather than knowledge sharing and creation. This leads employees to do the same.
- There is a lack of clear KM awareness policy. The prevailing policy fails to build KM awareness in practice.
- Although both employees and managers have good KM awareness, they have different perceptions. Employees are involved in KM activities for only their own benefit whereas managers argue that the organisation's benefit is more important.

6.5.1.9 Sharing Knowledge

Employees perceive that sharing knowledge by informal or traditional face-to-face interaction is preferred to virtual means (supported by technology). This is because employees believe that face-to-face interactions create stronger social relationships and promote trust, while these are difficult to establish in virtual contexts, as the expression of emotions is difficult. It is observed that most employees are resistant to having a conversation with their manager through instant messenger software such as ICQ or MSN for work. They prefer face-to-face interaction in order to give a clear explanation, to express emotion, and to develop trust. One manager gives an example about a preference for face-to-face interaction and mistrust of virtual communication:

"I prefer to meet my colleagues in person. Even when I send them an email, I must go to see them suddenly to confirm receipt of my email—'Have you received my email?' then I continue to talk with them physically."

Also, the researcher shows an example about the failure of the virtual method, gathered from the observation:

"One of helpdesk staff received a complaint email from our executive. He spent several hours thinking about the reply message that would satisfy the executive. He then he asked his colleagues to help him reply. Finally, an email was sent at the end of the day. That is, he and

his colleagues spent the whole day just to answer one email. However, the executive replied angrily to the email because of the unsatisfactory answer and, especially, the late reply"

Another example of the failure of the virtual method and the success of the traditional method, gathered from the observation, is a case of an interaction between an employee and a manager through a helpdesk system (a web board for end-users to report technical errors and for helpdesk staff to respond to the incidents):

"One senior manager reported a technical error in a helpdesk system. Once one of the helpdesk staff received the report, he answered immediately by typing the results in the system. Later, the manager raised a new question because the answer was still unclear. The helpdesk staff member answered again. However, the manager was not satisfied with the answers and asked again. The conversation through the system continued for several days. The manager became upset, and the helpdesk staff member was worried because it wasted time. Then, I [the researcher] asked the helpdesk staff 'Why don't you go to see her in person and talk?' The helpdesk staff member was surprised with the overlooked, easy and promising solution. The helpdesk staff member was happy for a while, and then became unhappy suddenly. The helpdesk staff member said 'But our boss doesn't like this old-fashioned method...It is a non-IT solution...'"

To share codified knowledge, employees feel reluctant to store their knowledge items in the centralised KMS, as they believe that it is risky. For example, (a) their knowledge may be stolen without permission, and (b) they may receive negative feedback if their shared knowledge is perceived as invalid, out-of-date, or useless. However it is observed that despite this unwillingness, they will share knowledge properly if it is their responsibility so to do.

Managers perceive that cooperative knowledge sharing in informal contexts, such as discussion forums and coffee breaks, is highly valued as this method can (a) break down barriers between employees and management, (b) establish stronger relationships among them, (c) allow employees to reduce personal barriers and gain confidence, and (d) practice and improve their presentation skills. IPR and confidentiality issues raised by employees in relation to shared knowledge are felt to be unjustified, as management believes that these concerns inhibit KM practices. Knowledge created during working hours is felt legitimately to belong to the organisation. One manager explains:

"We prefer to talk with each other in a cafeteria. It is a more relaxed environment than an office. However, we should have the same background about topics we will discuss before the meeting, and we should talk about future work rather than solving any serious problems."

In contrast, sharing implicit or formal forms of knowledge seems to be ineffective, as Thai people do not like to transform their experience (tacit knowledge) to document forms (codified knowledge). As one manager notes:

"According to Thai culture, Thai people don't like to create documents...After a project was completed, they [the employees] didn't recognise that it was necessary to write any report or memo, at least to prevent forgetting. This is our weakness."

The results show the promising knowledge sharing through face-to-face interaction. Conversely, in this case knowledge sharing through virtual space cannot be blended together with the traditional face-to-face approach although the majority of staff have high IT skills and are working in a "hi-tech" and IT-leading organisation. The researcher perceives that these surprising results are caused by several reasons:

- There is a strong belief that a face-to-face communication (with eye contact) is the most accepted method to show respect to people, especially senior persons. In contrast, electronic communication, especially instant messaging is perceived as impolite if a receiver is a senior person.
- Most processes over-rely on the computer system and are not flexible. That is, employees and managers are forced to be tied to their computer. Face-to-face interaction is often avoided although it is the most effective method. This is because they, especially those who are highly educated in computer technology, misunderstand that this communication style is out of date. Furthermore, they perceive that this "low-tech" style is inappropriate for a hi-tech organisation.
- Employees and managers overlook the outcomes of social events such as informal forums and tea breaks because most of these events are usually indicated as unnecessary. This prevents effective communication and experience sharing.

6.5.1.10 KMS Adoption

Employees and managers perceive that the adoption of simple technology is welcomed, while adoption of advanced or complicated technology is resisted. Therefore, initiating employees to simple KM practices and functionality such as storing knowledge items in the web-based KMS can help address technology adoption issues amongst employees. Moreover, management suggested that not only the ease of use, but also the usefulness should not be overlooked for KMS adoption. One manager explains the adoption of KMS in the organisation:

"To share knowledge among colleagues, we may do it in the evening in our forum. The atmosphere is informal, but it is a formal routine. I have two sub systems to support this idea. First, it is a knowledge repository system to store knowledge items. Another is a collaborative system or online communities. This system uses a 'Wiki' concept to encourage my colleagues to participate and share constructive comments."

Despite this, KMS cannot itself create a knowledge sharing culture, it is merely a machine that stores explicit knowledge. One senior manager remarked:

"Our repository system is not really a system to support knowledge sharing. Actually, its purpose is to support Business Intelligence and strategic decisions. ... This system just helps us to collect knowledge items, and then we will read thoroughly all the documents to examine whether it is original ideas or copies from other sources."

The KMS was introduced to build good KM, influenced by a user-friendly interface and many useful features such as knowledge storage, discussion board, search engine, etc. However, before the development of the KMS, knowledge storage was fragmented. Knowledge items were stored in a database server managed by each department that had its own regulations and used its own technical jargon. Therefore, once the centralised KMS was introduced, there were several problems in terms of human and technical aspects, to move all knowledge items to the new system:

- Knowledge items cannot be moved directly to the new system because of the incompatibility between the old and new system.

- The new system does not completely replace the old systems. That is, employees have to upload their knowledge items to the old system on a regular basis and upload the same knowledge to the new system to claim rewards. This results in data redundancy and employee dissatisfaction.
- Some employees do not wish to learn the new system. They continue using the old system. This results in fragmented knowledge items in the organisation.

It is observed that socialisation issues seem to be overlooked by management during the period of KMS adoption. The researcher notes that true knowledge sharing and creation are always connected with human networks and social capital. Furthermore, there is a poor software adoption culture as ICT solutions tend to be resisted by staff, as the ICT solutions often force them to neglect social aspects such as collaboration with people, face-to-face interaction, and trust development.

6.5.1.11 Motivation for KM

Employees perceive that rewards are not always able to motivate them to share knowledge, as they do not feel that the rewards impact their work performance. This is opposed to punishment which highly influences them to share knowledge. However, if reward systems are used in the organisation, the systems should be reliable, reasonable, and fair enough to motivate people to share knowledge. It is observed that employees are still reluctant to share knowledge because they do not believe that the organisation has enough financial resources to provide rewards. There is an overall feeling that the reward system is unfair.

The managers, however, perceive that rewards should be appropriate and meet the employees' expectations. Non-financial rewards such as staff development, empowerment, and recognition are perceived to be more effective than financial incentives because they need to gain respect among colleagues. Financial incentives seem to be effective in addressing short-term as opposed to long-term motivation. One manager feels financial incentives like salary incentives are unfair, and should be affected for short-term motivation, noting:

"We [managers] should think about quality and fairness in a reward system. However, I slightly disagree with a reward system like increasing salary... This reward affects employees' salary every month, every year and forever although they share knowledge only one time. The reward should be a form of special gifts on some special occasions, but not salary."

A reward system is perceived to motivate employees at a specific time, but it cannot change human behaviour to be willing to share knowledge forever. This means that a reward system cannot truly enhance knowledge sharing. One manager said:

"It just motivates you to create a document in order to claim rewards, but it cannot be presumed that it is knowledge sharing. It would be better if you can encourage people to use the knowledge in the system. It is only a storage system."

One manager proposed a solution relating to the motivation for KM:

"If people recognise they don't benefit from participations, they won't have motivation. In fact, we may not be able to motivate them by using any policy to force them. Instead, we must embed KM and learning culture in the organisation. They must realise that if they don't contribute, they will lose benefits."

The researcher highlights some key issues in relation to KM motivation, derived from the interviewees and the researcher's experience.

- Financial incentives should be the most effective rewards to motivate knowledge sharing and creation, but the organisation's budget offered for this purpose is limited. This results in lack of interest and participation.
- Perceived inappropriate criteria to get rewards lead to unfairness among staff and cause them to feel embarrassed if they do not qualify for rewards. The criteria judge employee performance from a number of published research papers, and the same criteria are used for all employees. Therefore, these criteria encourage employees from R&D departments only, whereas it is very difficult for those from other non-

research sectors such as administrative departments to be rewarded. These are indicated as unfair.

- There is a lack of clear criteria to get rewards, as it is often observed that the criteria are not stable, resulting in a lack of trust in a reward system.
- It is strongly believed that rewards may not be required. Instead, punishment can be used to stimulate staff to share and create knowledge. Furthermore, the organisation may indicate knowledge sharing is mandatory, not optional. This relies on the belief that employees seem to value assigned responsibilities and follow mandatory policies although they are not willing so to do.

6.5.1.12 KM Barriers

Employees perceive that barriers inhibiting KM include non-supportive organisational structure (hierarchical structure), lack of good social relationships amongst employees in the organisation due to a large gap between employees and managers, difficulty in using technology, and prohibitive cost of technology.

The managers' perceived KM barriers include lack of presentation skills and capabilities (speaking practices), lack of personal motivation due to ineffective rewards, which do not seem to meet employees' expectations, lack of financial support, and lack of IT skills. Due to potential security breaches, management has identified serious risks when accessing and sharing corporate knowledge across extranets. One manager mentions a barrier caused by lack of presentation skills:

"I just want to improve their [employees'] presentation skills. They are the experts at their research area. However, when they have to share experiences or knowledge to other people who don't have this knowledge, it is very difficult to do that, because they don't know how to speak in public and encourage audiences to understand. Worse, they cannot use simple words or simple language to communicate with audiences [they use only complicated or too technical words]. Maybe they are nervous... Therefore, first I should improve their presentation skill to better knowledge sharing... Another objective is to archive knowledge. I will record it in CD and it will be reusable. Actually, firstly I just archived it in order to

improve their presentation skill, not for knowledge sharing. Then I will let my colleagues see their weakness and improve their further presentation."

Another manager gives an example of personal barriers that may lead to missing an opportunity to sustain ties with others:

"When we've got some visitors to our office, our colleagues are shy and nervous to meet them. The problem is that they try to avoid discussions with them and presenting our work to them. I recognise that this is a Thai behaviour, but it would be better if they are brave enough to get to know others. Keeping up ties with significant people who visit us is always good."

The researcher highlights that the above barriers, except security concerns, inhibit knowledge sharing and creation in the organisation. It is observed that security risks are not indicated as a KM barrier, but some managers worry too much about this concern. They do not trust in the authentication and authorisation features of the KMS. Furthermore, they usually attempt to keep everything secret, even knowledge shared with other departments within the organisation. This results in a sluggish process of knowledge sharing and creation.

6.5.1.13 Employees' Perceived Values

Overall the perceived values for individuals (employees and managers), which emerged from the results, are as listed below:

- Knowledge gathered from the organisation
- Know-how
- Self-development
- Recognition through praise and promotion
- Improved social relationships among employees within and across the organisation
- Knowledge friendly culture.

6.5.1.14 Customers' Perceived Values

As BETA is a non-profit organisation, a customer's perceived values are not indicated as financial values, but the values can help to develop or improve intangible assets such as satisfaction and relationships. Knowledge in the form of documentation, training courses and research outcomes, shared with the customers, can persuade them to invest in the organisation in the future, and this also helps raise the organisation's image. These are listed below:

- Customer satisfaction.
- Improved service quality.
- Better recognition from customers.
- Building a good rapport between customers and the organisation.

6.5.1.15 Organisation's Perceived Values

Perceived values for the organisations, derived from the above results are listed below:

- Increasing knowledge
- Increasing productivity
- Reducing costs of service.
- The control of all knowledge in the organisation
- Addressing knowledge problems due to staff loss
- Becoming a learning organisation
- Increasing overall service quality

6.5.2 Summary

Table 6.4 below presents the checklist matrix developed from the summarised data in phase 2.

Table 6.4: Checklist matrix of phase 2

Categories	Concepts	Employees	Management
Environmental context	Information and Communication Technology	• The use of ICT supports basic knowledge management activities such as the capture and archival of knowledge within employees' own computers, and is perceived as empowering users as they have the freedom to manage the knowledge that is directly relevant to them. • Most processes rely on computer system, but cannot blend it with non-computer system or human-operated system successfully. • Familiarity and ease are the most important factors for technology selection (e.g. employees prefer Microsoft Office to OpenOffice, an open source solution). This factor is perceived to reduce time and improve productivity. • Communication beyond time and space (internet, intranet, extranet) can improve work performance and reduce time as employees can work and learn anytime, including from home. However, this results in lack of social-oriented communication. • Intranets and Extranets are highly valued as they promote flexible working, including access to document repositories and knowledge.	• Adapted technology, including Knowledge Management System (KMS), can meet the need for centralised control of knowledge. Storing knowledge in employees' computers is resisted, as this cannot create corporate knowledge owned and managed by the organisation. This is instead owned and controlled directly by employees. • Due to the prohibitive cost of technology, technology cost reduction combined with perceived usefulness, are the most important factors for technology selection. Familiarity tends to be ignored, and employees are expected to have to learn and adapt to technology provided by the organisation. These factors are perceived as benefiting the organisation as a whole as opposed to individuals. • "Look" and "feel" or user interface is a preference for a system design. • Communication beyond time and space (internet, intranet, extranet) can improve work performance and reduce time as employees can work and learn anytime, including from home. However, this results in lack of social-oriented communication. • Management perceives corporate knowledge as providing a competitive advantage to the organisation. Due to potential security breaches, management has identified serious risks when accessing and sharing corporate knowledge across extranets.

Categories	Concepts	Employees	Management
	Team working	• Teamwork seems to be a common characteristic in the organisation, so strong social relationship among employees is a critical factor to achieve their work. • Bureaucratic (hierarchical) organisational structure is perceived to inhibit positive social relationship among employees, in particular when teams involve members at various levels of the organisational structure. • A number of socio-emotional factors, including fear of speaking in public and respect for old age, inhibit teamwork effectiveness because people usually believe that they should act in a receiver role in their team and should not elaborate and argue their own ideas against those of older or senior staff. • Teamwork problems include fear and lack of contribution.	• Bureaucratic and participatory culture must be blended together and underpin team working. • Promoting appropriate teamwork environment and atmosphere help staff reduce their fears by encouraging them to contribute effectively through constructive comments to managers or team leaders. • Concerns about respect for old age by employees are perceived as a problem for young managers as employees tend to have more respect for older managers. Yet, managers accept that this is a key and non-changeable feature of Thai culture and do not take it too seriously. • Teamwork problems include egocentricity and arrogance.
Organisational context	ICT and Knowledge Provision Strategies	• The organisational policy to control knowledge by forcing employees to store their knowledge items within a centralised knowledge management system seems to generate resentment as employees believe that this is time consuming. They prefer to self-manage their knowledge within their own computers for their own benefit. • Attempt to reduce software cost by promoting free software or open source software seems to inhibit productivity as such software is difficult to use and is resisted by some employees. • Employees follow the ICT and KM policies although such policies seem to generate resentment to anyone who disagrees because they want to avoid punishment. • ICT should be blended fruitfully with motivation.	• Promoting a centralised knowledge management system seems to provide greater value for the organisation, in particular in the context of staff loss. • Adequate investment and support in KM (financial support, KM policy, KMS, reward system) may result in an increasing KM awareness and interest from employees across the organisation. • Management has a policy to promote open source as opposed to commercial ICT products. • A top-down approach to knowledge management improvements usually leads to better results with greater longevity. • ICT should be blended fruitfully with motivation.

Categories	Concepts	Employees	Management
	Structure and culture	• The dominant bureaucratic (hierarchical) organisational structure within the organisation may inhibit effective communication and employees' participation and contribution. This is reflected in existing working procedures (e.g. reporting layers) and may generate conflicting cultures. • The sense of participatory culture always appears in social contexts (outside the organisation or after office hours).	• Bureaucratic (hierarchical) structure is widely accepted in Thai organisations, and it is a non-changeable organisational culture. • Although bureaucratic (hierarchical) behaviour is dominant within the organisation, management feel that promoting participation promotes a sense of participatory and removes personal barriers.
	Training	• Formal training courses seem to be the most effective training method as it encourages a lively interaction among trainers and audiences and it creates strong relationships amongst employees during and after the training. • On the job training and learning from documents are perceived as fairly effective methods, but there are some limitations. For example, (a) it is a one-way communication that lacks people interaction and (b) it requires a number of skills such as self-learning skill, computer skill, reading skill, etc.	• Fostering a learning organisation culture promotes employee development. • A variety of training methods such as formal training courses, on the job training, and learning from documents can encourage staff to develop their self-learning skills. • Formal training is not always adequate as the incurred cost is sometimes too high. Therefore, the process of trainee selection must be carefully considered, and sometimes the process is inadequate and unfair. • Informal internal training (such as an informal forum during tea break) seems to be increasingly promoted as it allows people to exchange knowledge within a casual environment. This training is organised by the organisation, so the cost is very small compared to a formal training. • Either formal or informal training would be ineffective if most trainees do not give any responses to trainers such as not asking any questions and keeping quiet because they fear speaking in public.

Categories	Concepts	Employees	Management
	Coexistence of IS and KM Departments	• The IS department should be made responsible for the control of the knowledge management system, as this would facilitate its adoption by employees. • Bridging the gap between IS staff and KM team is important as IS staff (a majority of whom are young people) feel reluctant to talk openly with the KM team members (led by top management). • Outsourcing a KMS development should be avoided as the outsourced system may conflict and not be able to link with existing systems. • The enormous ego of older KM managers results in the IS team's resistance to the contribution of KMS development.	• KM team should have control of the knowledge management system, while IS department has a responsibility to maintain the technical aspects only. • IS staff should not be involved in knowledge management implementation, except technical maintenance, otherwise the KM team may loose importance and status. • Outsourcing a KMS development is recommended, as system stability is a key factor. The difficulties in linking between the outsourced system and the existing systems seem to be ignored as it is believed that IS staff should be in charge of ensuring that the two systems are made compatible.
KM Awareness and Practice	KM awareness	• KM is understood as involving the management of user experiences, documents, best practice, and codified knowledge items. • KM practices are perceived as important and effective only if directly useful to employees. KM practices are resisted if felt benefiting the organisation as opposed to employees.	• Encouraging employees to codify their tacit knowledge is perceived as a good activity for raising KM awareness. • Increased use of KMS and stored (created) knowledge items are perceived as good indicators of knowledge management successes in the organisation. • Persuading employees to understand that KM is part of their job responsibilities is the most effective means to promote KM awareness. • Managers tend to be tied to knowledge storage rather than knowledge sharing and creation. This leads employees to do the same.

Categories	Concepts	Employees	Management
	Sharing knowledge	• Sharing knowledge by informal or traditional face-to-face interaction is preferred to virtual means (supported by technology). This is because employees believe that face-to-face interactions create stronger social relationships and promote trust, while these are difficult to establish in virtual contexts, as the expression of emotions is difficult. • Employees overlook the outcomes from social events such as informal forum, tea break because most of them indicate these events useless. This prevents effective communication and experience sharing.	• Corporative knowledge sharing in informal contexts, such as discussion forums and coffee breaks, is highly valued as this method can (a) break barriers between employees and management, (b) establish stronger relationships among them (c) allow employees to reduce personal barriers, and (d) practice and improve their presentation skills. • IPR and confidentiality issues raised by employees in relation to shared knowledge are felt to be unjustified, as management believes that these concerns inhibit knowledge management practices. Knowledge created during working hours is felt to legitimately belong to the organisation. • Managers overlook the outcomes from social events such as informal forum, tea break because most of them indicate these events useless. This prevents effective communication and experience sharing.
	KMS adoption	• Initiating employees to simple knowledge management practices and functionality such as storing knowledge items in the web-based knowledge management system can help address technology adoption issues amongst employees. • There were several problems in terms of human and technical aspects, to adopt a KMS, especially moving all knowledge items to the new system.	• Knowledge management practices (including KMS adoption) should be supported by an effective reward system. • While the ease of use of the KMS is acknowledged as important, management feels that it is equally essential to persuade employees to recognise the usefulness of adopting the KMS. • There were several problems in terms of human and technical aspects, to adopt a KMS, especially moving all knowledge items to the new system.

Categories	Concepts	Employees	Management
	Motivation for KM	• Reward systems should be reliable, reasonable, and fair enough to motivate people to share knowledge. Employees are still reluctant to share knowledge because they do not believe that the organisation has enough financial resources to provide rewards. There is an overall feeling that the reward system is unfair. • Punishment is perceived to stimulate staff to share and create knowledge without rewards provided.	• Rewards should be appropriate and meet employees' expectations. Staff development, empowerment, and recognition are perceived to be more effective than financial incentives because these rewards gain respect among colleagues. • Financial incentives seem to be effective in addressing short-term as opposed to long-term motivation. • Punishment is perceived to stimulate staff to share and create knowledge without rewards provided.
	KM barriers	• Non-supportive organisational structure (hierarchical structure) • Lack of good social relationships amongst employees in the organisation. • Difficulty in using technology. • Prohibitive cost of technology.	• Lack of presentation skills and capabilities (speaking practices). • Lack of personal motivation due to ineffective rewards, which do not seem to meet employees' expectations. • Lack of financial support. • Lack of IT skills. • Concern about security risk.
Perceived values	Employees' perceived value	• Knowledge gathered from the organisation • Know-how • Self-development • Recognition through praise and promotion • Improved social relationships among employees within and across the organisation. • Knowledge friendly culture	• Knowledge gathered from the organisation • Know-how • Self-development • Recognition through praise and promotion • Improved social relationships among employees within and across the organisation. • Knowledge friendly culture
	Customers' perceived value	• Customer satisfaction. • Improved service quality. • Better recognition from customers. • Building a good rapport between customers and the organisation.	• Customer satisfaction. • Improved service quality. • Better recognition from customers. • Building a good rapport between customers and the organisation.
	Organisation's perceived value	• Increasing knowledge • Increasing productivity • Reducing costs of service. • The control of all knowledge in the organisation • Addressing knowledge problems due to staff loss • Becoming a learning organisation • Increasing overall service quality	• Increasing knowledge • Increasing productivity • Reducing costs of service. • The control of all knowledge in the organisation • Addressing knowledge problems due to staff loss • Becoming a learning organisation • Increasing overall service quality

6.6 Summary and Conclusion

This chapter began by presenting information relating to the case study in a selected site, BETA, a Thai hi-tech organisation. The organisation background was discussed to provide the overall picture of KM practices and the existing KM-related system. This was followed by a presentation of the data collection procedures and results.

The data collection was divided into two phases. The aim of the first phase was to provide general information whereas more in-depth and critical information was obtained in the latter phase. Iterative pattern coding was used to assign units of meaning to the descriptive or inferential information compiled from the qualitative data and to summarise segments of data. These codes are refined through an iterative reading and analysis process. Pattern codes emerging from phase 1 consisted of overall knowledge management, training, information technology, teamwork, motivation, and KM barriers, and the codes derived from phase 2 included information and communication technology, team working, ICT and knowledge provision strategies, structure and culture, training, coexistence of IS and KM departments, KM awareness, sharing knowledge, KMS adoption, motivation for KM, KM barriers, employees' perceived values, customers' perceived values, and organisation's perceived values. In order to more easily address the data from phase 1 and 2, the findings were summarised in Table 6.1 and 6.3 in the categories of thematic group and pattern code.

New facts about KM processes have been derived from the main findings of the two phases of the study. Accordingly, the researcher points to the need for the process mapping to describe the core KM processes involved in the organisation. Process mapping is selected as the tool for this for three reasons. First, process mapping is defined as a virtual aid for (a) picturing work processes which illustrate how inputs, outputs and tasks are linked (Anjard, 1998). Second, process maps provide a clearer understanding of the business context than text (Peppard and Rowland, 1995). Third, process maps are extensively used in re-engineering projects (Soliman, 1998). The resulting process map is expressed by using the IDEF0 method (IDEF0, 2004) in Figure 6.2.

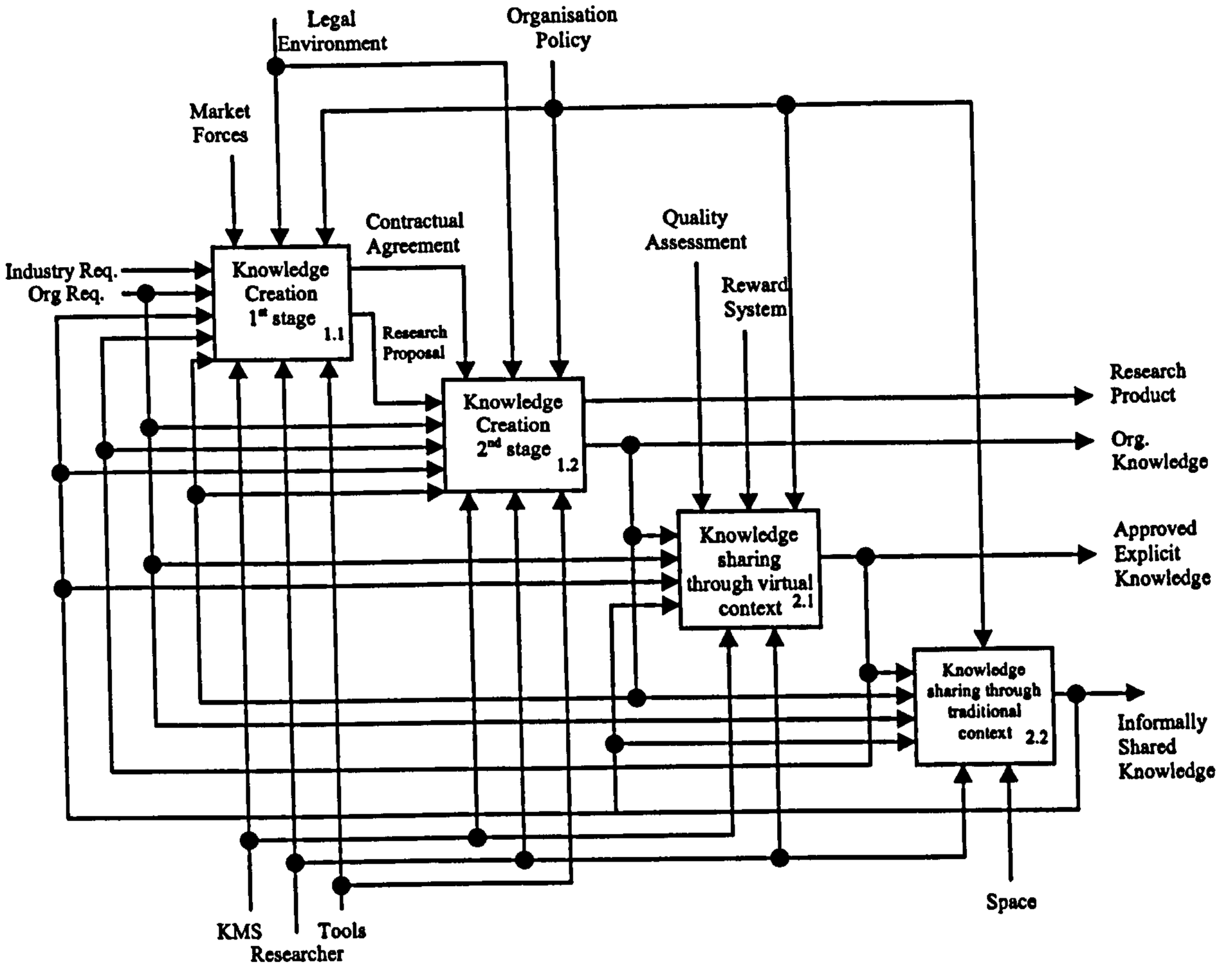

Figure 6.2: Process of knowledge creation and sharing in BETA.

Figure 6.2 shows that industrial needs or market forces drive research in BETA, as it strives to be a "demand-driven" organisation. It helped identify two knowledge creation stages: *the 1st Stage* involves knowledge creation in the context of the commissioned research to support the development of a research proposal / brief, while the *2nd Stage* involves fulfilling the research proposal by producing research outputs, hence creating new knowledge. It also helped identify two knowledge sharing patterns: *Knowledge Sharing through Virtual Context*, which involves the process of knowledge sharing within virtual spaces through groupware using knowledge repository systems; whereas *Knowledge Sharing through Traditional Context* involves the process of knowledge sharing in physical contexts such as face-to-face formal or informal meetings. Researchers can share project / research knowledge through an internal and informal forum that all members of the department can attend. The forum aims to practice both research and presentation skills. Moreover, knowledge can be shared through dedicated project meetings that only project members are allowed to attend and discuss within the project team. During or after the research, the researchers are required

to produce documents related to the ongoing or completed research, such as technical reports, papers, patents, and prototypes, and to upload these to the organisational knowledge repository system (BETA's Knowledge Management System). This is the mechanism used to acquire and store knowledge and also to claim rewards (monetary reward or promotion). The reward system was initiated based on the organisation's policy to motivate employees to share and create knowledge. All documents uploaded to the system have to pass a quality assessment approved by a dedicated committee.

In the following chapter, an analysis of the field data will be made with reference to the conceptual framework that was developed from the literature review. The data will be analysed critically to answer the research questions and to develop a theory emerging from the data.

CHAPTER 7

Discussion

7.1 Introduction

The previous chapter presented the results and findings from the case study of knowledge value perceptions in a Thai organisation, BETA. The content of this chapter is structured into five main sections. The objective of the first section is to present the cultural aspects linked to the results and findings from the case study. The aim of the second section is to discuss the theory selected in this research. Then, the cultural aspects from the first section are discussed in isolation, connected with the existing theories. The next section aims to generate the theory derived from the data and discussion. The final section is the conclusion.

7.2 Discussion

While both employees and managers in BETA have experienced the implementation and adoption of KM, their perceptions of the experience display both similarities and differences. The perceptions presented in terms of categories and concepts can be attributed to variations in the KM process as well as people's perceptions of technologies, organisational culture and strategies. While these units of analysis (employees and managers in BETA) have yielded a grounded theoretical framework of organisational KM process, it is necessary to connect the

grounded theory with existing theory, and this results in a more general substantive theory (Glaser and Strauss, 1967). Eisenhardt (1989) notes that "tying the emergent theory to existing literature enhances the internal validity, generalisability, and theoretical level of theory building from case study research."

It is interesting that the discussion should focus on the distinctive culture influencing knowledge value creation. A number of cultural aspects are reported in the literature on organisational culture in developing countries as well as Thailand (Chaidaroon, 2004; Hofstede 2001). In this case, crucial cultural aspects emerging from the results include collectiveness, shyness, conscientiousness, and seniority.

- *Collectiveness* represents collectivist culture and social relationship.
- *Shyness* represents nervousness, not speaking up, and receiver orientation in interactions.
- *Conscientiousness* represents avoidance of uncertainty and risk and being patient with something that is unpleasant.
- *Seniority* represents respect for older people or those who have higher rank socially and/or in the organisational hierarchy.

In order to clarify understanding of these four cultural aspects, the researcher employed the "rich pictures" technique to conceptualise the overall KM situation including structure, process, concerns, etc. Rich pictures are free form diagrams that display relationships between business functions and draw attention to the (usually) many people or groups who could be seen as stake-holders in any human situation (Checkland, 2000). The development of rich pictures appears in the "problem situation expressed" step of the Soft Systems Methodology (SSM), a systems thinking approach (Checkland, 2000). Figure 7.1 shows the researcher's rich picture illustrating the current situation under investigation.

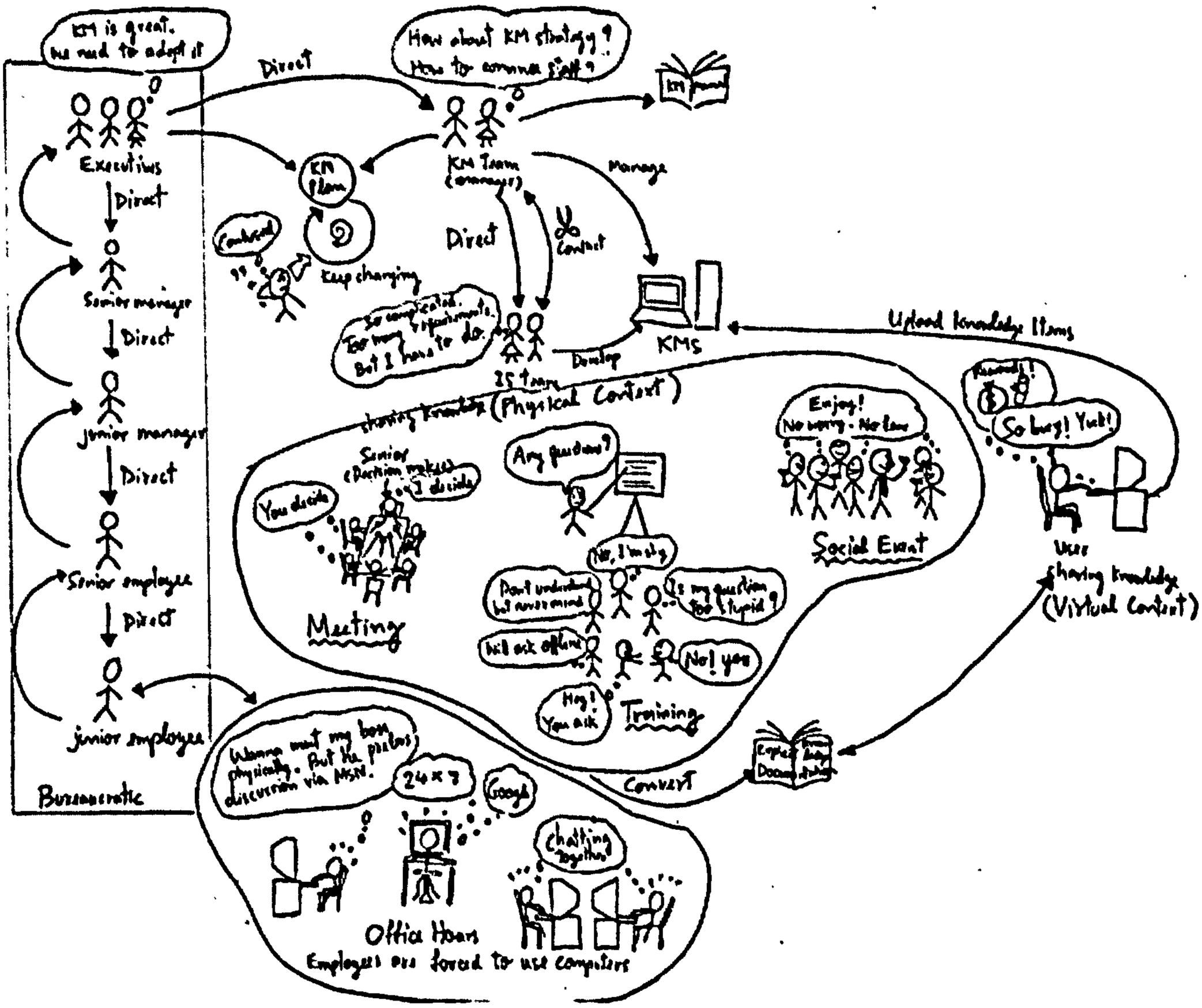

Figure 7.1: Rich picture

Table 7.1 below, presents these cultural aspects linked to the results and findings from the case study.

Table 7.1: Cultural aspects

Cultural Aspects	Findings
Collectiveness	• Employees prefer working in a team (collectivism) to individualism as they believe that teamwork creates more opportunities for team members to participate in problem-solving and decision making, and offers a range of different skills, abilities, knowledge, and experience to ensure that creative ideas are supported. Therefore, strong social relationship between them and collectiveness are perceived as critical factors in achieving team work. • Collectiveness (participatory culture) in social contexts (outside the organisation or after office hours) helps employees to open their minds and exchange information about work or personal life through a casual environment. This culture is perceived to break down personal barriers and to be able to create strong social relationships in the organisation. • The creation of strong social relationships during formal training is highly valued because employees believe that a lively discussion among trainers and audiences leads to efficiency in obtaining both tacit and explicit knowledge. Moreover, formal training creates a good connection after the training. • The other training methods (on the job training and learning from documents) seem not to be appreciated due to the individual nature of the learning process and lack of human interaction. • Employees believe that sharing knowledge through face-to-face interactions creates stronger social relationships and promotes trust, while these are difficult to establish in virtual contexts as the expression of emotions is difficult. • Collective knowledge sharing in informal contexts, such as discussion forums and coffee breaks, is highly valued as this method can (a) break down barriers between employees and management, (b) establish stronger relationships among them, (c) allow employees to become braver in speak among their colleagues, and (d) practice and improve their presentation skills. • Employees perceive that all organisation processes should be underpinned by IT practices. They therefore completely rely on computer technology, which leads to the feeling that they are usually "stuck" in front of their computers, resulting in a lack of human networks and social capital. • Bureaucratic (hierarchical) organisational structure is perceived to inhibit positive social relationships among employees, in particular when teams involve members at various levels of the organisational structure. Managers perceive that bureaucratic and participatory culture must be blended together and underpin team working. • In Thailand, everyone wants to take part in all activities. • Groupware or KMS was introduced to store knowledge and build virtual spaces for human networks and social capital. • IS and KM departments cannot work separately successfully. It would be better if the organisation decided to merge KM and IS departments into one. It is perceived that in this case working within a team causes fewer problems than working across teams. • The results show a number of concerns in relation to collectiveness: o Lack of social-oriented communication that is essential to develop trust amongst employees. o High task orientation that results in effectiveness without efficiency. o Inappropriate time management between social life and work. o Overlooking the outcomes of social events such as informal forums, tea breaks, resulting in preventing effective communication and experience sharing. • There are several needs in relation to collectiveness: o Improved social relationships among employees within the organisation o Relationships among people within and across the organisation o Building a good rapport between customers and the organisation o Customer satisfaction Better recognition from customers.

Cultural Aspects	Findings
Shyness	• A number of socio-emotional factors, including fear of speaking in public seem to inhibit teamwork effectiveness as people usually believe that they should act in a receiver role in their team. • It is important to help team members to reduce their shyness by facilitating open minded discussions in an informal context. • Shyness is believed to inhibit the effectiveness of knowledge sharing particularly in physical contexts involving a large number of participants. Management suggest that promoting adequate environments (informal, casual, and smaller group) and providing opportunities for staff to practice their presentation skills will reduce shyness. • One manager expressed that employees are very nervous to present their ideas to people. • Either formal or informal training would be ineffective if most trainees shy away from responding to the trainers, not asking questions, and keeping quiet because they are nervous when speaking in public. • The perceived inappropriate rewards criteria lead to unfairness among staff and cause them to feel embarrassed if they do not qualify for rewards. • The results show the need for self development such as presentation skills and capabilities (speaking practice).
Conscientiousness	• Employees prefer to avoid difficulties in using ICT. Therefore, familiarity and ease of use are the most important factors for employees' technology selection (e.g. employees prefer Microsoft Office to OpenOffice, an open source solution). This factor is perceived to reduce time, improve productivity, and in particular to avoid risk and problems. • Management perceives that avoidance of security problems should be addressed as corporate knowledge is indicated as providing a competitive advantage to the organisation. Due to potential security breaches, management has identified serious risks when accessing and sharing corporate knowledge across extranets. • Some managers worry too much about this concern. They do not trust in the authentication and authorisation features of the KMS. • Although most employees follow the KM policy, it is perceived that there is an underlying disagreement about this because of IPR, security, and confidentiality constraints. This results in employees' unwillingness to share knowledge. • Employees follow the organisational policy to control knowledge although this policy seems to generate resentment to anyone who prefers to self-manage their knowledge within their own computers for their own benefits. This is because they want to avoid unexpected problems such as punishment in the form of warning, demotion, salary reduction, etc. • Employees avoid the difficulty of using free software or open source software that seem to inhibit productivity due to the limited technical functions, while management promote such software in the organisation to avoid financial risks. Finally, employees must respect the management's decision and thereby invest considerable 'unpleasant' effort into studying such software. • Employees usually use pirated commercial software at home, but are forced to use open source software at work, leading to the obvious comparison between these two software types. • Avoidance of uncertainty and risk in relation to KMS development is perceived differently by the IS department and the KM team. The IS department believe that avoiding technical incompatibility among existing systems caused by outsourcing the system development should be addressed, while the KM team appear to avoid system instability rather than incompatibility. The KM team believes that outsourcing KMS development is recommended, as system stability is a key factor. • It is suggested that outsourcing KMS development should be avoided as the outsourced system may conflict with and be unable to link with the existing systems.

Cultural Aspects	Findings
	• Managers tend to be tied to knowledge storage rather than knowledge sharing and creation. This leads employees to do the same. • Employees feel uncomfortable with storing their knowledge items in the centralised KMS, as they believe that it is risky. For example, (a) their knowledge may be stolen without permission, and (b) they may receive negative feedback if their shared knowledge is perceived as invalid, out-of-date, or useless. However it is observed that despite this unwillingness, they will share knowledge properly if it is their responsibilities. • Employees and managers are forced to be tied to their computers. They perceive that this "low-tech" style is inappropriate for a hi-tech organisation. • KM practices are sometimes resisted if the employees feel that they benefit the organisation rather than themselves. However, they try to tolerate this unpleasant policy and accept it because they recognise that they should follow the common rule if the majority of employees do so. • Persuading employees to understand that KM is part of their job responsibilities is the most effective means to promote KM awareness because in general employees pay close attention to their job responsibilities. • Adoption of simple technology is welcomed, while adoption of advanced or complicated technology is resisted. Therefore, initiating employees to simple knowledge management practices and functionality such as storing knowledge items in the web-based KMS can help to address technology adoption issues. Moreover, management suggest that not only the ease of use, but also the usefulness should not be overlooked for KMS adoption. • It is strongly believed that rewards may not be required. Instead, punishment can be used to stimulate staff to share and create knowledge. Employees seem to value assigned responsibilities and follow mandatory policies although they are not willing so to do. • If reward systems are used in the organisation, they should be reliable, reasonable, and fair enough to motivate people to share knowledge. Employees are still reluctant to share knowledge because they do not believe that the organisation has enough financial resources to provide rewards. There is an overall feeling that the reward system is unfair.
Seniority	• A number of socio-emotional factors, including respect for old age, seem to inhibit teamwork effectiveness as people usually believe that they should act in a receiver role in their team and should not elaborate and argue their own ideas against those of older or more senior staff. Nevertheless, masculinity, femininity, and gender related-traits have not been found significantly influencing KM practices among people, in particular highly educated employees and managers. • Promoting an appropriate teamwork environment and atmosphere help staff to reduce their fears and gain confidence by encouraging them to contribute effectively through constructive comments to their managers or team leaders. • The Thai public sector has a seniority-based rather than a performance-based promotion system. • A top-down approach to KM improvements is usually perceived to lead to better results with greater longevity. • Management perceives that seniority and a hierarchical organisational structure is adequate in Thai organisations. • Junior staff members offer the criticism that those who are in a high position are likely to connect with egocentricity and arrogance. • Ideas are always finalised by senior members alone. Young members usually keep quiet, as they worry about potential negative impacts if they criticise the ideas expressed by older members. • The dominant bureaucratic (hierarchical) organisational structure within the organisation is perceived to inhibit effective communication and employee participation and contribution. This is reflected in existing working procedures (e.g. reporting layers) and may generate conflicting cultures. Conversely, management believe that as the bureaucratic (hierarchical) structure is widely

Cultural Aspects	Findings
	accepted in Thai organisations, it is a non-changeable organisational culture. • Nevertheless, although bureaucratic (hierarchical) behaviour is generally dominant within the organisation, management feels that promoting participation removes seniority barriers. • Young employees take the attitude that giving constructive comments in a diplomatic way convinces senior staff to make compromises. This relies on the fact that politeness and good manners in all circumstances are used as a means to achieving objectives. • Similarity, it is perceived that if senior managers reduce their egos, young employees will be brave enough to speak up. • A combination of bureaucratic and participatory culture within an appropriate environment causes a better relationship between young and old staff. • Bridging the gap between the IS staff and the KM team is important as the IS staff (the majority of whom are young people) feel reluctant to talk openly with the KM team members (led by top management). • Seniority concerns are likely to connect with arrogance. The IS staff are forced not to involve themselves in KM implementation, apart from routine technical maintenance, at the perceived risk of the KM team losing importance and status. • Seniority is a potential concern in relation to knowledge sharing. Those employees who have much more outstanding knowledge sharing performance than their managers or seniors seem to receive indirect negative feedback such as reduced opportunities for training. • The enormous ego of older KM managers results in the IS team's resistance to contribution to the KMS development.

7.3 Theory Selection

The researcher connects the grounded theory derived from the data with aspects of existing formal theory. In the case of an organisation study in relation to KM, the research involves several issues including human, organisational and technical aspects. The work on human and organisational aspects focuses on understanding socialisation and organisational nature to enhance KM processes (Becerra-Fernandez and Sabherwal, 2001; Gold *et al.*, 2001); the work on the technical aspects aims at studying the use of various technologies to acquire or store knowledge resources (Borghoff and Pareschi, 1998). The research extends and contributes to KM research by adopting a holistic perspective where human, organisational, and technical issues are blended successfully, to provide better contextuality and insight into the culturally related KM problem situation. As grounded theory facilitates "the generation of theories of process, sequence and change pertaining to organisations, positions and social interaction" (Glaser and Strauss, 1967), it is essential to consider the theory and literature of the related field before choosing the particular theory to further the discussion. A review of the theory and literature was given in Chapter 3.

As the research involves the study of KM in an organisation, focusing on the organisational culture in Thailand, the theory selected for the discussion needs to account for four distinctive characteristics of Thai culture: collectiveness, shyness, conscientiousness, and seniority, created out of existing knowledge practices across the organisation.

Although the diffusion of innovation theory (Rogers, 1995) and technology acceptance model (Davis, 1989) have widely been adopted within the discipline of KM, they emphasise how the organisation and people adopt innovation and technology, but do not account for the social influence in the adoption and utilisation of KM practices. On the other hand, social capital theory concentrates on both social and IT issues about KM. Importantly, three substantial clusters of social capital are highly relevant to four distinctive characteristics of Thai culture, and will provide valuable insights into the discussion. The structural dimension refers to the opportunity to connect with each other (collectiveness). The relational dimension refers to the character of the connection between individuals and motivation to share knowledge. This is best characterised through trust, norms, obligation, and respect (collectiveness, conscientiousness and seniority). The cognitive dimension refers to the ability to cognitively connect with each other in order to understand to what the other is referring when communicating and sharing knowledge (collectiveness, shyness, and seniority). As a result social capital is selected in this research to further the discussion.

Before discussing how the four distinctive characteristics influence knowledge value creation towards a social capital analysis, the summary of the review of social capital theory and Thai culture is presented in Table 7.2, adapted from Huysman and Wulf (2006).

Table 7.2: Three clusters of social capital

Dimension (Nahapiet and Ghoshal, 1998)	Structural dimension	Relational dimension	Cognitive dimension
Knowledge management issues	How people encourage opportunity for knowledge sharing and creation.	How people connect between individuals.	How knowledge is shared and created among people.
Social capital sources (Adler and Kwon, 2002)	Opportunity	Motivation	Ability
Content	Network ties	Trust, norms, obligation, and respect	Shared knowledge, codes, language, stories

7.4 Four Cultural Aspects

In this section, the four cultural aspects: collectiveness, shyness, conscientiousness, and seniority are discussed in turn.

7.4.1 Collectiveness

Collectiveness, indicated to be one of the distinctive characteristics of Thai culture, refers to collectivist culture and social relationship. This sub-section highlights a number of key issues about collectiveness, extracted from the findings in Table 7.2. Collectiveness is regarded as a network structure which contains the network ties, trust, and shared knowledge. The discussion of collectiveness corresponds to analysis of how collectiveness is (a) supporting people to form team working, (b) impacting on trust between people, and (c) promoting KM. As a result, this sub-section will be discussed according to all the dimensions of structural opportunity, relational motivation, and cognitive ability.

7.4.1.1 Structural Dimension

The structure dimension of social capital focuses mainly on the density of networks and on bridging structural holes (Burt, 1992; Wasserman and Faust, 1994). Studying of social networks would reveal with how collectiveness is supporting team formation in BETA.

The results show that BETA clearly supports employees' opportunity to work in a team rather than to work individually. Moreover, as reported in the survey questionnaire results, most employees are encouraged to be involved in more than one team at a time as it is a requirement for their jobs that they should carry out more than one project concurrently. However, it is observed that a team is generally formed by the management; individuals are not allowed to form a team freely. Since a team is established by people who are not involved in it (management), the team members may not have close relationships with one another, especially those who are from different departments and sometimes other organisations. That is, collectivist or participatory culture is needed in a team to help create network ties. One manager confirms that employees have been supportive of the collectivist culture in the organisation:

"We work together and always keep an open mind. If I work on Project A, and my colleagues work on Project B, I will go to see what they are doing and they can also come to my desk and discuss with me about their work."

Therefore, the organisation's knowledge values must be created through the network of relationships possessed by people in collectivist cultures. As also reported in Thanasankit and Corbitt (2000), Thai society constructs its reality as group or social interests rather than individual interests. Strong social relationships and collectiveness are perceived as a critical factor to create more opportunities for team members to participate in problem-solving and decision making, and offer a range of different skills, abilities, knowledge, and experience to ensure that creative ideas are supported. Also, as highlighted in Nahapiet and Ghoshal (1998), social capital is defined as the sum of the actual and potential resources embedded within, and derived from, the social network controlled by an individual or social unit. It is reported that social capital also plays an important role as an aid to adaptive efficiency and to the creativity and learning it (Nahapiet and Ghoshal, 1998). It enables facilitates cooperative behaviour, thereby encouraging the development of new forms of association and innovative organisation (Fukuyama, 1995; Jacobs, 1965; Putnam, 1993).

As outlined in Rezgui (2007b), it is suggested that a knowledge-based organisation needs all of its employees to share a culture that promotes the virtues of knowledge acquisition and sharing, requiring a number of essential attributes. These attributes are perceived to help create an opportunity for knowledge sharing and creation in BETA.

- A culture that recognises tacit knowledge and social networks, resulting in the promotion of open dialogue between staff allowing them to develop social links and share understandings. BETA has valued sharing tacit knowledge in informal contexts, such as discussion forums and coffee breaks. This method is perceived to (a) break down barriers between employees and management, (b) establish stronger relationships among them, (c) allow employees to reduce personal barriers and gain confidence, and (d) practice and improve their presentation skills.
- The support of communities of practice where members continuously increase their understandings of their collective tasks. The results show that BETA has provided physical and virtual spaces to support communities of practice such as open forums,

formal training, web-based discussions, etc., resulting in efficiency in obtaining both tacit and explicit knowledge, and good connections between employees.

7.4.1.2 Relational Dimension

The relational dimension here is based on socially attributed characteristics of the connection between individuals, such as trust. Its aim is to discuss how collectiveness is impacting on trust between people. The results show that team collaboration through face-to-face communication such as formal training creates stronger social relationships and promotes trust, while these are difficult to establish in virtual contexts due to the lack of emotional expressions. Therefore, team members in BETA are aware of the greater societal acceptance of face-to-face rather than virtual interaction. Based on Thai culture, virtual communication such as email may form bridges between people (e.g. across different sections or locations) but it does not create bonds (such as the case of the helpdesk staff member and the manager in the previous chapter). With the indirect communication strategies, they sometimes create a communication gap and misunderstanding during interactions and are seen as a very well liked culture but not so well trusted, respected, and admired even when compared with other Asian cultures from the Westerner's perspective (Hendon, 2001). One manager shows his preference for face-to-face interaction and mistrust of virtual communication:

"I prefer to meet my colleagues in person. Even when I send them an email, I must go to see them suddenly to confirm receipt of my email—'Have you received my email?' then I continue to talk with them physically."

As such, the research acknowledges the pivotal and strategic role that human networks play in developing trust in the particular context of the collective characteristic of Thai culture, as reported in Chaidaroon (2004). This has resulted in increased awareness, knowledge quality, and business intelligence, which have in turn triggered a value added dimension that did not exist prior to initiating the change processes. Human networks are facilitated and nurtured by providing informal forums that can be assimilated into communities of practice. These are complemented with virtual spaces to share knowledge (including sensitive information) protected by a role access control system. The collective characteristic of Thai society is exemplified by the dimension given to team working. However, it has been shown that

human networks can only be effective if the social conditions that underpin collaboration are met (including trust). This emphasises the role that social capital plays in creating organisational value underpinned by strong human networks. A participatory culture helps develop trust, respect, and understanding for others at different levels in BETA.

Clearly, a culture of confidence and trust in which people are willing to communicate is perceived to initiate KM. The results confirm the employees' perception that sharing knowledge through face-to-face interactions creates stronger social relationships and promotes trust, while these are difficult to establish in virtual contexts, as the expression of emotions is difficult. There are concerns about mistrust and confidentiality in the authentication and authorisation features of the KMS, as also reported in Rezgui (2007b).

7.4.1.3 Cognitive Dimension

The cognitive dimension here refers to the ability of human actors to cognitively connect with each other to share and create knowledge in both physical and virtual contexts. The discussion therefore will correspond to analysis of how collectiveness is promoting KM. The gathered evidence shows that formal and informal communication, through physical human collaborations such as formal training and meetings, is perceived to be effective in promoting knowledge sharing and creation. Also, most employees in BETA express a preference for sharing tacit knowledge and experience through face-to-face interaction. They prefer learning via exchanging their experiences within social contexts to individual learning from documentation. They perceive that tacit knowledge gathered from people collaboration should be converted into explicit knowledge in order to store in a shared database. This knowledge conversion, for example, can be done through the process of externalisation in SECI model (Nonaka *et al.*, 2000). This culture encourages the learning of lessons from failure as well as success. As reported in the results, a knowledge repository system is used to store best practices and failures in the form of documentation, created during collaboration such as informal forums and training. The system also provides great value for the organisation, in particular in the context of staff loss. One manager offers an example of knowledge capture during collaboration in BETA, leading to promoting a culture of knowledge-friendly practices:

"We started this strategy by giving a notebook to our staff to write anything they want. This is not just a normal notebook, but it is our KM initiative... They have to record everything that they do everyday. They can bring their notebook with them anywhere, and write down any new knowledge that they receive. For example, having a notebook in a meeting is better than having nothing. This means they have a tool to store knowledge. Also, this can practice their writing skill. I believe that transferring tacit to explicit knowledge is very necessary. This is a fundamental KM strategy proposed by the director."

In terms of socio-technical perspectives, BETA shows the concerns about lack of social-oriented communication and social events due to the tendency to completely rely on computer technology, which results in people feeling that they are usually "stuck" in front of their computers. This perception leads to KM fallacies or traps that directly influence the perceived functionality of IT applications for the support of KM initiatives (Huysman and de Wit, 2002). As also reported in Huysman and Wulf (2006), these KM fallacies relate to the tendency of organisations to concentrate too much on the IT role supporting KM practices, especially knowledge sharing, resulting in the "IT trap". It is important to recognise that IT is not independent from the social environment, as it is not the technology itself, but the way people use it that determines the role of IT in supporting knowledge management practices (Huysman and Wulf, 2006). Therefore, the organisation's success with the use of IT will not depend on IT skills, but the appropriate social context that can benefit from electronic communication technology (Zack and McKenny, 2000). It is suggested that information systems aimed at KM need to maintain the integrity of the social communities in which knowledge is embedded (Boland and Tenkasi, 1995), to avoid the IT trap. This requires the use of socially embedded technologies or collaborative system such as KMS or groupware, influenced by the belief structures (perceived ease-of-use and perceived usefulness) of TAM (Davis, 1989). In the case study, collaboration through groupware is highly valued overall, and the functionality like discussion forum has been described as important in nurturing knowledge sharing within a social context, as confirmed in related literature (Ellis *et al.*, 1991; Poltrock and Grudin, 1995). Clearly, in BETA, this socio-technical perspective can be perceived as a vital tool in bridging the gap between the social context and the use of IT, and also promoting KM. Social and technical aspects must be blended successfully to produce social capital.

7.4.1.4 Comparison of Collectiveness in Thai and Western Culture

The research confirms that BETA supports people's opportunity to work in a team rather than to work individually, as they perceive that knowledge values must be created through the network of relationships, especially sharing tacit knowledge and experience through face-to-face interaction within social contexts, possessed by people in collectivist cultures. Importantly, concerns about the lack of social-oriented communication and social events have been addressed.

It can be concluded that in a Thai organisation teamwork culture is more highly valued than individualism, as opposed to the case in Western, especially American and British, culture (Hofstede 2001). Komin (1990) adds that Thai people place more emphasis on the value of social relationships (collectivist culture) than on task achievements.

In contrast, Chaidaroon (2004) and Komin (1990) argue that Westerners tend to place greater emphasis on tasks than on relationships. As a result, Westerners may appear to be direct, argumentative, and aggressive to Thais because their aim is to get the job accomplished first and develop interpersonal relationships later.

7.4.2 Shyness

Shyness here refers to nervousness, not speaking up, and receiver orientation in interactions. It is regarded as a strategic mode of communication employed by the senders rather than a mere trait of incompetence (Chaidaroon, 2004). The discussion of shyness corresponds to analysis of how shyness is (a) affecting network ties and relationship, (b) affecting trust between people, and (c) affecting ability to share and create knowledge. Thus, this sub-section will be discussed according to all the dimensions of structural opportunity, relational motivation, and cognitive ability.

7.4.2.1 Structural Dimension

The concept of the structural dimension of social capital is used to refer to the overall pattern of connections between actors affected by shyness. The results confirm that shyness at work is perceived to inhibit the creation of strong social relationships. It is observed that

employees feel nervous when working with people with whom they have never worked before. They usually believe that they should act in a receiver role in their team and shyness can sometimes be strategically performed to gain recognition from others, as argued in related literature (Chaidaroon, 2004). One manager states that shyness may make employees miss an opportunity to sustain ties with others:

"When we've got some visitors to visit our office, our colleagues are shy and nervous to meet them. The problem is that they try to avoid discussions with them and presenting our work to them. I recognise that this is a Thai behaviour, but it would be better if they were brave enough to get to know others. Keeping up ties with significant people who visit us is always good."

To reduce shyness in a team, the results show that promoting adequate environments (informal, casual, and smaller groups) and providing opportunities for staff to practice their presentation skills is suggested, as agreed with the open-minded concept (Al-Saggaf, 2004). Along with participatory culture in BETA, employees are offered an informal forum during tea breaks, leading to the opportunity of speaking with each other, especially strangers, without being shy.

Beyond pure communication, a virtual space that allows the creation and development of online collaboration may foster the structural dimension of social capital. The results suggest the adoption of virtual spaces (such as online discussion forum) to help boost confidence and reduce personal barriers like shyness, leading to the initiation of online communities. Also, such a virtual space can help human actors to strengthen existing social ties, or build up new ones (Huysman and Wulf, 2006). A substantial amount of research suggests that the use of the virtual space has a potential to break down some barriers to participation by removing certain psychological elements including shyness encountered by the public when expressing their view points at public meetings (Al-Saggaf, 2004; Sadagopan, 2000). Additionally, Al-Saggaf (2004) note that online communities help people gain self-confidence, become more open-minded in their thinking, and be more aware of the wider characteristics of individuals within their society. However, some argue that in some online communities, people who are shy ('lurkers') are still not enthusiastic about communicating and posting publicly (Nonnecke and Preece, 2001; Nonnecke *et al.*, 2004).

7.4.2.2 Relational Dimension

The relational dimension here is based on a socially attributed characteristic of the relationship including trust and norm. This sub-section aims to discuss how shyness is affecting trust between people.

The results show that shyness may lead to lack of motivation including trust and norm, or simply a lack of awareness or lack of value being ascribed to sharing information with others, as confirmed in Clayton and Fisher (2005). It is observed that employees are shy when they do not achieve their work but their colleagues do. They sometimes believe that the organisational norm to evaluate them is unfair and the result may be that they feel paranoid and do not trust others. The observed results from the previous chapter have confirmed:

"Perceived inappropriate criteria to get rewards lead to unfairness among staff and cause them to feel embarrassed if they do not qualify for rewards. The criteria judge employee performance from a number of published research papers, and the same criteria are used for all employees. Therefore, these criteria encourage employees from R&D departments only, whereas it is very difficult for those from other non-research sectors such as administrative departments to be rewarded. These are indicated as unfair."

In terms of trust development among shy people, BETA has promoted an informal forum in physical space to motivate employees to speak out publicly without shyness. This method leads them to establish good relationships, resulting in the development of trust. On the other hand, the relational dimension is also characterised through trust of others in the virtual environment. Although the above discussion (structural dimension) emphasises the advantages of a virtual space to reduce shyness, on the negative side, it is argued that participants in the virtual world may neglect trust within their family/social commitments and may become confused about some aspects of their culture and religion (Al-Saggaf, 2004). This can be explained by the fact that human networks in the physical contexts (including face-to-face interaction) of the collective characteristic of Thai culture, rather than in virtual spaces, play the pivotal and strategic role in developing trust and relationships, as reported in related literature (Choo, 2003; Thanasankit and Corbitt, 2000).

7.4.2.3 Cognitive Dimension

The cognitive ability dimension of social capital here refers to the ability of the human actors to cognitively connect with each other despite shyness. This sub-section aims to discuss how shyness is affecting the ability to share and create knowledge.

The results demonstrate that most employees in BETA are shy to participate in the discussion in a team because they are nervous when speaking in public. Also, shyness possibly is perceived to cause unwillingness to receive any assistance about information transfer and knowledge acquisition when it is offered, even when needed (Nahl, 2001). One interview clearly explains that removing shyness and gaining confidence should be addressed before sharing knowledge in a team.

"I just want to improve their [employees'] presentation skills. They are the experts at their research area. However, when they have to share experiences or knowledge to other people who don't have this knowledge, it is very difficult to do that, because they don't know how to speak in public and encourage audiences to understand. Worse, they cannot use simple words or simple language to communicate with audiences [they use only complicated or too technical words]. Maybe they are nervous... Therefore, first I should improve their presentation skill to better knowledge sharing."

To foster the cognitive dimension of social capital, an appropriate representation of the history of knowledge sharing activities may be useful since it allows human actors to better understand and refer to past interactions (Huysman and Wulf, 2006). As reported in the results, the same interviewee promoted his idea about recording all presentations on digital archives for subsequent viewing by the presenters and other staff. This idea is perceived to lead them to become less shy and to improve their future presentation performances:

"Another objective is to archive knowledge. I will record it in CD and it will be reusable. Actually, firstly I just archived it in order to improve their presentation skill, not for knowledge sharing. Then I will let my colleagues to see their weakness and improve their further presentation."

Finally, it is worth noting again that although most of the Western literature related to KM suggests a virtual environment to deal with shyness (Nahl, 2001; Sadagopan, 2000), and that this method makes people more aware of the wider characteristics of the individuals in their society, the ability to express themselves raises their self-confidence (Al-Saggaf, 2004).

7.4.2.4 Comparison of Shyness in Thai and Western Culture

The research has confirmed that shyness at work is generally perceived to gain recognition from others. However, this perception leads to inhibiting knowledge sharing effectiveness. For example, people are shy to participate in a discussion in training because they are nervous when speaking in public, which results in a lack of knowledge exchange between them. Promoting adequate environments (informal, casual, and smaller groups) and providing opportunities for staff to practice their presentation skills have been suggested as methods to reduce this problem of shyness.

Chaidaroon (2004) differentiates Thai culture from Western cultures. Thais seem to be receiver orientated, while Western people tend to act as senders in interactions. Moreover, Thai people tend to place high value and responsibility on interactions in the process of receiving messages (Knutson, 2003). According to Knutson (2003), for example, silence in the West is sometimes a communication apprehension cue, but Thai silence is a positive sign of respect. In addition, Chaidaroon (2003) argues that shyness in Western culture is almost always considered a negative trait, as opposed to Thai culture.

7.4.3 Conscientiousness

Conscientiousness here represents avoidance of uncertainty and risk, and patience with something that is unpleasant. As society has an innate tendency towards improvement and this tendency can be fostered through conscientious human endeavour (Tracy and Tracy, 2000), creating social capital takes conscientious effort (Flora, 1997). It means that each individual must be included, not just to meet their needs, but for the assets which they can offer the community (Flora, 1997). In this sub-section, the discussion of conscientiousness corresponds to analysis of how conscientiousness is (a) affecting network ties and relationships, (b) affecting obligations, norms and respect, and (c) affecting ability to share

and create knowledge. Thus, this sub-section will be discussed in all dimensions of structural opportunity, relational motivation, and cognitive ability.

7.4.3.1 Structural Dimension

This sub-section aims to discuss how conscientiousness is affecting network ties and relationships. Conscientiousness may lead to the creation of strong relationships and network ties within an organisation. The overall results report that most employees avoid any risks/uncertainty and conflicts to maintain relationships with others, as also confirmed in the literature (Chaidaroon, 2004; Hofstede, 1994). It is perceived that the employees' values like "Kreng Jai", (a reluctance to disturb another's state of mind by refusing a request, refusing assistance, showing disagreement, etc.) and "Mai Pen Rai" (It doesn't matter) emphasise harmonious social relationships and seem to reinforce existing hierarchical relationships (Van den Anker, 2005). As also outlined in Costa and McCrae (1992), the more conscientious a person is, the more competent, dutiful, orderly, responsible and thorough. Because of this, the organisational policy initiated by the management can force employees to create relationships within provided physical and virtual contexts, such as informal forums during tea breaks, though they sometimes reflect skepticism about a low level of willingness to voluntarily participate in such communities. That is, they do not refuse to be involved in any social activities if they are directed by their managers.

It is clearly shown, therefore, that conscientiousness may encourage opportunities for creating relationships and network ties. However, the research so far does not claim that social capital with conscientiousness is effective. It may create only the "opportunity" to bridge people (such as those who are from different sections or locations) together, but does not bond them. For example, BETA has several project teams involving people from many departments, yet it is often reported that relationships among them outside work, especially people from different departments, are not very good (such as the case of the IS and KM departments).

7.4.3.2 Relational Dimension

The relational dimension here is based on socially attributed characteristics of the relationship. This sub-section aims to discuss how conscientiousness is affecting obligation, norms, and respect. The effects of Thai conscientiousness on the relational dimensional of social capital have not yet been researched systematically. It is still largely an open question how the overall organisational process interacts with the motivation to engage in common ventures.

The results show that the organisation can force conscientious employees to follow the organisational obligation and norms because the employees wish to avoid unexpected problems such as punishment, and they give high respect to managers or people in higher positions. This relies on the belief that employees seem to value assigned responsibilities and follow mandatory policies even if they are unwilling so to do. More importantly, it is perceived that if the organisation can successfully force one group of employees to follow the policies, others will be attracted to do the same thing automatically. This phenomenon can be explained by the facts that forcing one group of employees to be early adopters may trigger a positive domino effect (Vijay-Rao, 2004) that can move the majority of the employees in the organisation into accepting the policies very rapidly. This may be applied to the concept of innovation diffusion (Rogers, 1995) and technology acceptance (Davis, 1989).

Finally, it can be concluded, in a Thai context, that if a network scores highly on the relation-based motivation of social capital, this may imply that members are motivated to participate in organisational activities – not because of their willingness to contribute to the relationship, as opposed to Huysman and Wulf (2006), but due to motivation like rewards or punishment. It can be said that the advantage of this culture is that it is easy for the organisation to control staff as they appear to be competent, dutiful, orderly, responsible and thorough. It is possible to use extrinsic motivation methods like punishment to pressure Thai people to accept obligation and norms. However, the disadvantage is the creation of a larger gap between employees and managers because of the employees' unwillingness and resentment. This can be best explained with an example of the conflict between the IS and KM staff. Conscientious IS staff are forced to perform routine technical maintenance of the KMS, but KM staff do not recognise the IS staffs' needs. The IS staff may have a bad attitude towards work and people, resulting in further problems such as staff loss or severe conflict.

7.4.3.3 Cognitive Dimension

The cognitive ability dimension of social capital here refers to the ability of the conscientious people to cognitively connect with each other. The higher a social group's cognitive ability, the more the members are able to share (tacit) knowledge (Huysman and Wulf, 2006). The social capital's cognitive dimension may enable knowledge sharing and creation and bridge the tacit-explicit division as well as division in terms of, for example, old-timers-newcomers (Hinds and Pfeffer, 2003; Huysman and Wulf, 2006). This sub-section aims to discuss how conscientiousness is affecting the ability to share and create knowledge.

Conscientiousness may help to enhance the promotion of KM in an organisation. The results show that employees accept the KM policy to control knowledge, although this policy seems to generate resentment to anyone who prefers to self-manage their knowledge within their own computers for their own benefits. This is because they want to avoid any unexpected problems like punishment in the form of warning, demotion, salary reduction, etc. There is a strong belief that the controlled knowledge stored in in-house knowledge repositories do provide great value for the organisation, in particular in the context of staff loss (although when an employee quits the organisation, his / her knowledge is not lost as it is already documented and stored in the system, and can therefore be used as best practice by other staff). Not only does the policy force employees to store knowledge items in the system, but it also leads them to participate in a community to share tacit knowledge. One manager gave an example of this policy:

"To share knowledge among colleagues, we may do it in the evening in our forum. The atmosphere is informal, but it is a formal routine. I have two sub systems to support this idea. First, it is a knowledge repository system to store knowledge items. Another is a collaborative system or online communities. This system uses a 'Wiki' concept to encourage my colleagues to participate and share constructive comments."

In terms of motivation to promote KM, punishment can be used to stimulate conscientious employees to share and create knowledge in the communities. As reported in the previous chapter, it is observed that:

"It is strongly believed that rewards may not be required. Instead, punishment can be used to stimulate staff to share and create knowledge. Furthermore, the organisation may indicate knowledge sharing is mandatory, not optional. This relies on the belief that employees seem to value assigned responsibilities and follow mandatory policies although they are not willing to do so."

However, a punishment-only approach may lead to "pressure" (Kelman, 2006). It is argued that punishment and rewards should be blended successfully to promote "pressure and support" or "challenge and support" (Kelman, 2006). Both punishment, and even extrinsic reward, may reduce intrinsic motivation among those with an intrinsic orientation to the organisation's public-service mission, counteracting positive effects of incentives (Deci and Ryan, 1985). However, these arguments do not account for the organisation which is low in ambition and high in conscientiousness, as in this case, because a reward system tends to reinforce only highly ambitious people (Garfield, 1979) and to be unsuitable for developing countries which suffer the problem of low funding (Okunoye, 2002). One manager states:

"If people recognise they don't benefit from participations, they won't have motivation. In fact, we may not be able to motivate them by using any policy to force them. Instead, we must embed KM and a learning culture in the organisation. They must realise that if they don't contribute, they will lose benefits."

In terms of the socio-technical perspective, the results show that the organisation always rapidly adopts new KM technology (such as completely changing from commercial software to open source software). However, employees avoid the difficulty of using ICT and are afraid of misuse of unfamiliar technology because familiarity and ease of use are perceived as the most important factors for employees' technology selection. Davis's Technology Adoption Model (TAM) (Davis, 1989) argues that end-user acceptance and use of IS innovation is influenced by their beliefs regarding the technology. In particular, it proposes that *perceived usefulness* and *perceived ease of use* influence the use of IS innovations and that this effect is mediated through behavioural intentions to use (Davis, 1989). TAM, together with the belief structures including usefulness and ease of use, may be applied to the collaborative system or KMS, and help in the adoption of new KM technology in an organisation. However, it is reported that TAM does not in fact aim to influence people to adopt new information systems (Davis, 1989), and the belief structures (perceived ease of-

use and perceived usefulness) are not often stable (Easley *et al.*, 2003). Moreover, gradual adaptations of technology lead to a successful alignment rather than adoption of technology (generally appearing in developing countries) (Archibugi and Pietrobelli, 2003; Leonard-Barton, 1988); the technology adoption concept seems to be inadequate for KMS adoption in Thai organisations.

7.4.3.4 Comparison of Conscientiousness in Thai and Western Culture

The research has confirmed the conscientiousness culture in BETA. Conscientious employees are forced to follow the KM policy direction handed down from above. They seem to value assigned responsibilities and follow mandatory policies, even if they are not willing to do so, in order to avoid any risks/uncertainty and conflicts, whilst maintain relationships with others. For example, employees follow the organisational policy to control knowledge although this policy seems to generate resentment to anyone who prefers to self-manage their knowledge within their own computers for their own benefit.

The conscientiousness culture in Thailand and Western countries has been also reported in the literature. It is perceived that Thai culture represents the subjugation-to-nature view (Kluckhohn and Strodtbeck, 1961), one of three types of cultural worldview based on the way each culture conceives the relationship between man and nature. Therefore, Thai culture may value being conscientious, humble, and prudent. As a result, they tend not to be quick in expressing their communication behaviours, and may be even less expressive as they believe that there is nothing they can do to escape from the natural laws; they would rather stay calm and accept their fate (Chaidaroon, 2004). Conscientiousness is also highly valued in most Asian developing cultures as opposed to Western cultures which focus on ambition (Chaidaroon, 2004).

7.4.4 Seniority

Seniority here refers to respect of older people or those who have higher rank socially and/or in the organisational hierarchy in Thailand. The discussion of seniority corresponds to analysis of how seniority is (a) affecting network ties and relationships, (b) affecting respect to people, and (c) affecting the ability to share and create knowledge. Thus, this sub-section

will be discussed in all dimensions of structural opportunity, relational motivation, and cognitive ability.

7.4.4.1 Structural Dimension

The concept of the structural dimension of social capital is used to refer to the overall pattern of connections between senior and junior people. This sub-section aims to discuss how seniority is affecting network ties and relationships.

The results show that the concern about seniority is perceived as a key and non-changeable feature of Thai culture. This concern within the organisational hierarchy is perceived to inhibit the creation of network ties and relationships, resulting in a large gap between junior and senior employees. One manager confirms:

"Employees don't have lunch along with managers in a cafeteria, because there is a barrier between employees and managers, and this casual discussion during lunch time will become a more serious and formal one. For example, in a cafeteria, employees try to avoid having lunch with me. They will be ready to go away and leave me alone if they know I am going to join them at the same table."

As reported in Thanasankit and Corbitt (2000), Thai junior staff are not confident in meetings because they are afraid of making mistakes and giving senior staff the wrong advice. A construction of differential levels of responsibility and acceptance in Thai culture of being right is important within organisations (Thanasankit and Corbitt, 2000). The more senior and the more experienced managers are, the more confident they are. This leads to lack of confidence of junior staff in communicating with the more confident senior staff.

As explained in the results, face-to-face communication (with eye contact) is the most accepted method to show respect to Thai people, especially senior persons. In contrast, virtual communication, especially instant messaging is perceived as impolite if a receiver is a senior person. It relies on the fact that Thai people always talk quietly and use limited eye contact—particularly between two people who are not of equal social status (Burnard and Naiyapatanab, 2004). The junior party will seek to maintain 'Kreng Jai', to make sure that

the senior feels comfortable and that neither party is compromised. As a result of this, it seems to be difficult to deal successfully with senior people whilst maintaining a good relationship between the two parties.

7.4.4.2 Relational Dimension

The relational dimension here is based on a socially attributed characteristic of the relationship. This sub-section aims to discuss how seniority is affecting trust and respect. The results demonstrate that the organisational structure is a highly bureaucratic hierarchy and staff display high respect to senior people, which leads to the development of trust and respect between them.

Giving trust and respect to senior people can be presented in two other ways. First, the results show that senior people are perceived to be decision makers in Thai organisations, as highlighted in Chaidaroon (2004). This relies on the fact that in Thai business interactions "Top officials do not expect challenging ideas and initiation from subordinates. Management is autocratic and paternalistic. Therefore, very few Thai workers can imagine themselves moving up the ladder of success" (Hendon, 2001). Second, one common strategy that Thai people use to resolve their problem or conflict is to ask a third party, particularly those who are older or are in a higher social status, to intervene (Rojjanapraphayon *et al.*, 2003). One manager gave an example this:

"My pervious boss is very old, like my father. When he spoke, everyone listened to and believed him. But if I do the same, someone [who is older than the manager] may not listen to me... However, because this concern is very important for Thai culture, I should not take it too seriously."

Whilst a concern for seniority helps increase trust and respect in a hierarchical organisation, it may cause disadvantages in relation to personal behaviour. This concern may be likely to connect with egocentricity and arrogance (Davenport, 1997). The senior (knowledge) managers themselves should not imply by their words or actions that they are more "knowledgeable" than anyone else (Davenport, 1997). That is, the most important qualification for such a role is being "egoless" (Davenport, 1997). This characteristic also

appears in BETA. For example, from the case study, the IS staff were forced by the KM team members, led by top management, not to be involved in KM implementation because the KM team may lose importance and status. This concurs with the literature (Rus, Lindvall et al., (2002). Another example observed within the case is presented below:

"As Thai public sectors have an education-based (besides seniority-based) promotion system rather than a performance-based system, highly educated staff are generally promoted to a high position such as manager. It seems that the highly educated staff usually act as senior staff who are presumed to be decision makers in teams although junior staff disagree. Thus, there is sometimes a controversy surrounding this promotion system, and junior staff members offer the criticism that those who are in a high position are likely to connect with egocentricity and arrogance."

7.4.4.3 Cognitive Dimension

The cognitive ability dimension of social capital here refers to the ability of the human actors to cognitively connect with each other with the seniority concern. This sub-section aims to discuss how seniority is affecting the ability to share and create knowledge.

The results demonstrate that the KM initiative may fail due to friction between hierarchy and knowledge-sharing responsibilities within the organisation, as confirmed in Lam (2005). It is also reported that a number of socio-emotional factors, including respect for old age, seem to inhibit KM effectiveness. It is not easy to get Thai junior people to challenge senior people, resulting in a lack of knowledge sharing and creation within a team. It is reported in the previous chapter that:

"The ideas are always finalised by only senior members. Young members usually keep quiet, as they worry about the negative impact if they criticise the ideas expressed by their elders."

Klausner (1993) provides an interesting case of how junior people interact with senior people, reflecting on Thai culture. What the teacher has to say is important and to challenge him or her, or for the teacher to be wrong, would mean a loss of face for both parties. This means that the senior people would lose face for being wrong and the junior people would

lose face for causing the senior people the embarrassment of being wrong. The social capital's cognitive dimension may enable knowledge sharing and creation in the sense that stories, shared language, customs and traditions can bridge the tacit-explicit division as well as the division in terms of, for example, old-timers-newcomers (Hinds and Pfeffer, 2003).

As reported in the results, BETA offers an informal physical space in which junior staff, senior staff, and even executives are encouraged to collaboratively discuss issues of mutual interest. This environment is designed to support face-to-face discussion activities and help break down personal barriers between junior and senior staff (or executives). This concept is in line with the concept of how to augment collocated communication spaces with complex materials (Fischer *et al.*, 2004). They present the Envisionment and Discovery Collaboratory (EDC), an environment in which participants collaboratively discuss issues of mutual interest. The EDC supports face-to-face discussion activities by bringing together individuals who share a common problem. Moreover, the EDC provides an additional systematic feature to store historic data. Computer recognition of physical representations is designed to allow the computer to reduce the effort of capturing and formalising problem information. They perceive that face-to-face discussions without some capture mechanism may be rich interactions, but only participants around the table benefit, and when the discussion is over the interaction is lost.

As the Thai communication style tends to be more implicit in an informal context in physical situations (Chaidaroon, 2004; Sriussadaporn-Charoenngam and Jablin, 1999), the EDC of sharing tacit knowledge may help to eradicate the existing structure and replace it with a more "horizontal" structure, with job titles that put less emphasis on the level of seniority and also bridge and bond junior and senior people together. It is also suggested that a "participatory" type culture, with a flat structure, open communication channels, and participation and involvement in decision-making, enhances sharing of information and facilitates team cohesion, which in turn promotes respect and trust (Rezgui, 2007b). This, as reported in Kayworth and Leidner (2000) and Soliman and Youssef (2003), contributes to improving employees' overall satisfaction and job effectiveness. Although this solution may not be able to change the hierarchical culture, particularly a seniority-based system in Thai public sectors that present a clear lack of any knowledge-oriented practices (Vorakulpipat and Rezgui, 2006b), it seems to help junior staff to be more familiar and brave in approaching senior staff. This may help to initiate knowledge-friendly practices in the future.

7.4.4.4 Comparison of Seniority in Thai and Western Culture

The results confirm the concern about seniority in BETA: that young staff will follow the ways that their seniors undertake their work. This concern within the organisational hierarchy is perceived to prevent effective knowledge sharing within a team. For example, senior people are perceived to be decision makers in Thai organisations, and it is not easy to get junior people to challenge them.

Thai people are more hierarchical while Westerners value equalitarian practices (McCampbell *et al.*, 1999). Thai culture supports constructions of hierarchy in social and organisational settings, the normal structures and power relations in organisations are 'tall' (Thanasankit and Corbitt, 2000). Organisational structure for most Thai organisations reflects a superior/inferior power relationship constructed from an organisational structure where the power and/or authoritative distance between manager and sub-ordinate is large (Jirachiefpattana, 1996).

It is obvious that the seniority-based promotional practice is relative to Thailand's structure and operation of the family unit whereby the elder family members hold positions of honour and respect, in contrast to Western (US) companies that employ the merit-based system (McCampbell *et al.*, 1999). One of the most interesting findings of a survey of seniority-based promotion in Thailand, conducted by McCampbell, Jongpipitporn et al. (1999) reveals that Thai employees recognise the negative impact of the seniority-based promotion structure on company performance in a globally competitive market, and they are aware that seniority-based promotions are not necessarily reflective of stellar management performance and, collectively, retard a company's performance. Also, it is indicated that the larger the company in Thailand, the higher the possibility of employing a seniority-based promotional structure. Finally, the seniority culture related to KM in the Western countries has so far not been focused upon in the KM literature. It is still an open question whether and how people can be impacted by this culture.

7.5 Theory Building

The analysis of the case study for this research reveals how the four distinctive characteristics including collectiveness, shyness, conscientiousness and seniority, influence knowledge

value creation in a Thai organisation. As opposed to collectiveness and conscientiousness, shyness and seniority are indicated as problematic. However, the discussion also opens up areas where the value of these characteristics is very much subject to interpretation. The fact that it is difficult to change organisational culture, does not necessarily equate with negativity. Some characteristics are accepted as a key and non-changeable feature of Thai culture. People in the organisation prefer to retain the culture (e.g. respect for seniority) regardless of the impact on KM. Conversely, these cultural aspects may display problematic characteristics for many reasons, such as the way junior people wish to challenge ideas initiated by senior people.

Contrary to the general KM concept in the Western literature, the four distinctive characteristics of Thai culture may be interpreted as dynamic and important factors in knowledge sharing and creation. For example, the organisation may have an increasing number of KM outputs created by conscientious people who are easily forced to follow the KM policy direction handed down from above although they do not do so willingly.

Using the concept of social capital, the study can characterise Thai people's experience with KM. A theoretical model in Table 7.3 details the thinking presented in this study in the general form, using seven attributes analysed from the pattern codes and discussion – technology, organisational structure and policies supportive, change process, human network, social capital, knowledge sharing and creation ability, and KM motivation. However, the theory and variables emerging from the theory need to be validated and tested in BETA, or an organisation which represents a similar culture, in future research.

Table 7.3: Influence of attributes to collectiveness, shyness, conscientiousness, and seniority

Perspectives	Attributes	Collectiveness	Shyness	Conscientiousness	Seniority
Technology	Technology	Technology influence in promoting a sense of collectiveness	Impact of technology in breaking shyness barriers	Perceived role of technology in adopting and implementing corporate policies	Impact of technology in breaking down social and seniority barriers
Organisation	Organisational structure and policies supportive	Perceived role of organisational structure in nurturing collectiveness across individuals and teams	Perceived influence of organisational structure in addressing shyness barriers	Perceived influence of organisational structure in adopting and accepting policies	Perceived role of organisational structure and policies in addressing social and seniority barriers
	Change Process	Perceived role of collectiveness in the adoption of organisational change	Perceived role of shyness barriers in the adoption of organisational change	Perceived role of conscientiousness in the adoption of organisational change	Perceived role of social seniority barriers in the adoption of organisational change
People	Human Network	Perceived role of human network in nurturing collectiveness	Impact of human network in breaking down shyness barriers	Perceived influence of human network in adopting and diffusing innovation	Impact of human network in breaking down social and seniority barriers
	Social Capital	Perceived role of social capital in enhancing a sense of collectiveness	Perceived influence of social capital in addressing shyness barriers	Perceived influence of social capital in adopting and diffusing innovation	Perceived influence of social capital in addressing social and seniority barriers
	Knowledge Sharing and Creation Ability	Perceived influence of knowledge sharing and creation in addressing collectiveness	Perceived influence of knowledge sharing and creation in addressing shyness barriers	Perceived influence of knowledge sharing and creation in adopting and diffusing innovation	Perceived influence of knowledge sharing and creation in addressing social and seniority barriers
	KM Motivation	Perceived role of KM motivation in addressing collectiveness	Impact of KM motivation in breaking down shyness barriers	Perceived role of KM motivation in adopting and implementing corporate policies	Impact of KM motivation in breaking down social and seniority barriers

7.5.1 Attributes

- **Technology** refers to an important enabler for KM initiatives. Managing and enhancing the organisational processes of knowledge creation, storage/retrieval,

transfer, and application have relied on the wide use of technology, including Knowledge Management Systems (KMS). This also suggests that technology is an essential ingredient to sustain knowledge value creation.

- **Organisational Structure and Policies Supportive** refers to an organisation's structure and the policies which are supportive to knowledge value creation. A flat structure (few hierarchical levels) is perceived to support participatory culture, resulting in promoting knowledge-friendly practices, as opposed to a hierarchical or bureaucratic structure.

- **Change Process** plays an increasingly important role in sustaining "leading edge" competitiveness for organisations in times of rapid change and increased competition. Organisational change can be in terms of IT and human issues.

- **Human Network** is suggested to improve knowledge value creation in several ways. For example, formal and informal communication using face-to-face (including scheduled meetings) and virtual (synchronous/asynchronous) means (e.g. telephone and e-mail) are perceived as effective to promote knowledge sharing and creation. A lack of human networks or communication is identified as a problem that may lead to the ineffectiveness of teamwork and will hinder any knowledge sharing and creation perspective.

- **Social Capital** is concerned with how various social communities are bridged and bonded. It is aimed to help people develop trust, respect, and understanding of others, especially in the context of a strong bureaucratic organisational culture. This contributes indirectly to knowledge value creation. KM tools may foster social capital by offering virtual spaces for interaction, providing the context and history of interaction, and offering a motivational element to encourage people to share knowledge with each other.

- **Knowledge Sharing and Creation Ability** encompasses knowledge sharing and creation, organisational learning, innovation, skills, competencies, expertise and capabilities. It is suggested that knowledge value creation can be driven by

intellectual capital, and an intellectual capital management system should be created to measure performance.

- **KM Motivation** refers to tangible and intangible critical success factors to increase participation in KM activities. Motivational approaches to encourage more effective knowledge behaviours can be in the form of intrinsic (people engage in a KM activity for its own sake) and extrinsic (e.g. monetary rewards, recognition, praise, punishment, etc.) motivation.

7.5.2 Variables

7.5.2.1 Technology

- **Technology influence in promoting a sense of collectiveness:** Technology is perceived to significantly and positively influence promoting collectiveness such as the formation of a team. The use of technology for creating social relationship may be voluntary and certainly not mandatory in collectivist culture.

- **Impact of technology in breaking down shyness barriers:** Technology (e.g. virtual environments and knowledge management system) also strongly impacts breaking down shyness. The need for technology is acknowledged to gain people's confidence to reduce shyness.

- **Perceived role of technology in adopting and implementing corporate policies:** In relation to consciousness, it plays an important role in adopting and implementing corporate policies, especially IT-related policy. The rationale for an effect of technology on conscientiousness is that people may be intrinsically or extrinsically motivated to accept the IT policy even if they are not themselves in favour of the technology provided.

- **Impact of technology in breaking down social and seniority barriers:** Technology (e.g. KMS) also strongly impacts breaking down social seniority barriers. The need for technology is acknowledged to communicate with senior people.

7.5.2.2 Organisational structure and policies supportive

- **Perceived role of organisational structure in nurturing collectiveness across individuals and teams:** Organisational structure and policies is identified as an important role in nurturing collectiveness across individuals and teams. A supportive organisational structure and policies (e.g. flat management structure) is perceived to enhance people collaboration, plus knowledge sharing and creation within a team.

- **Perceived influence of organisational structure in addressing shyness barriers:** The effect of shyness barriers is consistent with the model above. Organisational structure may directly influence the creation or reduction of shyness.

- **Perceived influence of organisational structure in adopting and accepting policies:** It is believed that the organisational structure, especially a "top-down" management structure reinforces the adoption and acceptance of policies.

- **Perceived role of organisational structure and policies in addressing social and seniority barriers:** The effect of social seniority barriers is consistent with the model above. The structure and policies make a great impact in addressing seniority concerns. It is clear that typical "top-down" or classic hierarchical management and strategies result in a large gap between junior and senior people, in contrast with a flat structure.

7.5.2.3 Change Process

- **Perceived role of collectiveness in the adoption of organisational change:** Organisational change including human and IT change is perceived to be influenced by collectiveness.

- **Perceived role of shyness barriers in the adoption of organisational change:** The change is perceived to associate with the ability to break down shyness and social seniority barriers (e.g. replacing a traditional style of communication with a virtual interaction).

- **Perceived role of conscientiousness in the adoption of organisational change:** This change can be related to changing organisational structure and adaptive strategies in a community, which influences whether people would adopt or reject the change or innovation. The change may be correlated significantly with voluntariness or compliance with the mandatory acceptance of changes.

- **Perceived role of social seniority barriers in the adoption of organisational change:** The change is perceived to associate with the ability to break down social seniority barriers (e.g. changing from a hierarchical to a more horizontal organisational structure).

7.5.2.4 Human Network

- **Perceived role of human network in nurturing collectiveness:** Human network in both physical and virtual contexts has a positive and significant role in nurturing collectiveness and promoting a participatory type of culture while taking into account the team-based structure. The creation of human network in collectivist culture may be voluntary, and although it might be helpful, creating the human network is certainly not compulsory in an organisation.

- **Impact of human network in breaking down shyness barriers:** Human network has an impact in breaking down shyness barriers. It is clear that the creation of social relationship helps people gain confidence.

- **Perceived influence of human network in adopting and diffusing innovation:** Human network importantly influences the adoption and diffusion of innovation within an organisation in which people tend to avoid risk and uncertainty. The adoption and diffusion of innovation needs the early adopters, followed by the majority in human network.

- **Impact of human network in breaking down social and seniority barriers:** Human network has an impact in breaking down social seniority barriers. It is clear

that the creation of social relationships helps close a gap between senior and junior people.

7.5.2.5 Social Capital

- **Perceived role of social capital in enhancing a sense of collectiveness:** Social capital has a positive and significant role in enhancing a sense of collectiveness. It is suggested that people in a collectivist culture have a good awareness of, and cultural receptivity to, value created from connections within and between human networks such as trust development and social cohesion.

- **Perceived influence of social capital in addressing shyness barriers:** Social capital has an influence in addressing shyness barriers. It is clear that some of the ingredients of social capital such as trust development and social cohesion help people to gain confidence.

- **Perceived influence of social capital in adopting and diffusing innovation:** Similar to human network, social capital is perceived to influence the adoption and diffusion of innovation, as the need for the adopters is important.

- **Perceived influence of social capital in addressing social and seniority barriers:** Social capital has an influence in addressing social seniority barriers. It is clear that some of the ingredients of social capital such as social respect tend to nurture seniority concerns.

7.5.2.6 Knowledge Sharing and Creation Ability

- **Perceived influence of knowledge sharing and creation in addressing collectiveness:** Knowledge sharing and creation ability is perceived to significantly influence collectiveness. People in a collectivist culture are enthusiastic to acquire and share knowledge, especially experience or tacit knowledge within and across communities. Therefore, knowledge sharing and creation is sometimes voluntary and not mandatory in this culture.

- **Perceived influence of knowledge sharing and creation in addressing shyness barriers:** Knowledge sharing and creation also impacts on shyness barriers. To deal with these concerns, the need for technology, training, and learning is suggested to gain the ability to share and create knowledge among people.

- **Perceived influence of knowledge sharing and creation in adopting and diffusing innovation:** This influence within an organisation in which people tend to avoid risk and uncertainty may be different since it may be correlated with compliance with the mandatory adoption of KM activities and diffusion of technology supporting KM.

- **Perceived influence of knowledge sharing and creation in addressing social and seniority barriers:** Knowledge sharing and creation also impacts on social seniority barriers. To deal with these concerns, the need for technology, training, and learning is suggested to gain the ability to share and create knowledge among people.

7.5.2.7 KM Motivation

- **Perceived role of KM motivation in addressing collectiveness:** KM motivation plays an important role in collectiveness. As people in collectivist culture are enthusiastic to acquire and share knowledge, especially experience or tacit knowledge within and across communities, they may need intrinsic motivation to participate KM activities (e.g. an opportunity to exchange knowledge about their favourite topics).

- **Impact of KM motivation in breaking down shyness barriers:** KM motivation has a large influence in breaking down shyness. Intrinsic and extrinsic motivation may be suggested to deal with these concerns.

- **Perceived role of KM motivation in adopting and implementing corporate policies:** The role of KM motivation within an organisation in which people tend to avoid risk and uncertainty may be different. The need for extrinsic motivation (e.g. reward and punishment) may be included in KM policy that is used to force people to share and create knowledge even if they are not willing so to do.

- **Impact of KM motivation in breaking down social and seniority barriers:** KM motivation has a large influence in breaking down social seniority concerns. Intrinsic and extrinsic motivation may be suggested to deal with these concerns.

7.6 Summary and Conclusion

This chapter has presented an analysis and discussion of the field study data with reference to the literature on social capital. The overall aim has been to illustrate the roles of Thai cultural aspects (collectiveness, shyness, conscientiousness, and seniority) that influence, and are influenced by, knowledge value creation across the organisation. In order to more generally represent the findings of the study, a theory has been developed in Figure 7.2. The theory has presented an influence between three perspectives (technology, organisation, and people) and four cultural aspects, from which emerge 28 variables. The research suggests the theory and variables need to be validated and tested in BETA or an organisation which represents a similar culture and this may result in confirmation/revision to the theory in the future research.

CHAPTER 8

Summary, Findings, and Recommendations for Further Research

8.1 Introduction

This chapter summarises the main findings and presents the conclusions of the research. It begins with a summary of the research, leading to the major findings of the primary data analysis. This is followed by main contributions and an evaluation of the research. Recommendations for further research are offered, and the conclusion is drawn.

8.2 Summary of the Research

The objective of this research was to explore knowledge value creation in a Thai organisation, BETA, and develop a theory of KM influence. The research study encompassed a number of stages to fulfil that objective. In order to realise this objective:

- Chapter 2 and 3 review the existing research on KM in general and KM with particular emphasis upon IT adoption in developing countries. Chapter 2 presents the evolution of KM from knowledge sharing and creation to value creation, and chapter 3 presents the organisational and technological perspective in developing countries, especially Thailand. Chapter 4 demonstrates the research methodology that has been

employed. The review of literature helps to establish a theoretical background, identify gaps between previous research (in the Western developed countries) and this study, and obtain knowledge about KM, interpretive case study and grounded theory. The underlying thought of each chapter was how the issues that emerged may relate to the exploratory study of KM in Thailand. A conceptual framework which maps out the landscape of the literature in relation to KM is developed on the basis of these two chapters.

- Chapters 5 and 6 detail organisational experiences with KM.

- Chapter 7 analyses the data collected in Chapters 5 and 6, and emphasises the influence of the distinctive Thai culture in initiating and implementing KM. The conceptual framework developed earlier is used to structure this analysis and discussion. The analysis and discussion leads to the building of a theory presented later in the chapter.

An empirical study was divided into two stages: (a) survey - using a questionnaire distributed to a number of Thai organisations to examine an overview of KM practices in Thailand, and (b) an interpretive case study - using a questionnaire, interview, direct observation, documentation, and process mapping to study in-depth KM practices in a specific organisation and determine the distinctive characteristics of Thai culture which influence, and are influenced by, KM. Grounded theory associated with pattern coding method was undertaken to generate a theory of KM influence and a list of KM influence variables for validation and testing. Finally, the grounded theory and variables aimed to be used as a guideline for validation and testing in future research and to be adapted practically to initiate and implement KM in reality. The research sought to resolve the following three main research questions:

RQ1: Have employees from a selected Thai organisation adopted a culture of knowledge sharing and creation across their organisation?

RQ2: What kind of perceived value is created out of existing knowledge practices across the organisation?

RQ3: How perceived distinctive socio-cultural features influence, and are influenced by, knowledge value creation practices in an organisational context?

8.3 Major Findings of the Primary Data Analysis

This section presents the main findings of the data gained from the study; more specifically, from the findings related to knowledge value creation which were obtained from the case study at BETA. The main findings providing answers for the identified research questions are outlined below.

8.3.1 RQ1: Have employees from BETA adopted a culture of knowledge sharing and creation across their organisation?

Gathered primary sources of evidence confirm that a knowledge sharing and creation culture is in place in BETA. The results indicate an overall good awareness of, and cultural receptivity to, knowledge management changes introduced in BETA over recent years. The researcher argues in the context of this thesis that to promote KM, an organisation needs to meet four broad KM objectives (Davenport *et al.*, 1998) mentioned earlier: (a) creating knowledge repositories, (b) improving knowledge access, (c) enhancing cultural support for knowledge use, and (d) managing knowledge as an asset. The gathered data suggest that the introduction of a knowledge repository system has been welcomed, as the system promotes documenting and archiving of best practices across the organisation. In fact, the coding and sharing of best practice is one of the common initiatives employed to initiate organisational KM (Alavi and Leidner, 2001), and knowledge sharing can take place only once a corporate knowledge repository is made widely accessible to staff (Davenport and Prusak, 1998). These have helped improve knowledge connectivity, access, and transfer across BETA. The research also confirms the role of information technology in general, in facilitating knowledge sharing and creation, as reported elsewhere (Davenport *et al.*, 1998; Rezgui *et al.*, 2005). Moreover, the research has identified the role of Thai culture and values in the adoption and deployment of KM practices. This corroborates findings related to the adoption of IT in similar contexts (Thanasankit and Corbitt, 2000). Building a casual environment adapted to Thai culture, such as informal forums and personal connections, leads to positive KM practices (Sorod, 1991), as trust and social relationships form the foundation of Thai

society (Thanasankit and Corbitt, 2000). Also, the research acknowledges the impact of the change initiatives introduced by BETA over the years to increase staff KM awareness. This is exemplified by the introduction of reward systems to encourage people to contribute to KM activities, and establish an environment conducive to more effective knowledge practices, facilitated by the provision of physical and virtual spaces to share knowledge and help build knowledge communities. The change process involved (a) building awareness and cultural receptivity to knowledge, (b) changing behaviour relating to knowledge perception and practices, and (c) improving the knowledge management process.

8.3.2 RQ2: What kind of perceived value is created out of existing knowledge practices across the organisation?

KM practices introduced in BETA create a number of perceived knowledge values. It is worth offering some concrete examples of what type of value emerged from KM practices in BETA to support the answer to this research question.

Starting with business issues, KM practices in BETA provide better understanding of corporate processes and improved business intelligence. KM practices underpinned by IT in BETA support two types of business process and application. First, a database system and data warehouse are operated as a business transaction application responsible for running day-to-day business operations related to R&D productivity. These allow applications and users to store, access and manipulate the business transaction data (such as project data, financial data, employees' personal data). Second, the knowledge repository system and KMS are operated as a business intelligence application to analyse business operations and produce information and executive reports to help business users understand, improve and optimise business operations. For example, the knowledge repository system generates a summary of knowledge items created and used in the categories of departments, people, and year. This information is generated by processing the data stored in a database and data warehouse. When business users, mostly senior managers and executives, receive information, they use their expertise or knowledge to make decisions and take actions (e.g. planning for budget, future projects, training programmes, recruitment, and incentive program).

KM practices introduced in BETA then provide end-user self development through learning from best practice acquired through physical and virtual means. BETA has provided both formal and informal training courses for acquiring explicit and tacit knowledge. Also, a knowledge repository system has been developed to encourage employees (motivated by reward systems and policy) to store best practices and failures in the form of documentation, created during collaboration such as informal forum and training. Moreover, other learning methods such as on the job training and learning from documents have been adopted in BETA for the same purpose for those who have high self-development skills.

Furthermore, an environment that develops and nurtures social ties that bond employees together within and across teams while breaking organisational structure barriers has been provided through KM practices. BETA has offered a casual environment in a physical context (such as informal forums during tea breaks) to share tacit knowledge. This may help to eradicate the existing structure and replace it with a more "horizontal" structure, with job titles that put less emphasis on the level of seniority and also bridge and bond junior and senior people together. The virtual community, such as an online discussion forum in BETA, also fosters social ties beyond space and time. People from different teams situated in different locations can collaborate effectively. This virtual community helps human actors direct themselves to strengthen existing social ties or build up new ones

Overall, the gathered evidence from the research results, plus the examples provided above, suggest that BETA has reached a satisfactory maturity in terms of knowledge value creation. The five key value creation assets identified previously in Chapter 2, including human networks, social capital, intellectual capital, technology assets, and change processes, are used to support the answer.

The gathered evidence shows that formal and informal communication using face-to-face (including scheduled meetings) and virtual (synchronous / asynchronous) means (e.g. telephone and e-mail) are perceived as effective in promoting knowledge sharing and creation. As such, the research acknowledges the pivotal and strategic role that human networks play in promoting KM in the particular context of the collective characteristic of Thai culture, as reported in related literature (Choo, 2003; Thanasankit and Corbitt, 2000). This has resulted in increased awareness, knowledge quality, and business intelligence which have triggered a value added dimension that did not exist prior to initiating the change

processes. Human networks are facilitated and nurtured by providing informal forums that can be assimilated to communities of practice. These are complemented with virtual spaces to share knowledge (including sensitive information) protected by a role access control system. The collective characteristic of Thai society is exemplified by the dimension given to team working. However, it has been shown that human networks can only be effective if the social conditions that underpin collaboration are met (including trust). This emphasises the role that social capital plays in creating organisational values underpinned by strong human networks. A participatory culture helped employees develop trust, respect, and understanding for others at different levels in BETA.

The results confirm the usefulness of KMS to store best practices, and indicate a good enthusiasm for learning by doing, formal training or learning from documentation, facilitated by the wide introduction of technology. Knowledge is now perceived as a real asset, and the gathered data highlight the importance of the ability to access internal and external knowledge. The level of awareness that exists amongst staff in relation to the power and politics of knowledge has developed remarkably over the years. This emphasises the positive perception and appreciation of BETA's corporate intellectual capital and direct influence on KM practices. In this context, the introduction of a KMS (through knowledge repositories and dedicated groupware services) has been welcomed, as the system encourages staff to store and share best practices. Collaboration through groupware is overall highly valued, and is described as important to nurture knowledge sharing, as confirmed in related literature (Ellis *et al.*, 1991). The incremental development and introduction of technology seem to have worked, as an acute sense of knowledge value is gradually emerging.

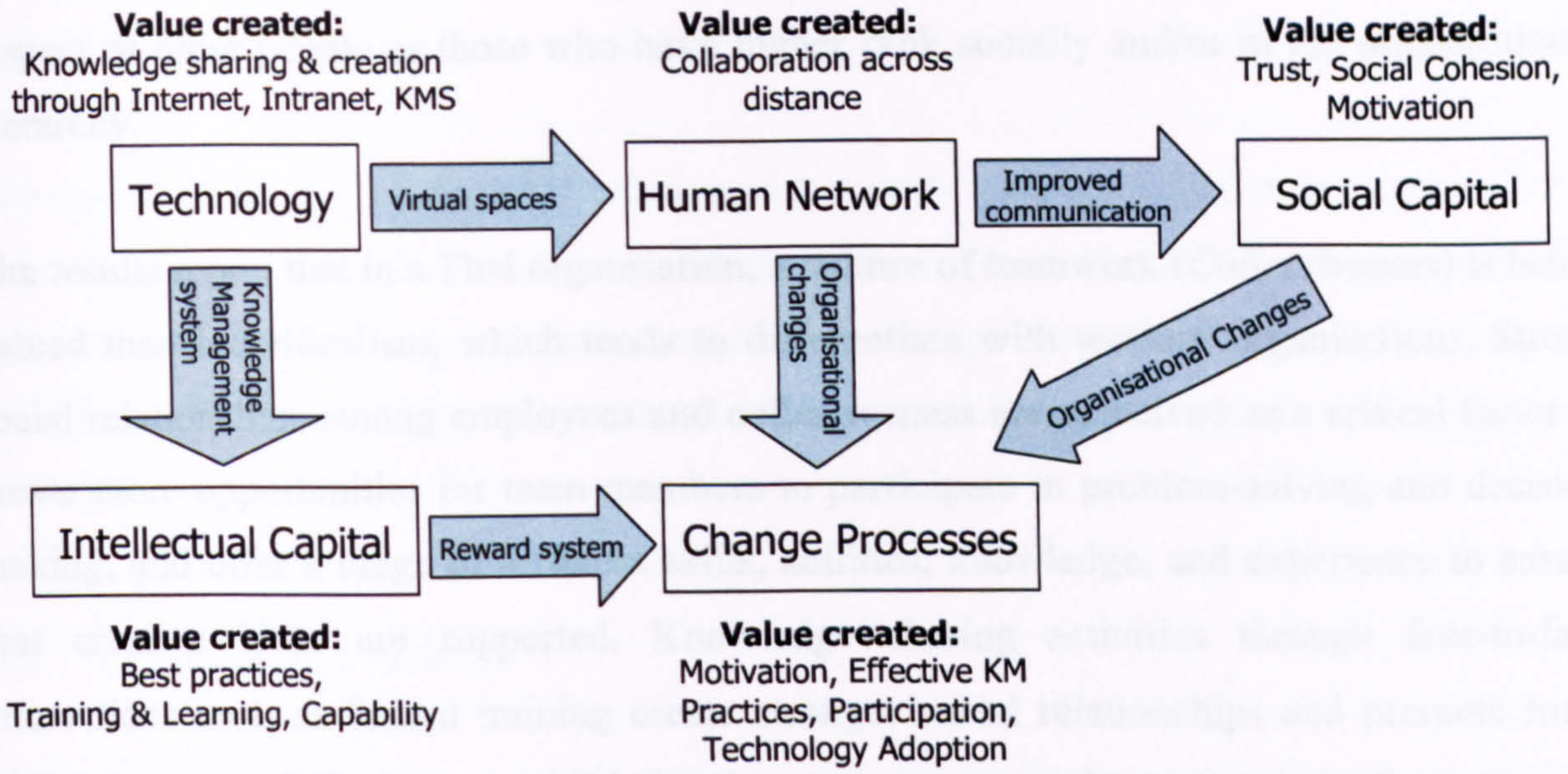

Figure 8.1: Factors to sustain value creation in BETA

Thus, as illustrated in Figure 8.1, the value creation 'equation' in BETA is grounded in human networks underpinned by strong social structures facilitated by technology. Socio-cultural factors, including trust and confidentiality must be blended successfully toward the shared knowledge management vision. Therefore, the migration path to value creation is grounded in human and cultural elements and is an exercise in change, which requires new mechanisms to enable participation and communication. The research reveals that the management has tried to adopt reward systems to motivate employees to share and create knowledge, and the employees have responded positively to the introduction of monetary and non-monetary rewards. There is a strong awareness amongst executive staff that managing the change process should not be overlooked to sustain this knowledge sharing and creation culture.

8.3.3 RQ3: How perceived distinctive socio-cultural features influence, and are influenced by, knowledge value creation practices in an organisational context?

The research has identified four distinctive features of Thai culture: collectiveness, shyness, conscientiousness, and seniority, which influence, and are influenced by, existing knowledge practices across the organisation. *Collectiveness* is underpinned by strong social relationships amongst employees and promotes a collectivist culture. *Shyness* relates to nervousness, not speaking up, and receiver orientation in interactions. *Conscientiousness* is characterised by

avoidance of uncertainty and risk, and patience with unpleasant situations. *Seniority* relates to respect of older people or those who have higher rank socially and/or in the organisational hierarchy.

The results report that in a Thai organisation, a culture of teamwork (*Collectiveness*) is better valued than individualism, which tends to differentiate with western organisations. Strong social relationships among employees and collectiveness are perceived as a critical factor to create more opportunities for team members to participate in problem-solving and decision making, and offer a range of different skills, abilities, knowledge, and experience to ensure that creative ideas are supported. Knowledge sharing activities through face-to-face interactions such as formal training create stronger social relationships and promote trust, while these are difficult to establish in virtual contexts, as the expression of emotions is difficult to manage.

Shyness is perceived to inhibit knowledge sharing effectiveness as employees usually believe that they should act in a receiver role in their team, and shyness can sometimes be strategically performed to gain recognition from others. In addition, shyness as well as a form of egocentricity or cultural norm can cause unwillingness to receive any assistance about information transfer and knowledge acquisition when it is offered, even when needed. To reduce shyness, management are trying to promote an adequate environment (through informal and smaller groups) while providing opportunities for staff to practice their presentation skills.

The results report that employees tend to avoid any risk that can affect their relationships with others (*Conscientiousness*). It is believed that the Thai culture represents a subjugation-to-nature view (Kluckhohn and Strodtbeck, 1961): one of three types of cultural worldviews based on the way in which each culture conceives the relationship between man and nature. Conscientiousness is also highly valued in most Asian developing cultures as opposed to Western cultures which focus on ambition (Chaidaroon, 2004). It is fair to state that Thai people are high in conscientiousness and risk avoidance and low in ambition.

Seniority concerns are perceived as a key and non-changeable feature of Thai culture. These concerns within the organisational hierarchy prevent effective knowledge sharing within a team because, as employees usually believe that to show their respect to the older or senior

staff, they should not elaborate and argue their own ideas against them and this results in a lack of diversity of ideas.

The data analysis of the case study identified 28 crucial variables (detailed in Chapter 7) that validate the level of KM influences of a number of attributes including technology, organisational structure and policies supportive, change process, human network, social capital, knowledge sharing and creation ability, and KM motivation, in addressing each cultural aspect.

8.4 Main Contributions

Myers (1997) argues that a good indicator of interpretive research is that it offers a contribution to the IS community in respect of whether the author has developed new concepts, applied new concepts or applied a well known theory in a new or unique way. He also suggests that a good marker is research that offers rich insights into the human, social and organisational aspects of IS development and application or if it contradicts conventional wisdom.

The results of the study provide two main contributions:

First, the research provides the rich data of KM in Thailand with emphasis on a Thai IT organisation, BETA, which generate a grounded understanding of knowledge value creation. The data collected from two stages (survey and case study) result in vital information for both the research community and practitioners. For the research community, not much is known about the adoption of KM in developing countries including Thailand. More specifically, very few studies in Thailand have been conducted regarding organisational KM in an IS perspective focusing on both human and IT issues. IS researchers could use the theory developed as a guideline for validation and testing in different organisations. For practitioners, the research could provide them a list of key concerns (variables) for KM initiative and implementation in an organisation which is characterised by the distinctive culture. This is essential for Thai organisations at present as they are currently entering a phase of high competition in KM and ICT among developing countries in the South East Asia region such as Malaysia, Singapore, Indonesia, etc.

Second, on the conceptual side, the study shows how to combine a specific grounded theory with the more formal insights available from social capital, technology adoption, and organisational KM and culture literature, developing a more general model (theory) that will allow researchers and practitioners to explain organisational knowledge value creation. Generally, the theory was developed starting from a conceptual model using data from the grounded theory method, respondents' perceptions and the researcher's experience. The case study was employed in order to customise the generic model to fit a specific case study using real information and perceptions.

Moreover, the study makes other contributions in the following ways:

- It develops the concept of KM.
- It offers an extensive review of KM literature which offers rich insights into existing research in the area related to human, social and organisational aspects of KM development particularly in relation to KM and ICT adoption in developing countries.
- The experiences of BETA offer rich insights into human, social, and organisational aspects of KM development.
- The findings present contradictions of KM culture between the West and Thailand.
- A theory developed in this study is put forward.

One limitation of the contribution is that it could be argued that the findings are based upon an insufficiently diverse data set as it is suggested that theory building from case study data usually requires approximately 4-10 cases (Eisenhardt, 1989). Therefore, this could be argued to be problematic as the study is based upon one organisation's experience. However, case studies should be defined by an interest in individual cases (Stake, 2000), and a single case is possible to indicate a general conceptual category or property in the study (Glaser and Strauss, 1967). In this study, prior to starting the investigation in BETA, a large survey of overall KM practices from many organisations in Thailand was conducted. Even so, there is still the question of how representative the experiences at BETA might be. It may be suggested that another organisation might provide significantly different insights. However, it is arguable that the way that the data have been used to develop the theory has lead to findings that are sufficiently abstract to have broader appeal and it also would be interesting

to extend the study to incorporate the experiences of other organisations and a different culture.

8.5 Evaluation of the Research

There has been some interest in recent years in the interpretive IS research community on appropriate ways to justify the methodological approach adopted in a particular study (Walsham, 2006). Due to the criticisms that are in evidence throughout this community, the need for the evaluation of interpretive research is acute. This section introduces the principles used to guide the conduct, and perform the evaluation of the study. The study uses the set of principles for conducting and evaluating interpretive research offered by Klein and Myers (1999). These criteria were: The Fundamental Principle of the Hermeneutic Circle, The Principle of Contextualisation, The Principle of Interaction between the Researchers and the Subjects, The Principle of Abstraction and Generalisation, The Principle of Dialogical Reasoning, The Principle of Multiple Interpretations, and The Principle of Suspicion. They were also used to guide the progress of the study as it was sensible to aim to conduct the research in cognisance of the evaluation criteria especially as they contained implicit guidance for the conduct of research.

8.5.1 The Fundamental Principle of the Hermeneutic Circle

This principle is foundational to all interpretive work of a hermeneutic nature and is in effect a meta-principle upon which the following ones expand. The idea of the hermeneutic circle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form. The whole in this study refers to KM practices in a Thai organisation. Therefore, it is possible to develop a better understanding of KM through the parts and interrelationships it comprises. Consequently, the component of the KM practices and their interrelationships were drawn from the literature and presented in the form of a conceptual framework used to guide the field study. The field study then focused upon collecting data about the components of the KM practices and their interrelationships, using grounded theory.

It is, however, essential to note that it is difficult to understand the totality of Thai KM practices in theory and practice. The problem, therefore, was determining when there was a

whole that was useful and thus when data collection and theory development could stop. This iterative process only stops when it becomes clear that further data no longer triggers new modifications to the data categories and emerging theory, that is, the research has reached "theoretical saturation" (Strauss and Corbin, 1998).

8.5.2 The Principle of Contextualisation

This principle requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged. For this study, the researcher was fortunate to have been involved with BETA for over a decade before KM was initiated. This allowed the researcher far closer involvement within the KM initiative and implementation in the organisation, especially as the decision to undertake direct observation in the case study was made fairly early on. Also, this observation and the researcher's role in the KM initiative and implementation afforded easy access to the organisation for deep insights into the contexts of KM practices.

There was, however, no guarantee that such good access was an accurate portrayal of the contexts for the KM practices. Even where the researcher was heavily and closely engaged with, and had a lot of experience of KM in the organisation, there was no guarantee that the real data about situations would be discovered. Therefore, in order to improve the accuracy, multiple sources were used to clear up any misunderstanding and to try to find out as much about how situations were viewed by those involved, whether this was through questionnaire, interview, documentation, or process mapping. This process also aided the explicit consideration of the researcher's role, and that of others, in the development of the research.

8.5.3 The Principle of Interaction between the Researchers and the Subjects

This principle requires critical reflection on how the research materials (or "data") were socially constructed through the interaction between the researcher and the participants. The case study in this research clearly demonstrates interaction between the researcher and the subjects in developing the outcomes. The data were created through the interaction: interviews, requests for specific documents or information, conversations during observation, and even informal contacts. These methods of interaction used affected how the subjects

view their own affairs and how they present an effect to the researcher. This in turn had an effect on the kind of data that the researcher obtained and made decision.

This was achieved through the application of the meta principle of the hermeneutic circle. The findings of this study comprise the researcher's own interpretations and those of others (respondents: employees and managers) who were involved in the study. However, as different people interpret data in different ways, this leads to multiple realities (Kaplan and Duchon, 1988). However, as only the researcher has controlled the study, the work is ultimately presented from the researcher's perspective, a typical criticism of interpretive studies.

8.5.4 The Principle of Abstraction and Generalisation

This principle requires relating the idiographic details revealed by the data interpretation through the application of principles one and two to theoretical, general concepts that describe the nature of human understanding and social action. Although it is noted that abstraction and generalisation are not prerequisites for interpretive studies, this study does offer opportunities for relating ideas to emerge from data collection to social capital and related theory. This research offers generalisations that related to the development of theory which may be intersubjectively understood to be useful (Walsham, 1995b) by using grounded theory. These generalisations also relate to the further development of the theory, detailed in the next section.

8.5.5 The Principle of Dialogical Reasoning

This principle requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings ("the story which the data tell") with subsequent cycles of revision. First, it is suggested that the researcher should make the philosophical assumptions of the research as transparent as possible. It is also suggested that the research findings might not support the initial theoretical preconceptions of the study and that the researcher must be aware of the need to revise these if necessary. In this research, the initial pattern codes after phase 1 were further questioned when the field data collected in phase 2 began to emerge and became more focused and clear. This led to further

revision of pattern codes, later resulting in the refined insights of KM practices in BETA before the emergence of the theory.

8.5.6 The Principle of Multiple Interpretations

This principle requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study. That is, the researcher needs to examine the influences of social context in the study and seek out multiple viewpoints and the reasons for these. In this research, there were multiple realities that were interpreted by different viewpoints. Therefore, a broad variety of these have been particularly made in the field study. The BETA case illustrates differing viewpoints among employees, managers, and the researcher. Where these differences in perspective have come up, the aim has been to find out why this may have been, or was perceived to have been, the case.

8.5.7 The Principle of Suspicion

This principle requires sensitivity to possible "biases" and systematic "distortions" in the narratives collected from the participants. It is noted that researchers may adopt a critical perspective and do not take their informants' views at face value. In this research, the BETA case's critique emerges mostly though the juxtaposition of alternative viewpoints of the participants, and by adopting a cultural and political perspective on the IS strategy and implementation process. For example, it is reported that a manager was very much against a traditional manual helpdesk service system: "*our boss doesn't like this old-fashioned method...It is a non-IT solution...*" (Chapter 6). The manager believed that the organisation must profit from the dominance of IT over the manual helpdesk service system. Rather than merely accepting the viewpoint of the manager, however, the researcher exhibited suspicion by considering the views of employees who mostly show a preference for the manual system, and relying on the researcher's own experience.

8.6 Recommendations for Further Research

The knowledge gained from conducting the research relating to KM practices can be further developed and expanded to deal with many prospects. Listed below are recommendations for

further research that the researcher thinks would be particularly interesting, relevant, and significant.

The study presented here intended to explore KM practices based on the views of employees and managers of R&D departments, who were in charge of research on ICT. The study, using an interpretive case study, was conducted within an organisation (BETA) of a developing country (Thailand). Therefore, the exploration was limited within this particular organisation and country in terms of human and IT issues. However, the study did not make an effort to investigate the KM practices from employees of other departments such as administrative sections in which all staff are end users. It is possible that they may be affected and influenced by the KM practices, particularly in terms of IT issues (e.g. KMS adoption). Their opinions could differ considerably from those of R&D departments and such differences should be investigated thoroughly as they may provide new insight on the KM practices phenomenon.

Further investigation in other Thai organisations is also highly recommended to validate and test the theory, and then put forward to generalise the theory to Thailand. Further studies in Thailand may take into account the following issues:

- **Validation and Test:** The need for the validation of the theory developed in this research is essential to determine the level of KM influence variables in each attribute and perspective. The levels can be measured by survey questionnaire using a scale. Each variable is assumed to develop a number of questions. For example, from the variable "Technology influence in promoting a sense of collectiveness" many questions may emerge in relation to intention to use, perceived usefulness, voluntariness, client satisfaction, etc. Moreover, this further research aims to test whether the selected organisation will represent the same culture as BETA, influencing or influenced by, the KM practices and whether the cultural aspects can represent the whole country.

- **Simplification:** During an investigation, the variables in the theory could be simplified if the researcher thinks subjectively fit for the case, depending on many factors such as duration of field study, organisational culture, the researcher's

experience, appropriation, etc. For example, seven attributes (technology, organisational structure and policies supportive, change process, human network, social capital, knowledge sharing and creation ability, and KM motivation) could be subjectively grouped into three new attributes including technology, organisation and people, where appropriate.

- **Roadmap:** Once the findings of the research on Thai KM practices become clear, it is possible to develop a roadmap for migrating Thai organisations (a) from ad-hoc to formalised KM practices, and (b) from knowledge sharing to knowledge value creation practices. The need for the development of a generic knowledge capability and maturity model to serve as a roadmap for Thai organisations for this migration is important. Finally, a field study to validate the roadmap and the knowledge capability and maturity model should be conducted.

In addition, further studies on KM practices within the context of developing countries are highly recommended to manifest the status of KM practices in these countries, to test the extent to which there is a positive or negative trend toward KM awareness, and to investigate the need for the theory developed in this research, particularly in South East Asian countries such as Malaysia and Indonesia which are Thai competitors in this region as well as in other large developing countries such as China, India, and the Middle East countries. However, the extent to which richness of data can be captured about KM practices within an unfamiliar organisation by the case study method remains unclear. Further studies may be conducted by using alternative research methodologies such as action research and ethnography.

8.7 Conclusion

The research has investigated the KM practices in BETA, a Thai organisation. It has also explored the perception about the value that is created out of knowledge. It demonstrated that an exploratory study on knowledge value creation within a specific organisation is far from objective and certain as the multiple realities associated with KM practices play out in various ways, resulting in the need for an interpretive case study to conduct the research. The use of the grounded theory approach generated a set of insights, concepts, and interactions that address the critical organisational KM elements—elements from the cases in developing countries largely overlooked in the KM literature.

The theory generated from the empirical findings suggests that the distinctive characteristics of Thai culture including collectiveness, shyness, conscientiousness, and seniority, critically influence, and are influenced by, a number of KM attributes in terms of the technology, organisation, and people perspectives. The research demonstrates how these cultural aspects support and/or inhibit KM practices which people in BETA have experienced. This proposes a different approach to doing KM research in developing countries—one that takes into account these distinctive characteristics of culture. The research also provides valuable insights for practitioners, detailing the organisational changes with KM solutions to the cultural problems. The study is limited to a Thai organisation, leading to the recommendations for further research which have been presented for the benefit of future researchers. Validation and testing of the theory, simplification of the variables, and development of the roadmap are suggested for further research.

Appendix A: Stage One Questionnaire

Knowledge Management in Thailand

The purpose of this questionnaire

This questionnaire is issued by a PhD candidate of University of Salford for capturing requirements of Thai organisations regarding organisational process of knowledge management. The questionnaire is to be sent to 28 organisations in Thailand.

The questionnaire contains seven sections about the topics below:

- Personal and organisation details
- Teamwork/Communication
- Organisation Environment
- Current Knowledge Sharing Culture
- Expected Changes of the Organisation
- Anticipated Impacts
- Barriers/Problems

Each section contains open-ended questions that may require you to provide a written response.

Confidentiality of responses

The information provided by you including your personal contact information will not be used or disclosed for any other purpose than communication about the research. Only summarised information will be published. The name of your organisation will be published subject to your permission:

☐ Tick here if you approve that the name of your organisation will be listed in public reports as a respondent in this inquiry.

1 Personal and organisation details

1.1 Contact person

Name Title: _____ First name: _____ Last name: _____

Email : _____

Telephone : _____

Fax : _____

In which department do you work?

☐ IT ☐ Marketing ☐ Human Resources ☐ Production

☐ Other : _____

Please list the main strengths of your department, and rank them in order of importance

_____

Please list the main factors you think are critical to the future growth and success of your organisation and rank them in order of importance

_____

1.2 Organisation

Name of organisation : _____
Name of department : _____
Address : _____
Website : _____
Number of people employed: _____

Core business of organisation[1]: (select one)

☐ Chemical ☐ Consulting ☐ Education
☐ Energy ☐ Financial ☐ Government
☐ Legal ☐ Manufacturing ☐ Pharmaceutical
☐ Retail ☐ Scientific/Engineering/ ICT
☐ Other, please specify _____

1.3 Information Technology

Do you use computers in your work? (if 'no' please go to Section 2)

☐ Yes ☐ No

How long have you been using computer? _____

How frequently do you use computers?

Very infrequently Very frequently
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

How confident do you feel using computers?

Not at all Very confident
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

For what do you mainly use computers?

☐ Word-processing ☐ Spreadsheet ☐ Web browser
☐ E-mail ☐ Database ☐ Instant messenger
☐ Presentation ☐ Groupware ☐ Project Management
☐ Other, please specify: _____

In your opinion, which network technologies are provided by your organisation?

☐ Internet ☐ Intranet ☐ Extranet ☐ Mobile (wireless)
☐ Other, please specify: _____

Is computer training available to everyone in your organisation?

☐ Yes ☐ No

Do you use Groupware in your organisation?

☐ Yes ☐ No

if 'no' please go to Section 2.

---

[1] *Applied from Knowledge Management Survey http://www.informationtransfer.com/km/survey.cfm*

If 'yes' please specify: _____

Which software features exist in Groupware[2] (or any application) in your organisation?

☐ Discussion/forum ☐ Review system ☐ Chat online ☐ Workflow
☐ Full text search ☐ Save search result ☐ Document version control
☐ Document expiry date set ☐ Role access control
☐ Auto finding experts ☐ Portal
☐ Other, please specify: _____

What are the characteristics of the software mentioned above?

☐ Web base ☐ Compatible with other application ☐ Opensource
☐ MS Windows base ☐ Standard communication (e.g. XML, SOAP, etc.)
☐ Object-oriented interoperability (e.g. CORBA, Java/RMI, etc.)

How would you rate the effectiveness of Groupware?

Not at all Very effective
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

2 Teamwork/Communication

Do you work as a member of a team (or project group)? (if 'no' please go to Section 3)

☐ Yes ☐ No

How many teams are you participating in?

_____

How many people work in your team(s)?

_____

How would you characterise working in teams in your organisation?

_____

How teamwork problems have you had to deal with?

_____

Which of the following methods does your team use for communications within the teams?

☐ Telephone ☐ Voice Mail ☐ Notice board

_____

[2] *Groupware is application software that integrates work on a single project by several concurrent users at separated workstations. Lotus Notes is an example of popular groupware. (http://en.wikipedia.org/wiki/Groupware)*

☐ E-mail ☐ Groupware ☐ Memo
☐ Scheduled meetings ☐ Instant messenger ☐ Informal gatherings
☐ Other, please specify _____

Which of the following methods does your team use for communications with other departments?
☐ Telephone ☐ Voice Mail ☐ Notice board
☐ E-mail ☐ Groupware ☐ Memo
☐ Scheduled meetings ☐ Instant messenger ☐ Informal gatherings
☐ Other, please specify _____

If you could change your team's communications practices, what would you change?

_____

How do you think that your teamwork methods could be improved in the future?

_____

3 Organisation Environment

How would you describe the culture of your company?
☐ Bureaucratic ☐ Participatory ☐ Autocratic ☐ Innovative
☐ Other _____

How would you describe the structure of your organisation?
Flat Hierarchical
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

What is the most difficult aspect of your job?

_____

To whom do you go if you need advice?
☐ Manager ☐ Team leader ☐ Colleague
☐ Other _____

4 Current Knowledge Sharing Culture

Are you aware of the knowledge sharing processes in your organisation?
Not at all Very much
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Are the processes computer based?
Not at all Completely
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Do they have supporting documentation?
Not at all Completely
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Were you formally trained to carry out these processes?

Not at all ☐ 1 ☐ 2 ☐ 3 ☐ 4 For all of them ☐ 5

How important do you feel knowledge sharing is in your organisation?

Not at all ☐ 1 ☐ 2 ☐ 3 ☐ 4 Very much ☐ 5

How often do you share knowledge?

Never ☐ 1 ☐ 2 ☐ 3 ☐ 4 Always ☐ 5

Have there been any major changes of knowledge sharing within your organisation in the last 24 months?

☐ Yes ☐ No

If 'yes' please explain _____

What were the main reasons for the change?

_____

Was there any resistance to the change?

Not at all ☐ 1 ☐ 2 ☐ 3 ☐ 4 Very much ☐ 5

How would you describe your organisation's attitude to change?

Negative ☐ 1 ☐ 2 ☐ 3 ☐ 4 Positive ☐ 5

What security measures does your organisation have for documents that are stores electronically?

_____

How do you feel about the idea of an *internally* shared knowledge?

Not at all happy ☐ 1 ☐ 2 ☐ 3 ☐ 4 Very happy ☐ 5

How do you feel about the idea of an *externally* shared knowledge?

Not at all happy ☐ 1 ☐ 2 ☐ 3 ☐ 4 Very happy ☐ 5

If an employee in your organisation has a new idea will this idea be stored electronically on the network for everyone to see?

☐ Yes ☐ No

If you had a new idea would you be prepared to make it available in a shared knowledge?

☐ Yes ☐ No

If 'no' why not? _____

If an employee brings some specialist knowledge to the organisation, should this knowledge be stored in a shared database of knowledge?
☐ Yes ☐ No

Would you be prepared to make your own specialist knowledge available in a shared database of knowledge?
☐ Yes ☐ No
If 'no' why not? _____

What problems do you experience with the knowledge you share?

Which activities of knowledge sharing are mostly found in your organisation?
☐ Sharing experiences by individual and face-to-face interaction
☐ Formal training, meeting, documentation, or computerised communication
☐ Learning by doing
☐ Other, please specify _____

Where in your organisation do people always exchange knowledge by face-to-face between two persons?
☐ Coffee/tea break room
☐ Cafeteria
☐ Office desk
☐ Video, Netmeeting
☐ Other, please specify _____

At the moment, what motivate people to share knowledge?
☐ Reward with salary increase
☐ Reward with promotion
☐ Penalty
☐ Other, please specify _____

Do you think sharing knowledge in your organisation is achieved?
☐ Yes ☐ No
If 'no' why? and how will it be improved? _____

5 Expected Changes of the Organisation

5.1 Knowledge creation culture and strategy

Which activities can be the most efficient and possible ways to create knowledge in your organisation?
(select max 3, 1=lowest, 3=highest)
___ Sharing experiences by individual and face-to-face interaction
___ Creating new theory e.g. concept, model, metaphor, etc.
___ Formal training, meeting, documentation, or computerised communication
___ Learning by doing

Which **possible** strategy in your organisation can stimulate people to create knowledge?
(select max 3, 1=lowest, 3=highest)
___ Reward with salary increase
___ Reward with promotion
___ Penalty
___ Other, please specify _____

What are the reasons you expect from people to create knowledge?
(select max 3, 1=lowest, 3=highest)
___ Willingness
___ Popularity
___ Be proud when cited or used
___ Reward expectation
___ Other, please specify _____

What skills do you and organisation's employees need?
IT skills : _____
Non-IT skills: _____

How do you think that knowledge creation can contribute to employees' empowerment and job satisfaction?
Please explain: _____

How do you think that knowledge creation can gain your organisation business?
Please explain: _____

Addition information in your own words: _____

5.2 Technology

In your opinion, which network technologies do you need in order to improve knowledge management in your organisation?
(select max 3, 1=lowest, 3=highest)
___ Internet ___ Intranet ___ Extranet ___ Mobile (wireless)
___ Other, please specify _____

Which features in knowledge management software are the greatest needs for your organisation?
(select max 5, 1=lowest, 5=highest)
___ Discussion/forum ___ Review system ___ Chat online
___ Workflow ___ Full text search ___ Save search result
___ Document version control ___ Document expiry date set
___ Role access control ___ Auto finding experts
___ Portal
___ Other, please specify _____

Which technical functions of software above are important for your organisation?
(select max 5, 1=lowest, 5=highest)
___ Web base ___ Compatible with other application ___ Opensource
___ MS Windows base ___ Standard communication (e.g. XML, SOAP, etc.)
___ Object-oriented interoperability (e.g. CORBA, Java/RMI, etc.)

Which commercial tool(s) (or groupware) do you think meet(s) the requirement of your organisation the most?
Please specify _____

If someone creates knowledge and shares it to you, which aspect of such knowledge do you concern first?
(select max 3, 1=first, 3=last)
___ Reliability ___ Relevance ___ Adaptability ___ Validity
___ Ease to understand ___ Number of times document downloaded
___ Authors
___ Other, please specify _____

6 Anticipated Impact

What are the most important impacts that should be achieved by knowledge creation?

Human aspects *(select max 3, 1=lowest, 3=highest)*
___ New forms of working and communicating at the office
___ New cultural attitude of your organisation
___ Improved IT skills of organisation's employees
___ Improved non-IT skills of organisation's employees
___ Other, please specify _____

Performance/Quality *(select max 3, 1=lowest, 3=highest)*
___ Improved business process
___ Standardised procedures and processes in the organisation
___ Increased organisation's income
___ Increased reuse of best practise or existing knowledge to run the business
___ Other, please specify _____

Knowledge creating & sharing *(select max 3, 1=lowest, 3=highest)*
___ Improved overall access to knowledge management system (KM tools)
___ Best practice databases that capitalise on past successes and failures
___ Improved knowledge creation life cycle
___ Other, please specify _____

7 Barriers/problems

Main barriers that prevent knowledge creation: *(select max 3, 1=lowest, 3=highest)*

Organisational Barriers
___ Business incentives ___ IT strategy
___ Training ___ Organisation chart/hierarchy

Legal Barriers

___ Risks for liability
___ Intellectual Property Rights

People Barriers

___ Personal incentives
___ Cultural issues
___ No motivation (such as reward)
___ Education/training/professional gap
___ Reluctance to contribute

Technology Barriers

___ Difficulties in using new technology
___ Lack of system performance
___ Incompatibility/standard problems
___ Lack of IT support
___ Security problem

Location Barriers

___ Distance problems
___ Atmosphere
___ Facility problems

Budget problems

___ Training cost
___ Documentation cost
___ Hardware/software cost
___ Human cost

Other barriers/problems, please specify: _____

Thank you for taking time to complete the questionnaire.

If you have any questions or comments, please feel free to contact us:

c.vorakulpipat@pgr.salford.ac.uk

Appendix B: Stage Two Questionnaire

****

Questionnaire on Knowledge Management Research

University of Salford

CONFIDENTIAL and ANONYMOUS

****

The purpose of this questionnaire

This questionnaire is issued by a PhD candidate of University of Salford. It aims at addressing a number of research questions related to knowledge sharing and creation practices in the Information Technology sector.

The questionnaire contains six sections about the topics below:

- General information
- Work environment and teamwork
- Knowledge management
- Requirements for ICT support
- Socio-Organisational Requirements
- Barriers

Each section contains open-ended questions that may require you to provide a written response.

1 General Information

1.1 How long have you worked at this organisation?

_____

1.2 What is your job title?

_____

1.3 Please explain your job responsibilities

_____

_____

2 Work environment and teamwork

2.1 Is your job team-based?

☐ Yes ☐ No If "No", please go to section 3.

2.2 Are you involved in more than one team?

☐ Yes ☐ No

2.3 If "Yes", do you have different roles and responsibilities within each team?

☐ Yes ☐ No

Please comment: _____

2.4 Do you have a say or get consulted about the team you are asked to join?

☐ Yes ☐ No

2.5 Are teams related to projects or exist independently from projects?

☐ Yes ☐ No

Please comment: _____

_____

2.6 How many people (average) work in your team(s)? _____

2.7 How would you characterise working in teams in your organisation? *(Please tick all that apply)*

☐ Bureaucratic ☐ Participatory ☐ Innovative

Please comment:

_____

2.8 Which of the following methods does your team use for communications within the team? *(Please tick all that apply)*

☐ Telephone ☐ Voice Mail ☐ Notice board

☐ E-mail ☐ Groupware[3] ☐ Memo

☐ Scheduled meetings ☐ Instant messenger ☐ Informal gatherings

☐ Other, please specify _____

2.9 Do you collaborate across Teams?

☐ Yes ☐ No

2.10 If "Yes, which of the following methods does your team use for communications across the teams/departments/organisations? *(Please tick all that apply)*

☐ Telephone ☐ Voice Mail ☐ Notice board

☐ E-mail ☐ Groupware ☐ Memo

☐ Scheduled meetings ☐ Instant messenger ☐ Informal gatherings

☐ Other, please specify _____

2.11 What teamwork problems have you had to deal with? *(Please tick all that apply)*

☐ Lack of communication in teams

☐ Lack of contribution in teams

☐ Too hierarchical structure

☐ Different thinking/ gaps

Please comment: _____

_____

2.12 Do you consider team working effective in your organisation?

☐ Yes ☐ No

Please comment: _____

_____

[3] *Groupware (e.g. Lotus Notes, NECTEC Intranet Application) is application software that integrates work on a single project by several concurrent users at separated workstations.*

3 Knowledge Management

3.1 Do you rely on Knowledge to carry out your tasks and processes?

☐ Yes ☐ No

If 'yes' please give an example of a task / process_____

_____

3.2 What type of knowledge do you usually require?

☐ Industry knowledge (produced by standardisation and governmental organisations)
☐ Corporate knowledge (produced by employees within your organisations)
☐ Project knowledge (produced across partners of a project)
☐ Personal knowledge (produced by yourself over time)

3.3 How would you class the knowledge that you use?

General (Can be used by a large number of staff) Specific (Can only be used by a minority)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3.4 Do you perceive a difference between Data, Information, and Knowledge?

☐ Yes ☐ No

If 'yes' please explain_____

_____

3.5 Which of the two statements below do you agree with?

☐ Data is interpreted to provide information from which knowledge emerges.
☐ Knowledge exist first from which information is generated and ultimately data created.

3.6 What is "knowledge" in your perspective? *(Please tick all that apply)*

☐ Fact of knowing and understanding through experience and study
☐ An object to be stored and manipulated
☐ A process of simultaneously knowing and acting
☐ A condition of access to information
☐ An organisational capability to use information
☐ Other, please specify _____

3.7 How often do you share knowledge with others?

Never Always

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3.8 Do you usually share knowledge with:

☐ Members of your team
☐ Members of your department
☐ Employees across your organisation
☐ External collaborators
☐ Other, please specify _____

3.9 When was last time you shared knowledge?

☐ Today
☐ Yesterday
☐ Few days ago
☐ A week ago
☐ Few weeks ago
☐ A month ago
☐ Few months ago
☐ I can't remember

3.10 What knowledge did you share?

☐ Industry knowledge (produced by standardisation and governmental organisations)
☐ Corporate knowledge (produced by employees within your organisations)
☐ Project knowledge (produced across partners of a project)
☐ Personal knowledge (produced by yourself over time)
☐ Other, please specify _____

3.11 Where did you share it?

☐ In a formal context (meeting, staff presentation, etc.)
☐ In an informal context (discussion in the cafeteria, company restaurant, or other)
☐ Other, please specify _____

3.12 How did you share it?

☐ In a traditional context through face-to-face interaction
☐ In a virtual context using technology (telephone, fax, computer programs, etc.)
☐ Other, please specify _____

3.13 Does the above example constitute a generalisable knowledge-sharing pattern?

☐ Yes ☐ No
If 'No' please explain_____
_____

3.14 How important would you rate knowledge sharing is in your organisation?

Not important Very important
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3.15 Do you have clear knowledge sharing instructions or guidelines in your organisation?

☐ Yes ☐ No

3.16 If an employee wants to share a good piece of knowledge would he/she be able to do it today?

☐ Yes ☐ No
If 'Yes', then how?
☐ Using a dedicated software application (e.g. shared database)
☐ Storing this on the Intranet
☐ Using the company web portal
☐ Through a paper communication, e.g. newsletter
☐ Other, please specify:_____

3.17 If you have a new idea would you be prepared to make it available to others through a shared database?

☐ Yes ☐ No

3.18 How supportive are you about the idea of an internally shared knowledge?

Not supportive at all happy — Very supportive

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Please explain your choice_____

_____

3.19 Do you have any concerns in relation to the knowledge you share? *(Please tick all that apply)*

☐ Concerns about loosing "expert" status or losing importance
☐ Concerns about IPR and confidentiality issues
☐ Concerns about reliability/validity of knowledge shared
☐ More individualism than cooperative work
☐ Rewards not provided

Please comment: _____

_____

3.20 Have there been any major knowledge sharing changes within your department and your team in the last 24 months?

☐ Yes ☐ No

If 'yes' please explain _____

3.21 What were the main reasons for the change? *(Please tick all that apply)*

☐ Policy change
☐ Improvement and introduction of new technology
☐ Increase in employees' awareness through education and training
☐ Executives' directives
☐ Other, please specify _____

_____

3.22 Was there any resistance to the change?

Not at all — Very much

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Please comment:_____

_____

3.23 How would you describe your team's attitude to change?

Negative — Positive

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Please comment:_____

_____

3.24 At present, what measures have been put in place in your organisation to promote knowledge sharing? ***(Please tick all that apply)***

☐ Rewards (e.g. money, bonus, gift, praise, promotion)
☐ Competition among colleagues (I need to be better than others)
☐ Policy/Rule from top management
☐ Sanction/Penalty
☐ Nothing, just my willingness
☐ Other, please specify _____

3.25 If a reward system is used to encourage you to share knowledge, then what is it? ***(Please tick all that apply)***

☐ Monetary/bonus/gift reward
☐ Recognition/praise reward
☐ Development/empowerment/promotion reward
☐ Sanction/penalty
☐ Other, please specify _____

3.26 At the end, do you think knowledge sharing in your department/team is achieved?

☐ Yes ☐ No

If 'no' why? and how could it be improved?

_____

_____

3.27 Does your job involve creating new knowledge?

☐ Yes ☐ No

If "Yes", answer the following questions:

3.28 When was the last time you have created new knowledge?

☐ Today
☐ Yesterday
☐ Few days ago
☐ A week ago
☐ Few weeks ago
☐ A month ago
☐ Few months ago
☐ I can't remember

3.29 What did help you create this knowledge?

☐ Access to already shared knowledge
☐ Access to knowledge available outside the remits of the organisation
☐ Interaction with colleagues at work
☐ Interaction with external colleagues
☐ Other, please specify _____

_____

3.30 How did you create it?

☐ In a traditional context through face-to-face interaction
☐ In a virtual context using technology (telephone, fax, computer programs, etc.)
☐ Other, please specify _____

3.31 Does the above example constitute a generalisable knowledge-creation pattern?

☐ Yes ☐ No

4 Requirements for ICT support

4.1 For what do you mainly use computers? *(Please tick all that apply)*

☐ Word-processing ☐ Spreadsheet ☐ Web access
☐ E-mail ☐ Database ☐ Instant messenger
☐ Presentation ☐ Groupware ☐ Project Management
☐ Other, please specify _____

4.2 How often do you use collaborative tools (e.g. groupware) in your organisation?

Rarely Frequently
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

4.3 How effective are groupware functions in promoting knowledge sharing?

Not effective at all Highly effective
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Please explain why? How could it be improved?_____

_____

4.4 Which Groupware features do you highly value to support knowledge sharing? (Select max 3, 1=lowest, 3=highest)

☐ Discussion/forum ☐ Review system ☐ Chat online ☐ Workflow
☐ Full text search ☐ Save search result ☐ Document version control
☐ Document expiry date set ☐ Role access control
☐ Auto finding experts ☐ Portal
☐ Other, please specify _____

4.5 How effective are groupware functions in promoting knowledge creation?

Not effective at all Highly effective
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Please explain why? How could it be improved?_____

_____

4.6 Which Groupware features do you highly value to support knowledge creation? (Select max 3, 1=lowest, 3=highest)

☐ Discussion/forum ☐ Review system ☐ Chat online ☐ Workflow
☐ Full text search ☐ Save search result ☐ Document version control
☐ Document expiry date set ☐ Role access control
☐ Auto finding experts ☐ Portal
☐ Other, please specify _____

4.7 Overall, which knowledge-oriented applications and systems *do you highly value?* (Select max 3, 1=lowest, 3=highest)?

- ☐ Human Resource Management
- ☐ Reuse of best practice
- ☐ Document management systems
- ☐ E-learning & e-training systems
- ☐ Easy search and access to information over the web
- ☐ Other, please specify _____

4.8 Which of the following standards are you familiar with (Select max 3, 1=lowest, 3=highest)?

- ☐ For semantics (e.g. XML, OWL, etc.)
- ☐ For classification (e.g. OECD etc.)
- ☐ For meta-information (e.g. Dublin core, RDF, etc.)
- ☐ For communication (e.g. XML, SOAP, WSDL, etc.)
- ☐ For object-oriented interoperability (e.g. OMG/CORBA, IIOP, Java/RMI, etc.)
- ☐ For workflow (e.g. WfMC, W3C/WSFL, etc.)
- ☐ For components (e.g. EJB, Corba Components Model, etc.)
- ☐ Other, please specify _____

4.9 Which solutions for ubiquitous access (anytime / anywhere) do you highly value? (Select max 3, 1=lowest, 3=highest)?

- ☐ Internet / Extranet / Intranet
- ☐ Web services (including .Net)
- ☐ Distributed databases
- ☐ Mobile / wireless infrastructures
- ☐ Virtual workspaces / environments
- ☐ Other, please specify _____

4.10 For what do you mainly use computers? *(Please tick all that apply)*

- ☐ Personal profiles
- ☐ User-interface customisation (e.g. layout, color, fonts, etc.)
- ☐ Information and news relevant to your work and personal life
- ☐ Personal learning space related to your activities, projects, and career path
- ☐ Search results listed in order of your relevance
- ☐ Other, please specify _____

4.11 Is there any "killer" technology that will make a difference to your knowledge management needs and practices?

☐ Yes ☐ No

Please comment _____

_____

5 Socio-Organisational Requirements

5.1 How easy is access to knowledge-friendly applications in your organisation?

Not easy Very easy

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

How could it be improved?_____

_____

5.2 What level of support do you get in terms of technology use?

Limited Excellent

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

How could it be improved?_____

_____

5.3 Do you have a clear training programme in your organisation?

☐ Yes ☐ No

Please comment:_____

_____

5.4 What ICT training courses have you attended in last 2 years?

_____

5.5 What further ICT training do you feel you need at present?

_____

5.6 Which learning methods do you prefer? ***(Select max 3, 1=lowest, 3=highest)***

☐ Learning by doing
☐ Formal training, meeting, documentation
☐ Informal learning, sharing experiences by individual and face-to-face interaction
☐ Other, please specify _____

5.7 Which reward system do you think might create the highest impact in terms of knowledge management? ***(Select max 3, 1=lowest, 3=highest)***

☐ Monetary/bonus/gift reward
☐ Recognition/praise reward
☐ Development/empowerment/promotion reward
☐ Sanction/penalty
☐ Other, please specify _____

5.8 Do you feel that your line manager, and the managers within your organisation promote enough knowledge sharing?

☐ Yes ☐ No

Please comment:_____

_____

5.9 Do you feel that the overall culture is adequate to promote knowledge sharing?

☐ Yes ☐ No

Please comment:_____

_____

5.10 **Which improvements do you highly expect?** ***(Select max 3, 1=lowest, 3=highest)***

☐ Improvement in IT
☐ Improvement in communication and relationship among people
☐ Improvement in overall knowledge sharing policies, including incentives
☐ Improvement in human capital management (hiring, training, employee retention)
☐ Other, please specify _____

6 Barriers

6.1 Main barriers that prevent knowledge sharing and creation:

Organisational Barriers (Select max 3, 1=lowest, 3=highest)

☐ Business incentives
☐ IT strategy
☐ Training
☐ Organisation chart/hierarchy

Legal Barriers (Select max 3, 1=lowest, 3=highest)

☐ Risks for liability
☐ Intellectual Property Rights

People Barriers (Select max 3, 1=lowest, 3=highest)

☐ Personal incentives
☐ Education/training/professional gap
☐ Cultural issues
☐ Reluctance to contribute
☐ No motivation (such as reward)

Technology Barriers (Select max 3, 1=lowest, 3=highest)

☐ Difficulties in using new technology
☐ Lack of IT support
☐ Lack of system performance
☐ Security problems
☐ Incompatibility/standard problems

Location Barriers (Select max 3, 1=lowest, 3=highest)

☐ Distance problems
☐ Facility problems
☐ Atmosphere

Financial problems (Select max 3, 1=lowest, 3=highest)

☐ Training cost
☐ Hardware/software cost
☐ Documentation cost
☐ Human cost

Other barriers / problems, please specify: _____

6.2 Categories of ICT tools to which the previous barriers apply: *(Select max 3, 1=lowest, 3=highest)*

☐ Communication tools (email, internet, etc.)
☐ Collaborative tools (Groupware, document/file management, workflow support, data exchange, etc.)
☐ Office tools (word processing, spreadsheet, presentation, personal databases etc.)
☐ Design tools (CAD, etc.)
☐ Management tools (MIS, planning, ERP, etc.)
☐ Other tools, please specify: _____

Thank you for taking time to complete the questionnaire.

If you have any questions or comments, please feel free to contact us:

c.vorakulpipat@pgr.salford.ac.uk

Appendix C: Stage Two Interview Guide

Interview Guide on Knowledge Management Research

Name of interviewee:
Organisation:
Department:
Position:
Date and Location:

Before Interview

- If you studied abroad, in which country did you study and for how long?
- Have you heard about the concept of knowledge management (including knowledge sharing and knowledge creation) before?
- How would you rank your own level of experience and familiarity with KM? (Introductory, Intermediate, Advanced)
- Have you worked in other organisation(s) before?
- Could you please describe your previous organisation(s)? (Private/Public sector or International/Local)
- Can you find the difference about knowledge sharing and creation between in your university/institute, your previous organisation(s), and your current organisation?
- Which one do you prefer? Why? Please explain.

1. General Information

1.1 Now, first of all can you tell me a little about yourself?
(Nature of work, department, position)

1.2 What can you tell me about the nature of your organisation/department?
(Aims and objectives, policies, business environment, competitors)

2. Teamwork and Organisation Environment

2.1 How would you describe the structure of the organisation?
(Structure, communications, culture)

2.2 How would you describe the climate within your organisation?
(Relations between colleagues, communications, appraisals)

2.3 What is the dominant method of working within your organisation?
(Team work / individuals)

2.4 How does the organisation encourage its personnel?
(Rewards, motivation, team support, training)

2.5 Which methods do you communicate with your colleagues within and across departments/ organisations/ projects?

3 Information Technology

3.1 How do you feel about the use of IT in your organisation?

3.2 How does the use of IT today compare to the situation 2 years ago?
(Efficiency, usefulness of computers, main purpose, training)

3.3 How do you feel about the use of groupware in your organisation?

3.4 How widely is groupware used within your organisation?

3.5 Which features of groupware do you feel should be improved / adopted in your organisation?

3.6 What are the main purposes for which staff uses groupware?
(e.g. search information, arrange a schedule meeting, email)

3.7 Does the organisation face any problems due to the use of IT?
What are they?
How would you suggest they could be resolved?

4 Knowledge Management

4.1 How do you feel about knowledge sharing in your organisation?

4.2 How does knowledge sharing today compare to the situation 2 years ago?
(Strategy, shared database, attitude)

4.3 Is there any resistance to knowledge sharing activities?
If 'yes', why?

4.4 What do you think about reward systems today? Can they improve knowledge sharing in your organisation?

4.5 How would you feel if employees can share any knowledge in, and access any knowledge from knowledge repositories?

4.6 Do you think Review system is necessary for your organisation?

4.7 How do you judge a person who most contributes to knowledge sharing activities? (Subjective / Objective)

4.8 Do people concern about IPR and confidential issues before sharing knowledge? If 'yes', do you think if it is an advantage or a disadvantage?
If 'disadvantage', how would you solve this problem?

4.9 Do you think knowledge sharing in your organisation is achieved?

4.10 Are you satisfied with knowledge sharing at present?
If 'no', how could you improve it?

4.11 How do you feel about the involvement of knowledge creation in your organisation?

4.12 Could you please explain the process of knowledge creation in your department?
Are you satisfied with the methods of knowledge creation at present? (e.g. face-to-face communications or virtual communications)
And do you think these are fit with the organisation culture?

4.13 How much do you think knowledge creation can enhance the organisation productivity?

5 Change

5.1 What major changes have you seen in the organisation?
(IT based? IT driven?)
Why did this/these change(s) occur?

5.2 Who was involved in the change process?
(Only management/subcordinates?)

5.3 How did you feel about the change?
How did others feel about the change?
(Acceptance, resistance, consultation)

5.4 What changes do you predict for the future of the organisation?
(IT/business based?)

5.5 Why do you see these changes occurring?
(Strategy, competition; are the changes in terms of technology alone? Personnel? Team/working practices?)

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