Knowledge Management:

A Study of Effective Management of Tacit Knowledge

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CONTENTS

List of Tables

List of Figures

Abstract

Knowledge is commonly defined as the information, understanding and skills that are gained through education or experience. More broadly, our understanding of knowledge is grounded in epistemology – the philosophical study of the nature, origin, and limits of human knowledge. Studies into knowledge, particularly from an organisational theory perspective, have and continue to generate a rich vein of academic enquiry and scholarship.

The extant literature widely conceptualises knowledge as a bifurcation of the 'tacit' and 'explicit' forms. Explicit forms of knowledge are generally codified, recorded or at least easily stored in a format that is readily retrievable and useful, Tacit, on the other hand, is knowledge that difficult to transfer to others by means of codifying or verbalising. This can include experience, foresight, insight, and intuition. Thus, tacit knowledge is widely regarded to be difficult to manage or embed into organisational routines and standard operating procedures.

This thesis presents a grounded theory approach to conceptualising the challenges of knowledge management from a tacit perspective through qualitative analysis of data generated in the context of Chinese not-for-profit organisations. It seeks to present a theoretical contribution in the form of maturity model that enables the determination of factors that may contribute to the successful transfer of tacit knowledge between employees in an organisation. The purpose of the maturity model is to encourage organisations to become more interactive and participative in the execution of knowledge management activities, especially knowledge-sharing activities between employees, as well as factors that aid the adoption of knowledge-sharing activities.

The results of data collection and analysis have shown that the following factors are potentially critical for success. The first is the coherence between the core values of the company and personal values amongst employees; they matter to performance management, especially, the efficiency and effectiveness of the completion of work tasks. Secondly, based on the qualitative research, utilising the power of the middle management team when applying tacit knowledge management (TKM) can be helpful for improving the efficiency of knowledge transfer. It means that by using the power of the middle management team, employees can better understand the essentials of the core values when they conduct specific tasks. In addition, adjusted strategies for applying tacit knowledge management can be one of the most crucial considerations when applying TKM. Cultural differences and differences in personal values require alternative methods when preparing to conduct TKM.

This study suggests further avenues for study. In this era, each organisation faces the challenge of increased competition and internal high staff turnover. Hence, it is important to undertake further research. In this study we are not focusing on the differences of the impact of different media (newsletters, video meetings, phone calls, Helpdesks) when conducting knowledge transfer throughout an organisation. Additionally, in this study, although we found the differences between knowledge-intensive and non-knowledge-intensive organisations in relation to the willingness to accept new knowledge, we are not actually concentrating on the mechanism behind this finding. Knowledge management has a strong connection with innovation and efficiency in an organisation.

Declaration

No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Copyright

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Chapter 1 Introduction

1.1 Background

Organisations are often described as a black box, where information is the medium inputted and outputted through that box, constantly and diversely. ‘Knowledge’ is based on the exterior elements. In other words, it is primarily exogenous.

In the view of both academics and managers, knowledge is seen as the vital source of competitive advantage (Grant, 1997). Knowledge is a potentially significant resource to the firm, as it may possess useful, unique, valuable, rare, inimitable and non-substitutable characteristics, particularly if it has a tacit dimension (Polanyi, 1966; Hall and Sapsed, 2005). In business organisations, the growing importance of knowledge requires us to change our thinking concerning innovation in several areas, such as technical innovation, product innovation, organisation innovation and strategic innovation. These areas represent the ways that companies create and transfer new knowledge. Innovation is not just the tool of problem solving or information processing, it is a form of organisational knowledge creation that can be better seen as the process in which the organisation seeks and ensures problems, and adds value by creating new knowledge to solve these problems. In 1999, Davenport and Marchand presented the view that even though information management includes the management of knowledge in some way, there are two distinctive tasks within: to improve the creation of new knowledge, and to manage the way people share and apply it. In Nonaka et al.'s (2000) unified model of dynamic knowledge creation, knowledge is described as dynamic, since it is created in social interactions amongst individuals and organisations. Knowledge is context specific, as it depends on a particular time and space. Without being put into context, it is just information, not knowledge. Information becomes knowledge when it is interpreted by individuals and given context, anchored in the beliefs and commitments of those individuals (Nonaka et al., 2000). Davenport et al. (1998) came up with similar definitions of knowledge. Knowledge which is new to an organisation had to either be invented internally or acquired from external sources.

There are two types of knowledge: explicit knowledge and tacit knowledge. Nonaka et al. (2000) and other authors, such as Kikoski and Kikoski (2004), describe explicit knowledge as what can be embodied in code or language, and consequently, it can be verbalised and communicated, processed, transmitted, and stored relatively easily. Explicit knowledge is the most widely known, public, and conventional form of knowledge which can be found in books, journals and mass media (such as newspapers, television internet etc.). It is the sort of knowledge we are aware of using and it can be shared in the form of data, scientific formulae, manuals and such like. Patents are an ideal example of explicit knowledge in a business context. In contrast, tacit knowledge is personal and hard to formalise; it is rooted in action, procedures, commitment, values, and emotions, etc. Tacit knowledge is the less familiar and more unconventional form of knowledge. It is the knowledge of which we are not conscious. Tacit knowledge is not codified or communicated in a ‘‘language’’, it is acquired by sharing experiences, through observation, and imitation (Kikoski and Kikoski, 2004; Hall and Andriani, 2002). Tacit and explicit knowledge are complementary, which means both types of knowledge are essential to knowledge creation. Explicit knowledge without tacit insight quickly loses its meaning. Knowledge is created through interactions between tacit and explicit knowledge and not from either tacit or explicit knowledge alone (Nonaka et al., 2000). Competitive advantage will only be gained if companies value their tacit knowledge, since that knowledge is unique and personal, whereas their explicit knowledge may also be understood by others. Tacit knowledge creates a learning curve for others to follow and provides a competitive advantage for future successful companies (Kikoski and Kikoski, 2004).

Usually, people refer to knowledge characterised by a low degree of codification as tacit knowledge. Such knowledge is typically believed to be hard to articulate and can solely be acquired through experience. Thus, it is more difficult to transfer tacit knowledge than explicit knowledge. Consequently, individuals or firms might choose to keep their knowledge tacit in order to prevent its transfer and diffusion, thereby maintaining a competitive advantage. The emphasis on tacit knowledge is not novel to the study of organisations (Kreiner, 1998). Indeed, it has been present since Adam Smith's (1776) famous argument that the division of labour made specialisation of knowledge possible. Von Hayek (1948a, b) later reminded us that the important knowledge was ``the knowledge of the particular circumstances of time and place" (von

Hayek, 1948b), i.e. the tacit, subjective, idiosyncratic knowledge that individual actors hold. It is precisely this kind of knowledge that is important for understanding organisational routines (Nelson and Winter, 1982). Different individuals hold different kinds of knowledge with different perceptions, and therefore, of technology and organisations. The cognitive processes by which knowledge is created, distributed and shared thus become important to studies attempting to deal with the organisation of technological knowledge (cf. Garud and Rappa, 1994, 1995). By stressing the importance of shared knowledge, we emphasise the importance of knowledge networks. It can be argued that such knowledge networks can be seen as representing the cognitive frames and categories by which we structure new knowledge, and thus manage it.

1.2 Research problem

Tacit knowledge is commonly used in companies to enhance staff's academic learning and professional working experience. It plays the vital role in leveraging the overall quality of knowledge (Goffee and Jones, 2000). However, tacit knowledge cannot be obtained in a simple and direct way, it will be faced with a loss through the lack of company capacity such as management. In 1987, Wagner and Sternberg (1987) held the view that the ability to acquire and manage tacit knowledge can reflect the success of management. Priceless and valuable knowledge resources would continue to be lost unless organisations could use them better. In order to fully use tacit knowledge, enhance people's professional working abilities, and better manage companies, the gaps in tacit knowledge should be realised and solved.

1.3 Research motivations

Organisations work to create, preserve, and protect the available knowledge. By comprehensively understanding the concept of knowledge, the organisation can manage that knowledge effectively, then create and maintain competitive advantage from it. Knowledge management is always used by organisations to gain competitive advantages. However, as a new type of management, knowledge management has only recently become prominent. Therefore, there is little research about the development and implementation of knowledge management in an organisation. What is more, the potential benefit that knowledge management has in improving organisational development is not fully mentioned in the previous research. This research focuses on this new type of knowledge management: by gaining an in-depth understanding of tacit knowledge and comprehensively analysing knowledge management, a company can enhance its productivity, performance, and competitive advantage.

1.4 Research aims

The aims of this research can be introduced as follows:

1. To demonstrate the vital role that tacit knowledge can have in inspiring employee willingness to participate in knowledge management activities and share their knowledge in the organisation.
2. To develop theoretical insight and models, which are different from the already existent frameworks in this area of study.
3. To determine the factors that can help employee participation in knowledge management and improve their interactivity in knowledge-based organisations, through analysis of the gaps that prevent the operation of knowledge management activities, and the vital factors that can improve knowledge-sharing activity.

1.5 Research objectives

In order to fulfil the research aim, the following objectives will be used to direct the research investigation, and references to the collation of data (inclusive of field data):

1. To identify key factors in managing knowledge, tacit knowledge and knowledge management, in the management of a project.
2. To summarise major contributions of tacit knowledge and ways to recognise, use, share, acquire, teach, and measure tacit knowledge (as discussed and illustrated).
3. To identify methods to better use tacit knowledge in the workplace and practical, proven ways to improve the understanding and use of that knowledge.

1.6 Research questions

In order to fully achieve the research objectives, the following research questions will be addressed:

1. What is knowledge, tacit knowledge and knowledge management in a project context?
2. What are the relationships between explicit knowledge and tacit knowledge?
3. What are the critical success factors for effective knowledge management implementation?
4. Does tacit knowledge create competitive advantage by improving management effectiveness?

1.7 Research methodology

In general, a research approach refers to data collection in methodical, concentrated and sequential ways so that information that is useful in solving certain research problems can be obtained (Ghauri and Gronhaug, 2005). As also suggested by Ghauri and Gronhaug (2005), approaches share differences with techniques and such differences lie in that the former is considered as data collection on basis of historical review, data analysis, interviews, or case studies while the latter refers to specific procedures followed by researchers in order to collect and analyse data. In relation to business studies, techniques are normally the preferable choice, which include interviews, observations, or surveys (Jankowicz, 1991).

Regarding the selection of an appropriate method, it is informed by the research issue and objectives. Research method is a methodical, focused and sequential collection of data, followed in order to gain useful information that could answer a certain research problem (Ghauri and Gronhaug, 2005). They also point out that methods differ from techniques: methods are “data collection through historical review and analysis, surveys and case studies”; whereas techniques are “a step-by-step procedure that is followed by researchers for collecting and analysing data”. In business research, it is normal to apply techniques, for example interviews, surveys and observations (Collis and Hussy, 2009).

In order to explore the most important factors that influence employee enthusiasm to participate in knowledge management activities, share their personal knowledge within the organisation, and to develop academic insights that differ from these already existing in this area, appropriate research methods will be identified in the following sections. These will offer a clear outline of the research process for this study. A well-defined research methodology is crucial in a research project. First, a comprehensive introduction about the research design and research strategy are vital. The research design shows a detailed framework for the data collection and analysis in three main types of research method: quantitative, qualitative, and mixed methods research. The difference between quantitative and qualitative are that quantitative uses more data, and is related to frequency, while qualitative uses more description, and is concerned with meaning. Mixed methods are a combination of quantitative and qualitative, which can add more value to the research. Research strategy is classified into four main categories: experiment, survey, case study and grounded theory. After data source perception and introduction to secondary and primary data collection respectively, this study begins to collect primary research data. This is achieved using a qualitative research approach using the grounded theory method, specifically, semi-structured interviews.

1.8 Data collection

In order to select the most suitable data collection method, the research topic and its relevant research questions should have primary importance and be the guiding factors. Research methods are designed to solve research problems, if these approaches could not adequately solve the problems, it indicates that the method should undergo some change (Robson, 2002). Therefore, a suitable data gathering method is crucial, it should be carefully chosen to ensure that it is appropriate for the research and can answer the research questions.

In this research, grounded theory, which was developed by Strauss and Glaser (1967), is used as the main research methodology. This strategy has become popular and has been widely used for qualitative research in recent years (Payne, 2007). Unlike normal methods that test existing academic theories or hypotheses from the same area, grounded theory can develop a new theory from the empirical data that is collected, which helps researchers develop innovative analyses and retest existing ideas (Charmaz, 2011). The chosen strategy, grounded theory, is used as the qualitative method in this research. Furthermore, semi-structured interviews were selected as the method to collect qualitative data for the grounded theory strategy, which has been used in various previous research projects. This chapter presents the first stage of the research design, which was used as the literature review in the first year. The grounded theory is covered in the second stage, which are interviews, the selected sample and qualitative analysis.

In this research, 50 face-to-face interviews with 50 managers from 15 areas were conducted, which are good for improving understanding, completing theory and to prevent collecting unreliable data. Those companies included the following sectors: banking, economics, education, manufacturing, and agriculture. Of those companies, 21 are knowledge-based and 9 are non-knowledge-based. The average duration of each interview was around 45 minutes. In consideration of special cases, the specific length of interviewing time depended on the interviewees' availability and their interviewing status. The minimum duration was 30 minutes.

1.9 Structure of the report

Chapter 1: Introduction

This chapter provides an overview of the research, which briefly includes all aspects, such as background, the research aims, research questions, research methodology, data collection, research model and structure of the report.

Chapter 2: Literature review

This chapter summarises the relevant definitions and characteristics of knowledge and knowledge between tacit knowledge and knowledge management found in relevant literature. Some of the existing models regarding the use of grounded theory were also reviewed.

Chapter 3: Research methodology

This chapter provides a suitable methodology that effectively simplifies the research problem into its fundamental parts. First, two vital parts about research make a comprehensive introduction to research design and research strategy. The research design showed a detailed framework for the data collection and analysis using three main types of research methods: quantitative, qualitative, and mixed methods research. In this part, the difference between quantitative and qualitative is that quantitative uses numbers, while qualitative uses words. Whereas, mixed methods are the combination of quantitative and qualitative, which can add more value to the research. Then, research strategies were discussed and classified into four main categories: experimental, survey, case study and grounded theory. After data source perception and a respective introduction to primary and secondary data collection, this study begins to collect primary research data using the qualitative research approach of grounded theory using semi-structed interviews.

Chapter 4: Data collection

This chapter mainly discusses two aspects: research design and the processes that were used to collect the data for research objectives. In order to select the most suitable data collection method, the research topic and its relevant research questions should attach greater importance and be the guiding factors for the initial findings from the qualitative approach.

Additionally, this chapter discusses the initial findings and qualitative data from the semi-structured interviews.

Chapter 5: Groundwork and data collection

This chapter presents the qualitative data collected from the face-to-face interviews. Those interviews were conducted with 50 managers from 30 different companies in a range of sectors, in order to enhance understanding, develop theory, and to overcome the risk of failing to collect reliable data.

Chapter 6: Overview of coding procedure

In this chapter, the data analysis procedure for grounded theory is outlined in detail. Especially important for this research, the process of coding data is also explained in detail. Firstly, the overview of the coding process is presented, then the first resulting conclusion from the open coding stage will be introduced. The qualitative data was not only extracted from the interview transcripts, but it was also examined and sorted into categories. Codes and concepts were labelled based on incidents occurring in the data.

Chapter 7 Data analysis

This chapter analyses the data collected in China and establishes the tacit knowledge management and tacit knowledge management model.

Chapter 8: Conclusions and further work

This chapter provides the conclusion and all findings of the research, outlines the barriers and proposes future work, which is required for future research.

Chapter 2 Literature review

2.1 Introduction

This chapter provides a review of relevant literature on knowledge management. It begins with defining and explaining knowledge and knowledge management clearly. It then proceeds to examine the key concept of knowledge as types of knowledge, importance of tacit knowledge, and how knowledge management impacts organisations. This chapter is followed by a discussion of the benefits of knowledge management (KM), the KM life cycle, challenges, organisational learning as well as KM as a whole.

Merriam (1988) argued that a literature review is "an interpretation and synthesis of published work." Merriam presented that statement in 1988, from which time there has been an extension of the concept being published within the academic context, such as in books and journals. Synthesis in this context refers to collating material from different sources and integrating a structured review of the relevant work (Merriam, 1998). This provides an analytically and critically evaluative stance to the existing literature on the topic (Grayson, 1998). Research literature reviews can be contrasted with more subjective examinations of recorded information. When doing a research review, researchers systematically examine all sources and describe and justify what they have done. This enables others to reproduce their methods. and to determine objectively whether to accept the results of the review. In contrast, subjective reviews tend to be idiosyncratic. Subjective reviewers choose articles without justifying why they were selected, and they may give equal credence to good and poor studies. The results of subjective reviews are often based on a partial examination of the available literature, and their findings may be inaccurate or even false (Arlene, 2009). The process of conducting as well as reporting a literature review can help researchers to clarify the existing thoughts and ideas about the area of study.

2.2 Definitions of knowledge

With the development of the economy, knowledge has been considered one of the most important assets for an organisation and an essential strategic resource to retain competitive advantage (Nonaka, 2000). Many scientists claim that knowledge is the most important resource for organisations, so that KM has become a common function for business (Zack et al., 2009). Nonaka (2007) argued that knowledge innovation is the key factor which can impact whether an organisation can be successful. However, many leaders use knowledge improperly and have not cultivated the right kind of knowledge for business development, which will result in problems for that business (Nonaka, 1995). Therefore, although knowledge innovation can retain competitive advantage for an organisation, it is difficult to manage and develop because knowledge is complex to define (Nonaka, 1995).

There are various definitions of knowledge, so it is not easy to define in its entirety. In general, knowledge represents information, skills, understanding, experience, and education, gained through discovery and learning. The understanding of relations and causalities are essential in making operations effective, building business processes, or predicting the outcomes of business models (McKinsey, 2001). Knowledge can be implicit in the form of particular skills and experiences, as well as explicit in the form of theoretical understanding.

Reference	Definition
McAdam and McCreedy (2000)	“Knowledge is truth”
Davenport and Sensiper (1998)	Function of framed experiences, values, context, and expert insight that enables the evaluation and incorporation of new experiences and information.
McKinsey (2001)	The understanding of relations and causalities is essential in making operations effective, building business processes, or predicting the outcomes of business models.
KPMG (2004)	It can accumulate in peoples’ minds, about customers, products, processes, and competitors.
Charles Ha (2001)	“Information is raw, that is, un-acted upon by any receiver; knowledge is information acted upon cognitively, that is, transformed into some conceptual framework and hence along with the common sense to know when and how to use it.”

Nonaka and Takeuchi (1995)	A dynamic human process of justifying personal belief towards truth.
Wiig (2007)	"Knowledge includes truths, facts, and beliefs, perspectives, judgements and expectations, methodologies and know-how whereas information consists of facts and data organized to describe a particular situation or condition."
Yim et al. (2004)	Awareness of the efficiency and effectiveness of different actions in production outcomes based on experiences.
Yang (2009)	Knowledge is about beliefs, commitments, perspectives, intention, and action. Knowledge is defined as a belief that increases an entity's capacity for effective action.
Bourdreau and Couillard (1999)	Things that are held to be true and drive people to action.

Table 2.1 Various definitions of knowledge

2.3 The types of knowledge

Nanoka (1991) argued that the last competitive advantage of business is knowledge. A company that continues creating new techniques, products, and new knowledge is called a "knowledge-creating company" (Nonaka, 1994). However, few leaders grasp the true nature of knowledge and know how to manage it, while people often misunderstand what different kinds of knowledge there are and how those types can be utilised by different types of companies. Therefore, an understanding of the concept of knowledge and knowledge types is vital, since developments in the knowledge management field are based on the distinction between the different types of knowledge (Nonaka 1994, Alavi and Leinder, 2001, Yim et al., 2004).

There are four types of knowledge, and the two most frequently mentioned are explicit knowledge and tacit knowledge. For tacit and explicit knowledge, knowledge management and learning theory has taken root during the relationship and interaction between them, to retain the basic theory of both tacit and explicit knowledge (Nonaka 1994). Some researchers make a further distinction and talk of embedded knowledge. In this way, one differentiates between knowledge embodied in people and that embedded in processes; organisational culture, routines, etc. (Horvath 2000). Gamble and Blackwell (2001) use a scale consisting of represented-embodied-embedded knowledge, where the first two closely match the explicit-tacit. Not all knowledge is created equally; we think of knowledge as something that can be recorded in words, visualised and taught. However, this is not always the case. Tacit knowledge is a class of knowledge that is difficult to communicate. Since the last competitive advantage for a company is knowledge, continuing to innovate is the most important thing for each business. For those activities deemed “knowledge-creating”, some companies have been successful by innovation through launching new products onto the market. Before managing knowledge, managers need to completely understand what knowledge is and what kinds of knowledge a business can exploit. However, few managers understand the nature of knowledge, which is the main reason leading to the failure of managing knowledge.

2.3.1 Explicit knowledge

Explicit knowledge is knowledge that can be formalised and codified and is sometimes referred to as 'know-what' (Brown and Duguid, 1998). So, it is easy to identify, store, and retrieve (Wellman, 2009). People have not only accessed what they want, but also stored the important knowledge for them. Explicit knowledge is knowledge and information that not only can be expressed or written down, but also that people can communicate easily, which can be found in different ways: databases, memo notes, paper, documents, and reports (Botha et al., 2008). Moreover, knowledge that has been stored can be reviewed and updated through further reading of papers or books. Despite this, many theoreticians regard explicit knowledge as being less important than implicit. Nonaka (1994) states that implicit knowledge can be transformed completely and easily to other people, and explicit knowledge is considered simpler in nature. Because of this, explicit knowledge can generate fewer competitive advantages for an organisation.

Patents are an ideal example of explicit knowledge in a business context. In fact, for business organisations, patents are the only place where certain key information must be revealed to the public, and between business competitors, which would otherwise be kept private. Therefore, through careful, rigorous, comprehensive and relevant analysis, corporate competitive intelligence analysts can derive a great deal of useful information from patent literature, while making publicly available patent information available to their own businesses. Therefore, for a company with patents, it is difficult to create a huge competitive advantage over other companies.

2.3.2 Tacit knowledge

Tacit knowledge is in the minds of humans and includes cultural beliefs, values, attitudes, skills, and life, as well as work experiences (Botha et al., 2008). It is hard to communicate and is deeply rooted in action, commitment, and involvement (Nonaka, 1994). However, tacit knowledge is complex to define because it is referred to as 'know-how' (Brown and Duguid, 1998) and is based on rich experience instead of simply learning facts. For these reasons, tacit knowledge can have high variance according to different surroundings and human nature. Therefore, tacit knowledge is hard to communicate or transfer (Nonaka, 1994). Conversely to explicit knowledge, which has been regarded as less and less important, organisations have increasingly regarded tacit knowledge as the most valuable source of knowledge (Wellman, 2009). Moreover, tacit knowledge is most likely to lead to breakthroughs for an organisation (Wellman, 2009). Tacit knowledge can influence organisations directly (Gamble and Blackwell, 2001), so if one is able to completely and successfully transfer tacit knowledge, it could create the greatest competitive advantage for an organisation.

However, numerous authors have considered that tacit knowledge is 'hiding' in people's minds, making it too difficult to transfer or share with other people (Nonaka et al., 2000). Some tacit knowledge has been generated from culture and belief when people were young, but there is another type of tacit knowledge which is generated mostly through skills and experiences, especially for adults. Yang (2009) stated that there are two different dimensions of tacit knowledge: the cognitive dimension and the technique dimension. The cognitive dimension of tacit knowledge refers to the knowledge that is generated by ideas, beliefs, and values, while the technique dimension of tacit knowledge is observed as the 'know-how' of experiences and skills.

Using a case study, Polanyi (1996) was trying to write an article that would accurately convey how one reads facial expressions. It should have been quite apparent that it would be nearly impossible to convey our intuitive understanding gathered from years of experience as well as practice. However, a specialist said "it would be very difficult to transfer his knowledge into a document completely." (Polanyi, 1996).

Tacit knowledge	Explicit knowledge
Inexpressible in a codifiable form	Codifiable
Subjective	Objective
Personal	Personal
Context specific	Context independent
Difficult to share	Easy to share

Table 2.2 The differences and characteristics of tacit and explicit knowledge

2.3.3 Embedded knowledge

Embedded knowledge refers to the knowledge that is locked in processes, products, culture, routines, artefacts, or structures (Horvath 2000, Gamble and Blackwell, 2001). Knowledge is embedded either formally, such as through a management initiative to formalise a certain beneficial routine, or informally, as the organisation uses and applies the other two knowledge types.

There is another type of knowledge which is called embedded knowledge; it can be identified as organisation culture, codes of conduct, ethics, and products. Horvath (2000) defined embedded knowledge as the knowledge that can be locked in processes, culture, artefacts, or structures (Horvath, 2000). Knowledge is embedded either formally, according to the basic management for formalising specialist routine, or informally, as an organisation uses and applies the other two knowledge types (Gamble and Blackwell, 2001).

While managing embedded knowledge, the challenges (which in managing vary considerably) would differ from embodied tacit knowledge. It hardly changes and even understanding it can be very difficult for different cultures, in other words, formalised routines can be easily implemented by embedding lessons directly to learn procedures, routines, rules and products.

The role of this research is somewhat limited, but it does have some useful applications. Broadly speaking, information technology (IT) can be used to help map organisational knowledge areas; as a tool in reverse engineering of products (thus trying to uncover hidden embedded knowledge); or as a supporting mechanism for processes and cultures. However, it has also been argued that IT can have a disruptive influence on culture and processes, particularly if implemented incorrectly.

Due to the difficulties in effectively managing embedded knowledge, firms that succeed may enjoy a significant competitive advantage (Tallman et al., 2004).

Embedded knowledge can be found in rules, processes, manuals, organisational culture, codes of conduct, ethics, and products, etc. It is important to note that although it is possible for embedded knowledge to exist in explicit sources, the knowledge itself is not explicit. For example, it is not immediately apparent why doing something in a particular way is beneficial to the organisation.

2.3.4 Practical wisdom

According to the statement in Nicomachean Ethics by Aristotle, practical wisdom is tacit knowledge, and it is one of the three forms of knowledge (Aristotle 300 BC). Aristotle identified practical wisdom as “a true and reasoned state or capacity to act with regard to the things that are bad or good for men.”. Moreover, Aristotle also identified episteme, or universally valid scientific knowledge. If the episteme or universally valid scientific knowledge is ‘know-why’ and the Techne is ‘know-how’, practical wisdom is ‘what-should-be-done’. Episteme cannot identify “what is a good watch” when there exists no universal notion of a “good watch”, which means that it requires a long time to ascertain. Techne is know-how, i.e., to know how to make a good watch, while practical wisdom is not only knowing what a good watch is, but also knowing how to make it well. So, phronesis allows managers to determine what is good during emergency situations, or specific periods, and then choosing as well as undertaking the best suitable actions for the common good during those times. According to the development of business, knowledge in leadership is in demand more than ever. It does not only depend on tacit or explicit knowledge when executing, it also needs the other things like phronesis or practical wisdom. Phronesis is acquired from experiences in order to enable people to make prudent judgements in time, and then taking suitable actions based on values as well as morals. The phronesis leader must have six abilities, including assessing what is good, understanding the principle or essence of the situation apace, creating contexts for learning, executing effective communication, using political power for getting people together, and encouraging the development of phronesis in others through apprenticeships and mentoring.

- Assessment of what is good

Phronesis leaders assess what is good and take the right action in each situation. Phronesis leaders have greater insight, so they not only make profit for the company and maximise the shareholders’ wealth (which can lead to good deeds), but also take action with a moral purpose. Judgement must be guided by an individual’s ethics and values, because executives cannot assess as well as decide what is good without the foundation of value. Value is one’s own and cannot be borrowed, so it is important to ask and encourage employees to think about questions deeply as well as generating or reflecting their own value. When managers make judgements, they must focus on the common good instead of competitive advantage or profit. Tadashi Yanai, the CEO of Uniqlo, said that companies need to live in harmony with and have to be accepted by society; to do that, companies need to be contributing to society. Most companies have failed on this due to not maintaining the relationship with society, and only focusing on the company. There are four ways to make judgements about goodness: as experiences, by writing down principles drawn from life experiences; thereby, through the relentless pursuit of excellence, judgement can be cultivated.

- Understanding the essence of a situation

Phronesis leaders need to find and understand the essence of a situation quickly when different situations occur. They need to find the essence, which is the driving force behind the situation, design a version of the future or consequences, then take action based on the designed version. Phronesis leaders need an understanding of the natural meaning of people, situations, and events. Sometimes, detail is everything. Toshifumi Suzuki, the Japanese chairman of 7-Eleven, said most companies have the incorrect opinion that management only means managing a single item. The employees of 7-Eleven need to face different customers every day, such as students and businessmen, so they may meet many different situations all the time. When this happens, they need to use their own knowledge to face it, for example, satisfying a customer according to their demands for food or beverages. Thus, to understand the underlying demand of a customer before they make a judgement, and taking the right action, is extremely important in every situation.

- Creating and sharing contexts for learning

Phronesis leaders create a chance for employees to learn from others. Sharing information with other employees to do better work. Some companies have shared first-hand information with employees; if their own objective becomes the common objective, it can make them cooperate effectively and establish a close relationship. Sharing information can help new employees to quickly understand the demands of customers as well as the company objectives.

- Communicating effectively

Phronesis leaders have the responsibility to communicate with everyone clearly (or "most of the employees frequently"). To ensure everyone understands, they need to communicate with people with distinct backgrounds in different ways and use suitable stories as well as language in order to have effective communication. Stories can help people get the self-knowledge of experiences and effective communication can touch people's minds and hearts. Examples of this are the speeches of Martin Luther King, Jr in 1963 "I have a dream", and Steve Jobs' speech in 2005; both presented their experiences for the whole time, from the beginning to the end of the speech. During the speech, Jobs repeated the phrase "stay hungry, stay foolish" three times in the last 20 seconds of his speech. Communication has the role of bringing dreams to life.

- Bringing people together

A phronesis leader must use political power to make people work and share information together to improve the efficiency of accomplishment. Bringing people together as equals and making them own knowledge together creates comprehensive knowledge, which can be hugely powerful in a company's success. Moreover, comprehensive knowledge can also create new knowledge for a company.

- Foster practical wisdom in others

Fostering distributed phronesis enables businesses to respond flexibly and creatively to any situation. As the Japanese chairman of 7-Eleven, Toshifumi Suzuki said he only has two eyes and one mind, but if his employees can also make judgements and take the right action, it means that they have a thousand eyes and minds for the business.

2.3.5 Comparison of tacit and explicit knowledge

As we all know, most knowledge originates from individuals. When an individual's knowledge is transformed into organisational knowledge, it will become part of the whole company's values. Therefore, the most important thing is to create and how-to share an individual's personal knowledge, so it can be transformed completely into an organisation, or with other persons, to produce a knowledge-creating company. Ikuko Tanaka's innovation illustrates a movement between two very different types of knowledge, as explicit knowledge and tacit knowledge. Because explicit knowledge is informal and systematic, it can be transformed, communicated, and shared easily. However, there is another type of knowledge called tacit knowledge, which is a personal knowledge and based on personal experiences, so it is difficult to share and be transformed completely. The distinction between explicit and tacit knowledge suggests four basic patterns for creating knowledge in any organisation.

In 1995, Ikujiro Nonaka and Hirotaka Takeuchi, in their book 'The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation' presented the SECI model of how tacit and explicit knowledge interact in the knowledge creation process. Nonaka and Takeuchi (1995) reported that tacit and explicit knowledge are part of a four-stage process shown in the SECI model, as shown below. Figure 2.1:

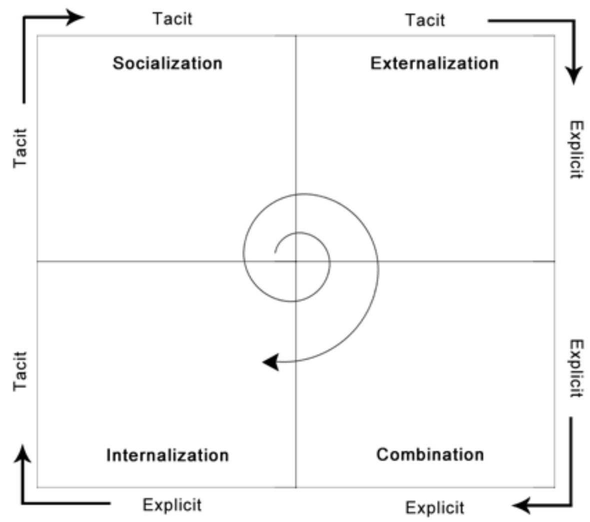

Figure 2.1 SECI model (Source: Nonaka and Takeuchi, 1995)

- Socialisation

From tacit to tacit

People will sometimes share personal tacit knowledge with another person, but because the tacit knowledge is different from explicit knowledge, it is hard to transform to other people. When transforming tacit knowledge, people learn from observation, imitation, and practice, which will become part of their own tacit knowledge. However, tacit knowledge is not learnt from explicit knowledge, so it is hard to be leveraged by the organisation as a cycle.

- Combination

From explicit to explicit

This is the process from explicit to explicit for developing as well as improving existing explicit knowledge. The key point has been considered as a combination of knowledge through two or more people's communication, such as discussing one topic or problem with the goal of developing better ideas. There is an advantage when combining explicit knowledge with explicit knowledge, because people can easily combine different discrete pieces of explicit knowledge.

- Externalisation

From tacit to explicit

When tacit knowledge to explicit knowledge interacts, such as in the Matsushita example, some powerful things happen. It is precisely this exchange between tacit and explicit knowledge that is good for developing companies.

- Internalisation

From explicit to tacit

Concepts of "explicit" and "tacit" knowledge are meant to highlight the fact that knowledge is a deeply rooted human process that lives within the private world of the individual and cannot simply be reduced to information processing and software automation. At the same time, the human process lives in the public domain of communication and language, culture, and representation that generates knowledge artefacts. These artefacts can be enhanced through software automation in a powerful way.

Explicit knowledge can be recorded digitally in documents, records, patents and other intellectual property artefacts. Explicit knowledge is representational and can live and is manipulated within the digital domain. Converting data-to-information and information-to-knowledge describes a value continuum of explicit knowledge. The tools and business processes of knowledge management are intended to enhance this continuum of value.

Tacit knowledge is made up of best practice, experience, wisdom and recordable intellectual property that live within individuals and teams. Since tacit knowledge exists within minds, it cannot be reduced to the digital domain as a material asset, nor can it be manipulated directly. However, it expresses itself in the social realm as the ability of individuals, such as productivity, innovation and initiative, and teamwork (communication, coordination and collaboration).

2.4 Definitions of knowledge management

"Knowledge management is the process of capturing, distributing, and effectively using knowledge." (Davenport 1994). It is difficult to define knowledge management, therefore, there is no formal definition of knowledge management. However, all organisations regard knowledge management as the most important thing, one of the root factors that can influence whether a business will be successful or not. Therefore, to define the meaning of knowledge management, as well as effective knowledge management, is extremely important for organisations. According to an individual's different background, attitude, human nature, and life experience, there are varied definitions of knowledge management which refer to a multidiscipline approach to achieving organisational objectives by making the best use of knowledge. In the recent information-driven economy, companies uncover the most opportunities, and ultimately derive the most value, from intellectual rather than physical assets. To get the most value from a company's intellectual assets, knowledge management practitioners maintain that knowledge must be shared and serve as the foundation for collaboration. Managing knowledge can transform businesses into becoming more effective.

Knowledge management in view	
People	How do you increase the ability of an individual in an organisation to influence others with their knowledge?
Process	Its approach varies from organisation to organisation; there is no limit on the number of processes.

Technology	It needs to be chosen only after all the requirements of knowledge management initiative have been established.
Benefits of knowledge management	Some benefits of KM correlate directly to bottom-in savings while others are more difficult to quantify.

Table 2.3 Knowledge management in view

Reference	**Definition**
Davenport (1994)	"Knowledge management is the process of capturing, distributing, and effectively using knowledge."
Duhon (1998)	"Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously uncaptured expertise and experience in individual workers."
Sir John Steely Browne (1997)	"Most activities or tasks are not one-time events. Whether it's drilling a well or conducting a transaction at a service station, we do the same

	things repeatedly. Our philosophy is fairly simple: every time we do something again, we should do it better than the last time".
Ellen Knapp (1997)	“Knowledge management is the art of transforming information and intellectual assets into enduring value for an organisation's clients and its people.”
Takeuchi and Nonaka (1995)	"It is the process of applying a systematic approach to the capture, structure, management, and dissemination of knowledge throughout an organisation for working faster, reusing best practices, and reducing costly rework from project to project"

Table 2.4 Various definitions of knowledge management

2.5 The benefits of knowledge management

The purpose of knowledge management is to implement a comprehensive approach to manage organisational knowledge (Heisig, 2009). Efficient knowledge management can improve the efficiency, effectiveness, and degree of innovation of an organisation’s processes by helping organisations to select as well as perform the most appropriate processes (Becerra-Fernandez et al., 2004). Effectiveness means making the most suitable and best decision for an organisation, and efficiency is performing processes in a low-cost and fast way. Therefore, knowledge management can produce substantial benefits for organisations, such as lowering cost, increasing efficiency, and maintaining the return on investment. The most important elements are influencing an organisation's productivity, costs, and returns.

New knowledge can allow organisations to continue innovation through creating new markets and customers; innovation has become the element with the greatest influence as to whether a business can be successful (Nonaka, 1991). Moreover, knowledge management can make organisations generate more profit, open new markets, reduce costs, enhance productivity, improve decision-making, meet the demands of customers, and gain objectives (Civi, 2000). According to Nonaka's (2001) argument, a business that continues to innovate will gain a greater organisational competitive advantage.

Nonaka (1991) argues that knowledge management not only supports organisations to gain more competitive advantage (by using new knowledge and techniques to improve efficiency, reduce cost, and improve return on investment), but also helps them to meet customer demands (Grayson and O'Dell, 1998). Otherwise, knowledge management has helped organisations to accelerate innovation, improve cycle times, and establish a sustainable competitive advantage (Davenport and Prusak, 1998). In other words, knowledge management can help an organisation to increase profit, reduce cost, enhance market share, and identify as well as develop new markets (Civi, 2000). The figure below shows how knowledge management impacts organisational processes. According to Figure 2.2, it is apparent that knowledge management can improve organisational processes, effectiveness, efficiency, and innovation through supporting organisations to choose as well as perform the most suitable processes.

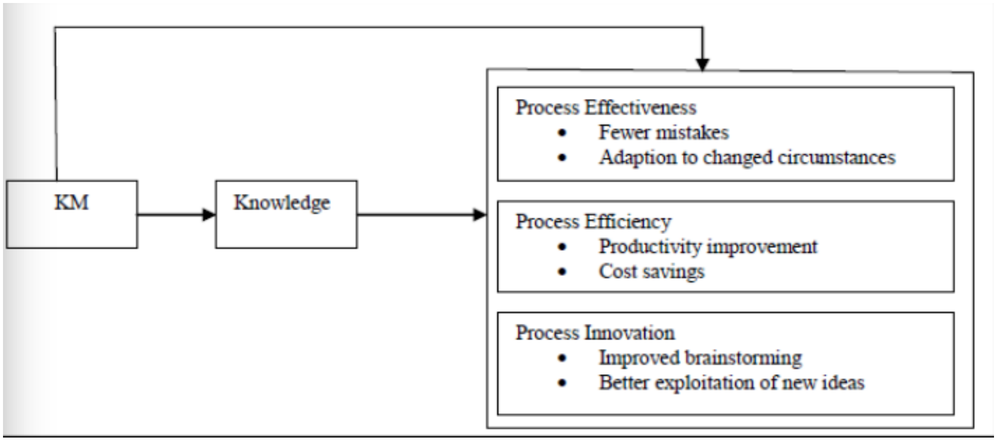

Figure 2.2 The KM model (Source: Becerra-Fernandez et al., 2004)

Although there are many benefits of knowledge management for organisations, and almost all organisations should try to create new knowledge or perform other innovation activities to become more competitive in the market, knowledge that has been generated within a specific project and is hard to transform will lead to wasted time and activities, and an organisation’s failure (Leseure and Brookes, 2004). In addition, knowledge management is able to help employees transfer knowledge between other people, learn experiences or gain knowledge from each other, and even discover solutions to problems before they happen within an organisation (Nonaka, 1994). Therefore, knowledge management can effectively increase employees’ knowledge, enhance job performance, and improve their market value (Becerra-Fernandez et al., 2004). Moreover, knowledge management can make employees become more able to make intelligent decisions, as well as enhance job satisfaction, improve performance, productivity, and employability (Bontis et al. 2000).

2.6 The importance of tacit knowledge

As it is one of the important concepts developed in the knowledge management field of research, there are lots of definitions of tacit knowledge. One of the most widely accepted is described by Polyani as “we know more than we can tell” (Ivona, 2009). In other words, tacit knowledge is a kind of personal knowledge derived from the direct interaction between individuals and their environment. In addition, many other forms of non-rational knowledge are also considered tacit, such as intuition, feelings, talent, and hunches. According to some empirical studies, it is probably that tacit knowledge is able to work in certain ways with certain consequences for its techniques, methods, and designs (Rosenberg, 1987) and it is difficult to communicate to others due to it being highly personal with hard formalised characteristics (Nonaka, 1991).

Based on an investigation from Nonaka and Konno (1998), there are two dimensions of tacit knowledge: the first one focuses on the ‘know-how’ which is the technical dimension, the other on the cognitive dimension which covers beliefs, ideas and values (Alwis, 2004). Nonaka introduces the SECI model, or knowledge spiral, to show how the interactions between explicit and tacit knowledge lead to the creation of new knowledge. The SECI model describes the dynamic process in which explicit and tacit knowledge are exchanged and transformed. Nonaka argues that this idea can be put into practice, using the concepts of 'ba'. Although tacit knowledge is not easy to code and extract, it is much easier to understand and to remember than explicit knowledge (Ivona, 2009). Since almost two thirds of the information received at work is transformed into tacit knowledge, it plays a significant role in knowledge management as well as in the innovation process. In general, tacit knowledge comes from face-to-face informal conversations, internships, stories, apprenticeships and mentoring (Ivona, 2009). As the SECI model shows in Figure 1, with the evolution of tacit knowledge, it has become a vital component in the SECI process, which describes four modes of knowledge conversion forming a spiral. The four steps of the SECI process are socialisation, externalisation, combination, and internalisation. Socialisation involves the sharing of tacit knowledge between individuals. In practice, socialisation involves capturing knowledge through physical proximity. Externalisation involves the articulation of tacit knowledge; that is, the conversion of tacit knowledge into explicit knowledge. Combination involves the conversion of explicit knowledge into more complex sets of explicit knowledge. Finally, internalisation is the conversion of explicit knowledge into the organisation's tacit knowledge (Nonaka and Konno, 1998). Managers should be aware of this process when developing an environment for knowledge sharing in their organisation. Knowledge is manageable only to the extent that leaders embrace and foster the dynamism of knowledge creation (Nonaka and Konno, 1998). As mentioned in part 2.3.5, the tacit knowledge of learned skills can be converted to explicit knowledge through observation and verbal protocols (Ivona, 2009). In addition, by encouraging employees to share and create tacit knowledge through writing their personal stories and documenting their insights, or by using photographs, solutions for difficult problems or improvements to existing work processes can be found. In other words, this method makes it possible to realise knowledge sharing and capture as well as reusing knowledge, which is especially important in organisations.

Since innovation is essential for business, how to establish and maintain the capacity of innovation is also essential for business. Innovation describes creating ideas, to do this, people need to use knowledge and it is not simple to do. According to data research, it can be evidenced that explicit knowledge only accounts for 5% of people's knowledge, whereas tacit knowledge accounts for the other 95%. Therefore, exploring and using tacit knowledge is extremely important when creating new ideas for a business. Tacit knowledge can deeply affect people's behaviour and commitment during activities, both as an individual and as a collective (such as during team activities). Additionally, a common point can be found in the most successful businesses relating to managing and creating new knowledge, after reading lots of successful business literature. These businesses have the ability to continue creating new products and exploring more potential customers, responding to customers quickly, and creating new markets for business. Before managing new knowledge, companies first need to create new knowledge, which is not a simple task. Creating new knowledge is based on tapping into tacit and highly subjective insight, rather than the processing of objective information. The key to this process is personal commitment; whether the employee's sense of identity supports the company and the objective or mission of business; and facilitating that commitment as well as embodying the tacit knowledge into actual technologies and products. The experience of knowledge creation within a knowledge-creating company is using different new ways to consider managerial roles and responsibilities, organisational design, and business practices. Knowledge creation belongs at the key point or centre of human resource strategy within an organisation, and thus the approach is to put knowledge into where it belongs. Further, a knowledge-creating company is mainly concerned with coming up with new ideas and innovations. The principle of innovation is re-creating the world using a particular vision or idea. To create new knowledge or ideas means to quite literally recreate the business containing it, which is a non-stop process of organisational or personal self-renewal. However, to innovate new ideas and create new knowledge is not a sanctioned activity for a knowledge-creating company; it is the responsibility of a research and development department, or part of marketing strategy planning. Tacit knowledge includes technical skills, such as the kind of informal, hard-to-pin-down skills described in the term "know-how". As well as this, tacit knowledge has another important cognitive dimension, which consists of mental models, beliefs, and perspectives. This knowledge is often taken for granted due to it being deeply ingrained, which makes it very hard to articulate.

2.7 Organisational learning and knowledge management

Although researchers have disputed whether organisational learning (OL) could be defined as changes in cognition or in behaviour, the debate has receded (Easterby-Smith et al., 2000). Almost all researchers have agreed that definition of organisational learning is a change in the organisation's knowledge that occurs, as a function of its experiences (Fiol and Lyles, 1985). Great progress has been made in knowledge management and organisational learning, which can also be seen as complementary to knowledge management. While organisational learning is more concerned with the process of knowledge sharing and considering the objective of knowledge, knowledge management is concerned with the content of knowledge. Therefore, the consideration of OL is one of the most important ways in which an organisation can use knowledge (King, 2008).

Researchers have measured organisational knowledge in various ways, one of the approaches measures organisational members (Huff and Jenkins, 2002). According to this measure of an employee's performance, employees using knowledge can innovate new knowledge and thereby make improvements to an organisation; Harrison and Kessles (2004) defined knowledge productivity as concerning the processes by which those employees make improvements for an organisation. Therefore, organisations need a better learning environment for improving knowledge productivity (Stam, 2007). In other words, learning knowledge can increase innovation and profit for an organisation (Kessles and Van der Werff, 2002). Moreover, OL contains the process of innovation according to the creation of new knowledge (Nonaka, 1991). Furthermore, it is based on the repetition of the process of articulation and internalisation (Nonaka, 1991). Nonaka (1991) argues that articulation describes the process of converting tacit knowledge into explicit knowledge, while internalisation is another process of transforming explicit knowledge into other employees' tacit knowledge. Therefore, OL can only take place within the intersection of tacit knowledge and explicit knowledge between different employees and departments. Pemberton and Stonehouse (2000) argue that to continue OL and to improve knowledge management are the key factors for any organisation that wishes to maintain a competitive advantage, and to gain goals as well as achieve its objectives. Knowledge is the most important source for obtaining competitive advantage for businesses (Nonaka 1991).

Knowledge management can be considered as the key when creating a competitive advantage during the process of continuing OL (Meso and Smith, 2000). In fact, creating new knowledge occurs during the process of OL, and the creation of new knowledge produces innovation. Then, to continue innovation can result in a more sustainable business, as well as a greater competitive advantage for that business. Furthermore, the most important factor is that individual knowledge transfers to organisational knowledge (Nonaka, 1994) and it has been prepared in a way that can be used by other employees in that organisation. However, success in OL only can be achieved when combining knowledge management with OL, based on creating a suitable organisational environment.

2.8 Maturity model

Knowledge has always been presented as one of the most important assets alongside economic development. Successful knowledge management can gain a greater competitive advantage for an organisation. Based on interviews conducted in numerous organisations; although knowledge has been regarded as the key resource for organisations that can influence employee’s performance, knowledge is difficult to identify, acquire, and transfer (Grant, 2002). The varied definitions of knowledge have been presented, but tacit knowledge and knowledge management also have been researched by many. In recent years, a link has been established between knowledge management and economic performance in organisations (Kianto et al., 2013; Massingham & Massingham, 2014). According to literature reviews regarding the maturity model, many researchers show that organisations usually differ in terms of their levels of knowledge management maturity. This may be assessed based on an application of knowledge management maturity models and various models have been introduced. In 1999, Microsoft created a software application ‘Knowledge Management Landscape’, and, in 2000, KPMG introduced a five-stage ‘Knowledge Journey’ model. The recent developments include an Intellectual Capital Management Capability Model (Shang & Lin, 2010), a social network scorecard for knowledge flow evaluation (Grippa, 2009), a knowledge-generation maturity approach (Arling & Chun, 2011), the People Capability Maturity Model (Curtis et al., 2009), and a knowledge manager’s decision-making guide (McKenzie et al., 2011).

2.9 Knowledge management challenge

Yang (2009) stated that the key to understanding the development of competitive advantage is to understand knowledge and how to share and transfer it. While it is a huge challenge to define knowledge because of its complex nature. Moreover, the main challenges that organisations usually face can be identified as tacit knowledge management. Almost all organisations have managed tacit knowledge by continued attempts to convince, direct, or gain employees who will share their knowledge within their organisations (Gupta et al., 2000, Leseure and Brookes, 2004). However, the willingness of employees is a huge challenge to face. Stenmark (2002) stated that almost all employees would not be willing to share their own tacit knowledge with other people, since it would introduce a risk that they lose the competitive advantage they have over their peers. In many organisations, employees feel that their promotions are based on their expertise, and not on the extent that they share their knowledge to help others (Alavi and Leidner, 2001). Pawlowski and Bick (2012) suggest that the character of employees within organisations could lead to some barriers for using knowledge management, for example, employees could feel afraid about losing their jobs, or lack understanding regarding knowledge management. Additionally, some people may be too shy to communicate with others, especially if they lack interpersonal skills (including communication skills), or if there is a difference of age, or gender. Furthermore, Santos et al. (2012) have pointed out that the knowledge sharing barriers can be considered as the following points: codification processing, lack of employee initiative and strategy, and lack of time and resources. Holste and Fields (2010) state that establishing trust between employees can facilitate, as well as, increase their willingness to both share and transfer tacit knowledge with other employees in the same organisation. Furthermore, if a good trusting relationship is established between employees, the willingness of those employees to share as well as transfer tacit knowledge will increase. Moreover, time is usually identified as part of the main challenge when sharing as well as transferring tacit knowledge, since sharing tacit knowledge always requires a long time; reviewing a project or formulating lessons learned (Leseure and Brookes, 2004; Yang, 2009). Otherwise, organisational culture could be seen as another main challenge that organisations have to face. Most organisations have an established organisational culture, and while a good organisational culture can facilitate tacit knowledge sharing and learning, creating, shaping and building a knowledge management culture in an organisation has been identified as one of the most difficult challenges (Turner and Minonne, 2010; Oliverira et al., 2012).

Although increasing investment in IT and facilities will lead to the storage and sharing of knowledge, it only can be used for explicit, rather than tacit knowledge (Hoste and Field, 2010). Tacit knowledge is not easy to share, and if it is shared, people can decide not to use it. However, developments in IT need to consider the ability of an organisation to create, store, transfer, and share knowledge, because management has developed structural paradigms. Moreover, the most important element and the key factor that can influence knowledge management is the human factor. Before investing in new IT and facilities, organisations need to introduce it to all employees, because people can only use the facilities which they have accepted and have knowledge of. Otherwise, it will result in a failure of implementation of such systems, as well as the organisations implementing them (Turner and Minonne, 2010). Whereas the key to success for tacit knowledge transfer is employee willingness and capability to share their experiences or tacit knowledge, and whether they will use what they have learned to facilitate the learning of others (Foos et al., 2006; Nonaka, 1995).

Holste and Field (2010) have stated that the willingness of employees plays an important role when sharing tacit knowledge, and mostly depends on the established relationship between employees. If the employees of an organisation trust each other, this significantly affects their willingness to share as well as transfer knowledge to other employees. Furthermore, the competition between employees is another factor that influences tacit knowledge sharing and transfer. Therefore, building a good relationship between employees is very important before sharing or transferring knowledge management (Oliverira et al., 2012). In addition, time is also one of the main barriers that needs to be considered, since this sharing demands that a long time is required (Yang, 2009). Another major challenge that knowledge management needs to consider is the organisational and knowledge management culture (Gupta et al., 2000; Oliverira et al., 2012; Turner and Minonne; 2010). The challenge that an organisation faces is when it has built an organisational culture before successfully implementing knowledge management. This is because organisational culture plays an extremely important role in facilitating sharing, learning, and knowledge creation, and can have significant influence on whether an organisation can implement knowledge management. Therefore, the most important challenge is how to establish a knowledge management culture in an organisation.

2.10 Knowledge management life cycle

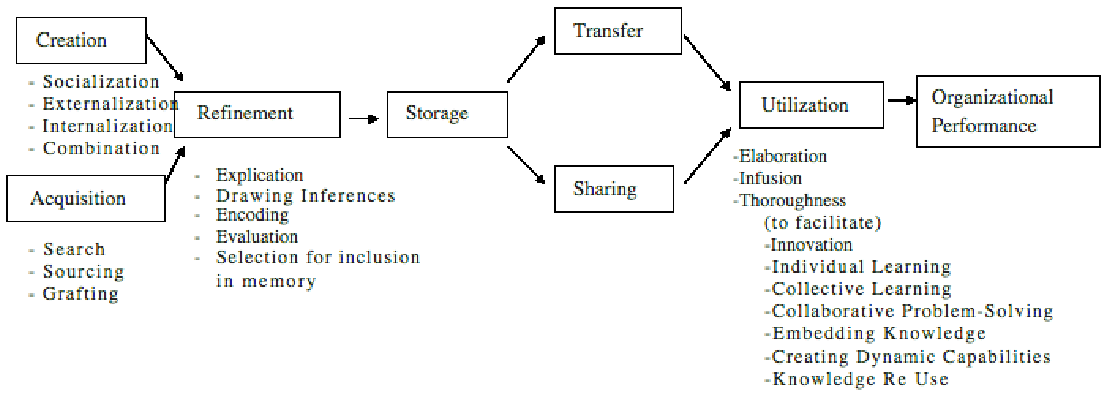

Figure 2.3 KM cycle model (Source: King et al., 2008)

Heisig (2009) analysed 160 frameworks of various origins regarding knowledge management activities; the most frequent activities are: identification, creation, acquisition, storage, sharing, and use.

King (2008) states that great progress has been made in knowledge management and OL over the past decade. He considers 68 papers from authors in 21 countries and employs 117 reviewers from 24 nations. He examines what he regards as the nine best papers and selects them to be published in a management science journal. These articles provide new insights and important empirical findings with respect to various stages of the knowledge management cycle. Using these papers, he creates a comprehensive life cycle model of knowledge management, which uses parallel paths in order to make important distinctions in six stages, as follows:

1. Knowledge can either be created or acquired by an organisation.

2. The next stage after new knowledge has been created or acquired is the refinement of knowledge.

3. Knowledge is then stored in the organisation’s memory.

4. To gain the maximum benefit, knowledge should be either transferred or shared within the organisation.

5. Utilisation of knowledge takes place through a process of elaboration, infusion, thoroughness, innovation, individual learning, collective learning, embedding knowledge, creating dynamic capabilities and knowledge re-use.

6. The improvement of organisational performance (OP) is the basic element used by an organisation to evaluate the value of knowledge management. However, the researcher compared King’s Approach to knowledge management (2008) with Fong and Choi (2009) and Heisig (2009).

2.11 Improving knowledge worker performance

According to Drucker (1999), the productive power of an organisation mostly depends on the ability of a knowledge worker to mark knowledge productivity. Therefore, the most important challenge of knowledge management is a knowledge employee's productivity and performance. Therefore, those knowledge workers can be considered as key for influencing organisational development, because they are creating innovation, designing marketing programmes, and designing marketing strategies to facilitate the organisation in gaining greater competitive advantage (Nonaka 1995). Moreover, fast-growing and knowledge-creating organisations are those that have the best quality knowledge workers.

The most successful approach for improving knowledge worker performance is to combine process and practice approaches together. However, Davenport (2008) reports the difference between process and practice. Process refers to designing or planning work which is to be done, while practice refers to the way in which the work is done. So, when analysing process, one needs to focus on the design or plan, which has nothing to do with actual work. Alternatively, analysing practice means to describe the activities of workers, in which it is important to observe workers in their jobs, especially over long periods. Moreover, leaders and managers should be knowledge workers. Nonaka and Takeuchi (1995) reported on an article called "wise leader", which explains the importance of knowledge leaders. Managers should have the ability to recruit knowledge workers and they also need to be the facilitator of social networking, which characterises the best performance. Managers have the responsibility to provide a suitable environment for knowledge workers and enhance their productivity for organisational achievement objectives, in order to become more competitive. Additionally, organisations must focus on all factors that can influence work performance to improve it.

2.12 Critical success factors of KM implementation

Nowadays, with a more knowledge intensive work environment, organisations prefer to hire “minds” over “hands”, so as a competitive asset, knowledge management has become a vital part of the critical driving force of successful business (Wong, 2005). In other words, the implementation of the critical success factors of knowledge management is a great benefit for enhancing the competitiveness of enterprises (Mahdieh Heaidari, 2011). In general, there are two types of KM objectives from Mian Ajmal’s study: on the one hand, KM is flexible enough to make the firm act as smart as possible to keep viability and overall success in safety; on the other hand, KM can bring out the best value of the knowledge assets within the company (Ajmal, 2009). So, it is necessary for organisations to be cognisant and aware of the factors that make an impact on the success of KM initiatives (Wong, 2005). According to Davenport, there are several indicators of successful KM initiatives, which vary based on the project company environment and across different time spans (Davenport, 1998). The first indicator is the growth of resources, which includes the people and budget attached to the project. The second is the development of knowledge content, which includes the number of documents, accesses, repositories, and participants, especially for discussion-oriented projects. Furthermore, the probability of project survival is another indicator which must be an organisational initiative, rather than an individual effort. Finally, financial return is an important indicator, either for the knowledge management activity itself, or for the organisation as a whole (Ajmal, 2009).

With the development of economic globalisation and technology, traditional business models had to change their environment in order to survive, especially under the rapid and constant changes of information technology (IT). Many researchers state that culture, IT, and leadership have a great influence on KM accomplishment. However, an investigation from Digman (1999) suggests that although environmental analysis through reviewing failure factors is also helpful for an organisation, there is a benefit for organisational success since there is an important link between environmental analysis and critical factors, even for failure factors.

In this case, in order to gauge the performance of companies, it is necessary to identify critical enablers-success factors, as well as barriers-failure factors of KM initiatives (Ajmal, 2009).

Although KM is a key component for organisations, developing and improving through experiences is still important in order to implement KM, which is a new phenomenon within the management system (Chong and Choi, 2005). Moreover, insufficient research has been carried out to guide the successful development and implementation of KM systems or to guide the expectations of the benefits of KM systems (Civi, 2000; Alavi and Leidner, 1999; Cormican and O'Sullivan, 2003). However, most organisations have failed to use KM, or gained only small, insignificant benefits, due to the lack of consideration put into the critical success factors of KM implementation (Chan and Chau, 2005; Walker, 2006). Until now, there has not been enough examination of the critical success factors of KM implementation (Lehner and Haas, 2010). Therefore, successful KM has to be based on critical success factors (Heisig, 2009). Pawlowski and Bick (2000) report that the result of studies has shown that many KM projects fail, and the reasons for that failure are not clearly understood.

2.12.1 Definition of critical success factors of KM implementation

According to Chua and Lam (2005), there are six factors which influence KM initiatives, including familiarity, coordination, incentive, authority, system, and culture.

The critical success factors can be defined as the activities that an organisation shall accomplish, such as the examination and categorisation of the impact of achieving the mission of the organisation (Oakland, 2000). Moreover, the critical success factors refer to the minimum level of things that should be done right to make sure a manager and organisation operation well (Kanji and Thambi, 1999).

2.12.2 Human factors

The "human being" refers to all employees' attitudes when facing KM and their support of the top management (Lehner and Haas, 2010). The top management includes the initiator, sponsor, and promoter of KM, and it provides financial resource and time for

KM. Oliverira et al., (2012) state that a supportive and committed top management can be defined as a key factor, because the role of top management is to define the priorities and supporting activities of KM. Creating an environment for simulating the creation and sharing of organisational knowledge is the role of top management (Neto et al., 2009). Also, all employees must have the desire to promote and be open to KM, so that emotional barriers can be handled or taken away, to secure the success of KM. Lehner and Haas (2012) state that all employees will share and transfer knowledge based on their willingness, so although employees have no sharing and transferring of knowledge, they must trust each other and keep an accepting attitude towards any available knowledge.

Managers must plan and implement processes and structures that encourage employees and teams to share and use organisational knowledge (Cross and Baird, 2000). To enable a company to successfully implement KM, it is necessary to include KM activities within business processes, and to effectively communicate strong managerial support. Moreover, including KM activities within employees' daily job routines can raise business process achievements, improve employee performance, and progress professional development (Levy et al., 2010). For an organisation to benefit from its accumulative knowledge, a systematic routine for knowledge capturing is essential (Alavi and Leidner, 2001). A major cultural change is required to change employees' attitudes and behaviour, so that they willingly and consistently share their knowledge and insights (Levy et al., 2010). Therefore, tacit knowledge cannot be shared unless it is transferred to all organisational staff through employees sharing their experiences (Mayfield, 2010; Chen et al., 2012). This can be achieved by encouraging them to share by offering a reward system (Chen et al., 2012).

2.12.3 Organisational culture

The dimension "organisation" includes all factors, which are operated and designed by the organisation, such as the development of personnel, the goals of KM, the responsibility for KM, available motivating systems, existing social networks, and a knowledge-promoting corporate culture (Lehner and Haas, 2010). Gupta et al. (2000) argue that KM requires a major change in organisational culture and a commitment at all levels of an organisation to work. Companies need to harness knowledge in order to stay competitive and to become innovative. Pawlowski and Bick (2012) state, "it is clearly necessary to include dedicated awareness-building and training processes into knowledge processes to facilitate cultural understanding. Cultural factors also influence how, and which knowledge is shared". (Oliverira et al., 2012) state that organisational culture is a fundamental factor in the implementation of KM, and for some organisations, it is a problem that needs to be solved.

Pawlowski and Bick (2012) state that "organisational processes also differ depending on organisational and geographic culture. Obviously, it is necessary to coordinate KM processes in distributed organisations between organisations with different organisational and ethic culture". Any organisation that wants to achieve and maintain a competitive advantage must be able to not only always define and integrate knowledge into value-creating strategies, but also develop efficient means for creating, transferring and integrating knowledge. The main factor that affects the integration of knowledge is the interaction between individuals and the knowledge they retain (Roland 2006). Therefore, a healthy corporate culture is very important for success in the implementation of KM, because bureaucratic cultures experience a lack of trust and a failure to reward and promote cooperation and collaboration. So, KM organisations not only need to develop a healthy environment and culture that supports the objectives of implementing KM, but they should also consider improving their culture as a top priority in their strategic plans (Liebowitz, 1999). This is necessary because strong cultures have a set of core values and key principles that are understood and followed by all employees (Jones, 2006). Organisational culture is very important for enhancing OP and competitiveness; it is seen as a core point that affects employees' perception, motivation, morale and satisfaction (Cameron and Quinn, 2006). Cameron and Quinn also believe that auditing is a fundamental factor in encouraging employees to store documents and share their knowledge. Internal audits reveal the names of employees who have not participated in the KM project, so that those employees will not receive rewards. Employee performance will increase, employee morale and commitment will be raised, and this will help organisations to discover previously hidden innovations. Moreover, the process not only helps organisations to better manage tacit knowledge and preserve it in organisational memory, but also allows them to enhance productive OL in the face of turnover. Organisations should commit to increasing tacit knowledge sharing through training, rewarding employees, a comprehensive KM strategy, and effective top management participation in order to gain these advantages (Mayfield, 2010).

2.13 Knowledge storage and transferral

Knowledge transfer within an organisation happens every day, whether it is managed or not. Moreover, managing knowledge is mostly used in formal knowledge transfer processes. Unstructured knowledge transfer is vital to an organisation's success. However, any organisation that wants to develop and prosper needs to be successful in keeping track of, or managing, organisational knowledge. Moreover, there are seven main factors that affect effective knowledge transfer. These factors are relationship and trust; culture; availability of common meeting areas; incentives or rewards based on 53 sharing activities; presence of absorptive capacity in recipients; educating workers that knowledge-sharing sources are all equally important; and finally, tolerance for mistakes (Davenport and Prusak, 1998).

2.14 Conclusions

This chapter has presented a review of the existing literature regarding different areas and aspects of knowledge, such as the definition of knowledge, the definition of knowledge management, and the distinction between information and knowledge. Additionally, it introduced the different types of knowledge as tacit knowledge and explicit knowledge and highlighted the benefits of tacit knowledge for organisations. Moreover, it outlines the greater importance of tacit knowledge management and its numerous advantages or benefits for an organisation, especially regarding managing time, employees' performance, and gaining greater competitive advantage. KM can not only improve an organisation's processes, making it become more efficient, but can also reduce cost, increase profits, create new ideas for innovation, meet customer demands, increase market share, and improve the overall efficiency of the organisation.

The objective of this research is to establish an effective tacit knowledge framework for organisations to become more successful, since tacit knowledge is considered as an extremely important factor or element for any organisation (Nonaka, 2002). According to the existing literature, knowledge management is always important for an organisation. Organisations can use different methods to develop or gain more advantage, such as creating new ideas, launching new products, and extending targeted marketing. Each of these things cannot be realised without knowledge. Therefore, knowledge is an essential asset for organisations.

King (2008) presented the KM life cycle, which has six processes: knowledge creation, refinement, storage, and distribution, by transferring explicit as well as tacit knowledge, and sharing knowledge within an organisation. Although many consider that organisational learning can be identified as complementary to KM, OL is more concerned with processes, while KM is more concerned with the content of the knowledge, which the organisation has created, used, and acquired. Therefore, there is a significant difference between KM and OL.

According to the existing literature regarding tacit knowledge management compared with non-tacit KM within an organisation, the difference between them is determined and the effectiveness of tacit knowledge in enhancing the productivity and performance of an organisation as outlined. To determine how using KM can enhance productivity, increase competitive advantage, and improve the performance of an organisation, different organisational performances will be introduced and analysed. For example, both knowledge-based and non-knowledge-based organisations will be considered. Furthermore, a huge difference between knowledge-based and non-knowledge-based organisations is knowledge as sharing, as well as knowledge transfer between employees in the organisation. However, if using KM can help an organisation to gain greater advantage, the reason that some organisations choose not to use KM is because it is too difficult to manage, share, and use. Therefore, according to the review of the existing literature, employee willingness can be considered an important factor that can impact tacit knowledge sharing as well as direct transfer. Furthermore, this problem still exists within any type of organisation.

A theoretical contribution of this model is the determination of the reasons why employees in knowledge-based organisations are more interactive and willing to participate in KM activities. This is done by analysing the barriers that impede the adoption of KM activities and, especially, knowledge-sharing activities between employees, as well as the factors that aid the adoption of knowledge-sharing activities. This aided the researcher to determine the conditions that influence employees to share more, or less. The researcher concludes that highlighting the human side of the KM perspective is another of the research's contribution to knowledge, achieved by covering the current lack of existing empirical studies in the field. Furthermore, the main practical contribution of this study is the presentation of a framework model that demonstrates the process for effective KM implementation.

However, according to the amount of differing existing literature, a major challenge and key factor of an organisation using KM is tacit knowledge management. The key or main factors can directly influence whether transferring tacit knowledge will be successful is the willingness and capability of the people who are sharing their tacit knowledge. Furthermore, whether an organisation has successfully established a culture can also be considered as an important point that can impact the willingness of employees to transfer their tacit knowledge; a successful organisational culture will facilitate sharing as well as knowledge innovation. Holste and Fields (2010) argue that the willingness of employees to share and use tacit knowledge may depend on the extent to which co-workers are trusted as receivers and sources. Moreover, trust in co-workers and good personal relationships between co-workers have the most significant effect on willingness to share tacit knowledge. Time is also considered to be one of the main difficulties of sharing tacit knowledge, as this sharing requires a long time to be spent on post-project reviews and on formulating lessons learnt from these projects (Leseure and Brookes, 2004; Yang, 2009). Another major challenge facing organisations trying to implement KM successfully is organisational culture, which has a significant role in facilitating sharing, learning, and knowledge creation (Gupta et al., 2000). One of the most difficult challenges is establishing a KM culture in an organisation (Turner and Minonne, 2010; Oliverira et al., 2012), and competition between employees is also considered to be a barrier to knowledge sharing (Oliverira et al., 2012). In other words, the willingness of employees is the key to transferring tacit knowledge. To facilitate this willingness, an organisation can set up or provide a reward strategy to help motivate employees.

The next chapter will be on research methodology which will present the selected methodology for this research and explain the reasons for choosing it.

Chapter 3 Research methodology

3.1 Introduction

In order to explore the most important factors that influence employee enthusiasm to participate in knowledge management activities, share personal knowledge in an organisation, and develop academic insights, in a way that differs from the research already existing in this area, a suitable methodology that effectively simplifies the research problem is fundamental. Methodology is the approach to the process of the research, encompassing a body of methods (Collins and Hussey, 2009), which comprises the research problem and a research paradigm. The aim of a methodology is to ascertain the best research method, prior to implementing the investigation.

Appropriate research methods will be identified in the following sections to offer a clear outline of the research process for this study. A well-defined research methodology is crucial in a research project. Firstly, this section outlines two vital aspects of research methodology: a comprehensive introduction to research design and research strategy. The research design outlines a detailed framework for the data collection and analysis in three main types of research methods, namely, quantitative research, qualitative research, and mixed methods research. For the purpose of this thesis, the difference between quantitative and qualitative research is specifically that quantitative uses numbers, while qualitative uses words. Mixed methods research is the combination of quantitative and qualitative, which can add more value to the overall research. Later in this section, research strategies are discussed. It has been classified into four main categories: experimental, survey, case study and grounded theory. After data source perception and an introduction to primary and secondary data collection, this study begins to collect primary research data by way of a qualitative approach-grounded theory method, through the use of semi-structed interviews.

3.2 Research design

Research designs are a form of investigation involving quantitative, qualitative, and mixed methods, that offer particular routes for inquiry in a study (Bryman, 2008; Creswell, 2013).

Quantitative	**Qualitative**	**Mixed Methods**
Experimental designs	Narrative research	Convergent
Non-experimental designs	Phenomenology	Explanatory sequential
	Grounded theory	Exploratory sequential
	Ethnographies	Transformative, embedded, or multiphase.
	Case study	

Table 3.1Different types of research methods

(Source: Creswell, 2013; Bryman, 2008; Saunders et al., 2009)

From previous research, it can be concluded that the qualitative method, which should be analysed by utilising statistical techniques, is more suitable for formative evaluations. Conversely, the quantitative method is more suitable for judging the final value of summative evaluations. By using questionnaires or other standardised methods in a quantitative approach, there is a risk that the responses could be inaccurate. Respondents may not understand the survey questions comprehensively, or they may not want to release their personal details, particularly if some questions are more private. This results in questionnaires having lower validity and accuracy as a data collection method. However, techniques in qualitative research have been developed for classifying and analysing large sets of descriptive data. It has also been increasingly recognised that both quantitative and qualitative data collection methods within a cultural context are affected to some extent by the perceptions and beliefs of investigators and data collectors.

In 2005, Ghauri and Gronhaug argued that even though quantitative and qualitative research differ in procedure, they are not completely different in the data that they obtain. The differences between them manifest in the aspects of emphasis, form and objectives. The differences in the qualitative and quantitative approach and their emphasis are shown in Table 3.2:

Qualitative methods	Quantitative methods
• Emphasis on understanding • Focus on understanding from respondent's/information's point of view • Interpretation and rational approach • Observations and measurements in natural settings • Subjective 'insider view' and closeness to data • Explorative orientation • Process oriented • Holistic perspective • Generalization by comparison of properties and contexts of individual organism	• Emphasis on testing and verification • Focus on facts and/or reasons for social events • Logical and critical approach • Controlled measurement • Objective 'outside view' distant from data • Hypothetical-deductive; focus on hypothesis testing • Result oriented • Particularistic and analytical • Generalization by population membershipEndFragment

Table 3.2 The Differences of Qualitative & Quantitative Approach

(Source: Ghauri and Gronhaug, 2005)

3.2.1 Quantitative research

Quantitative research is a synonym for any data collection, such as questionnaires, or the procedure of data analysis, such as statistics or graphs that use numerical data (Saunders et al., 2009). Two research methods that comprise quantitative designs are experimental research and survey research.

A major advantage of the quantitative approach is that this kind of data collection method can done easily and quickly. However, Hussey (1997) indicates that the weakness of using this research method is that data measurement and quantification needs to be noticed. What is more, the authenticity of the data can be called into question, since the quantitative approach is operated in an uncontrolled situation, participants may provide fake information (Hussey, 1997). This means that the richness and the realness of the data may be partially lost. The most commonly used method of the quantitative approach is questionnaires.

3.2.2 Qualitative research

Qualitative research is defined by a focus on non-numeric data, the use of data collection techniques such as interviews, and data analysis procedures such as categorisation (Saunders et al., 2009). There are five main research methods that can be identified as qualitative. Firstly, narrative research, which is a method of studying people by encouraging them to share their individual stories about their daily lives (Creswell, 2013). Secondly, phenomenological research, which is a method of exploration in philosophy and psychology, whereby the researcher describes a phenomenon and individuals who have experienced it (Creswell, 2013). Based in social science, the third research method is grounded theory, which collects data from interviews, from which fresh and innovative analyses can be created using the unique perspectives available in this research method (Denzin and Lincoln, 2011). Then, the fourth research model is ethnography, which investigates shared patterns of language, behaviours and actions within a completed cultural group. Lastly, the fifth research method is case studies, which is a method used to deeply analyse an event, programme, activity, and process, done by either an individual or in a group (Creswell, 2013).

According to Hussey (1997), even though the qualitative method has the downside that it is relatively time-consuming and much more expensive, data collected from qualitative strategy is more truthful than the quantitative approach. Moreover, the qualitative method can help researchers to understand research objectives more deeply and solve research problems effectively, which is very beneficial to the research (Ghauri and Gronhaug, 2005). Quantitative research is suitable for use in areas such as anthropology or philosophical orientations.

3.2.3 Mixed methods research

Mixed methods is a relatively new research method which has only been widely used for the last decade. It has gained popularity because it benefits from the merits of using multiple ways to explore a research problem. Either or both qualitative and quantitative research methods can be presented in one research study by using mixed methods (Bryman, 2008). To be specific, designs can be based on either or both perspectives, and all techniques are available to researchers in data collection. Some of the possible benefits that carefully designed mixed-method designs can yield have been conceptualised by several evaluators. Firstly, by collecting large amounts of high-quality data using a mixed method, it provides a better opportunity for researchers to more easily describe and report their research (Tashakkori and Teddlie, 2003). Secondly, the validity of results can be strengthened by using more than one instrument to study the same topic. Thirdly, compared with using a single research approach alone, mixed-methods help researchers to gain a more comprehensive understanding of the research questions and problems. Fourthly, the mixed methods approach can provide better understanding and insights, which any single method alone cannot achieve. In addition, a more complete knowledge can be offered, which better informs practice and theory (Johnson and Onwuegbuzie, 2004).

However, mixed methods research also has some potential issues, as it has high requirements of time, effort and resources. Researchers who use a mixed methods approach must have broader skills that can cover both the quantitative and qualitative aspects of the research (Molina Azorin, 2011). Equally importantly, it is a big challenge for researchers to clearly explain the integration of the quantitative and qualitative results and to do some analysis for that integration (Mertens, 2011).

3.3 Research strategies

Qualitative research focuses on non-numeric data and using a data collection technique (e.g. interview) or data analysis procedure (e.g. categorising data) (Saunders et al., 2009). There are five research methods identified as qualitative:

Narrative research, which belongs to an approach for interviewing certain groups through requirement of stories on individual lives (Creswell, 2013).

Phenomenological research refers to a research approach on basis of psychology and philosophy. Specifically speaking, researchers put forward certain phenomenon or examples on similar experience from individuals in the process (Creswell, 2013).

Ethnography includes common patterns of behaviours, actions and languages amongst certain cultural groups.

3.3.1 Experimental

Experimental research describes the process that a researcher undergoes by controlling certain variables and manipulating others to observe if the results of the experiment reflect that the manipulations directly caused the particular outcome. This type of research differs from a descriptive study, and another one of its important aspects is the use of random assignment. It can be best summarised in terms of its benefits and detriments. Many key points are mentioned in the following aspects.

Firstly, it has control over variables; secondly, it has easy determination of the cause-and-effect relationship, which can achieve better results. The results gained can also give the researcher greater confidence regarding those results. Furthermore, it should be noted that experiments are repeated, which can help to validify results through repetition.

In terms of detriments to experimental research, any form of uncontrolled or unpredictable error may destroy the validity of the experiment or have a negative influence on the results. These kinds of risks are important to consider because experiments require time, finances and resource.

3.3.2 Survey

Recently, survey research has become a popular and powerful tool that researchers choose for collecting data. To complement this approach, there is rapidly growing advanced survey software available, and several channels that can be provided for survey research: paper, online, and mobile surveys. Available survey solutions have vital importance and can have widespread use in quantitative methods. By collecting data from the surveys, more valid and reliable data can be analysed and used to formulate strategies for effective models or theories.

There are four primary benefits to using surveys. Firstly, compared with other research strategies that require large capital, surveys are relatively cheap and accessible, especially when online or mobile surveys are used. With the help of modern equipment and techniques, thousands of responses can be collected from virtual networks with low cost. Based on its ability to reach a large number of participants, it can also be concluded that surveys are suitable for describing a large population. Compared with other strategies, which can take considerable time to reach their target population, surveys can ensure a more accurate sample to gather more specific and ideal research groups. As mentioned above, surveys can be achieved using several methods. This flexibility can help researchers gain data quicker and more easily. Lastly, the anonymity that surveys allow can encourage respondents to answer with more candid and truthful answers. To get the most accurate data, respondents need to be as open and honest as possible with their answers. Surveys conducted anonymously provide an avenue for more honest and unambiguous responses compared with other types of research methodologies, especially if it is clearly stated that survey answers will remain completely confidential.

3.3.3 Case study

In 1988, Merriam first introduced the view that the case study is an examination of specific phenomenon or certain event, for instance a big event, a program, social group, a process or an institution. Denzin and Lincoln state that a case study is both a process of and the product of that inquiry and inquiry about the case.

Yin (1984) offers a more technical definition by equating a case study with an empirical enquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used.

The case study's main purpose is to achieve an in-depth and comprehensive understanding of the situation and to explore the inner meaning and final conclusions for those involved. A key point in using this method is its process rather than its outcomes. By understanding the context during the whole process, more theoretical knowledge can be discovered, rather than verifying specific conclusions using a particular variable.

The case study strategy is a common way of conducting qualitative inquiry in research; it is commonly used in the situation that the variables that researchers are interested in cannot possibly be controlled. Merriam (1988) indicates that the unique strength of the case study is its ability to deal with a full variety of evidence, including interviews, observations, documents, and artefacts. It is considered as the most suitable design for an analysis of a process. As the main focus for case study research, processes are viewed in two ways. Firstly, a process can be understood as monitoring, which involves describing the context and population of the study. What is more, it also has the second meaning in causal explanation and it involved the discovery or confirmation of the process (Reichardt & Cook, 1979).

Overall, process, rather than the final outcomes, is the most vital part which can justify the selection of a case study. In addition, case studies can help us to better understand the processes of events, projects, and programmes, and to discover context characteristics that will shed light on an issue or object (Sander, 1981).

3.4 Research in Grounded Theory

Grounded theory is part of a wider methodological approach. It can be defined as an approach that launched on the basis of social science and contributes to the development of creative and fresh analyses from unique angles (Denzin and Lincoln, 2011).

Nowadays, many researchers use grounded theory to seek the theoretical knowledge that can be connected with evidence. In this way, the resultant theory is more likely to be connected to empirical data. In 1999, Hughes, along with other researchers, found that even grounded theory is problematic as the process is time consuming, and has a high requirement for investment and considerable cognitive effort by researchers. Nevertheless, it is still a popular approach for analysing large semi-structured qualitative data.

While conducting this research, the researcher contacted the interviewees by email and phone to explain the aim of the research and to arrange the interviews, which were focused on knowledge managers. The interview questions focused on some vital topics such as the competitive advantages of tacit knowledge management, ways to share tacit knowledge, and ways to inspire tacit knowledge sharing.

3.5 Research Methods Selection

Considering the previous analyses, this study adopted grounded theory for various reasons. Firstly, this methodology is very relevant to education. It identifies the research problems from professional practice in organisational and institutional contexts (Punch, 2009). In contrast, the traditional hypothesis-testing approach would not be suitable for this research. Punch (2009) presents the view that many problems confronting educational research are new, since they come from newly developing contexts or from new developments in professional practice. He argues that these areas require empirical research, much of which is qualitative, for which a theory verification approach would not be appropriate. According to Punch, the grounded theory generation approach would be most appropriate for these new areas, since there is a lack of grounded concepts that describe and explain the relevant activities.

What is more, a further strength of the grounded theory approach is its focus on inductive strategies generating theory, in contrast to other theoretical perspectives, which emphasise theory developed "by logical deduction from a priori assumptions"

(Patton, 2002). Gay, Mills, and Airasian (2009) point to the inductive analysis of data that is done without making assumptions about the findings prior to collecting evidence.

Grounded theory is further credited when used for written guidelines for the systematic analysis of the data, complete with clear and specific procedures and research strategies (Myers, 2009; LaRossa, 2005). As suggested by Thomas and James (2006), although qualitative inquiry is valid, it can be difficult to do. For instance, in education, it may involve talking with such people as students, parents and teachers; this way of doing research can lead to a lack of direction in terms of what to do with the data. Therefore, grounded theory is commended for offering a solution by providing a set of procedures and a means by which theory is generated. Thomas and James (2006) argue that with such explicitly laid down procedures, grounded theory has proved to be “an accessible and thoroughly explained method in qualitative inquiry”.

Therefore, grounded theory, along with its guidelines, was found to be the most suitable approach for research into an area that has not been studied in-depth. In addition, grounded theory offers of a framework in terms of data generation and coding procedures that guide the analytical process, which can lead to generating theory (Strauss & Corbin, 1998).

3.6 Conclusions

This chapter aims to identify suitable research methods for the study of tacit knowledge management. The importance of the research design, the main points that researchers need to consider in designing their methodology, and inherent problems are all introduced in this chapter. Firstly, two vital aspects of research to be introduced are research design and strategy. Research design outlines a detailed framework for the data collection and analysis in three main types of research method, namely, quantitative, qualitative, and mixed methods research. The difference between quantitative and qualitative is specifically concluded as quantitative regarding numbers, while qualitative is related to words. Mixed methods is the combination of quantitative and qualitative, which can add more value to the research. Research strategies were then discussed. Research strategy was classified into four main categories: experimental, survey, case study and grounded theory. After data source perception and an introduction to primary and secondary data collection, this study then begins to collect primary research data using the qualitative research approach of grounded theory using a semi-structed interview format.

The aims of this exploratory study are: to demonstrate the most important factors that can affect employee enthusiasm to participate in knowledge management activities and share their personal knowledge in an organisation. To develop academic insights that differ from those already existent in this area, this research will use both primary and secondary data. What is more, the grounded theory method is used as the main research method. By using semi-structured interviews, this research can collect more raw data, which is essential for creating new theories.

Chapter 4: Data Collection

4.1 Introduction

This chapter mainly discusses two aspects: research design, and the processes that were used to collect data for the research objectives. In order to select the most suitable data collection method, the research topic and its relevant research questions should have greater importance, which acts as a guiding function. Research methods are designed to solve research problems; if these approaches could not be solved well, it indicates that the method should be changed (Robson, 2002). Therefore, suitable data gathering methods are vital and should be carefully chosen to ensure that it is suitable for the research and can answer the research questions.

In this research, grounded theory, which was developed by Strauss and Glaser (1967), is used as the main research methodology. This strategy has become popular in recent years and is widely used in qualitative research (Payne, 2007). Unlike normal methods, that test existing academic theories or hypotheses from the same area, grounded theory can develop a new theory from the empirical data that is collected, which helps researchers develop innovative analyses and retest existing ideas (Charmaz, 2011). The chosen strategy of grounded theory is used as the qualitative method in this research. What is more, semi-structured interviews are selected as the method for collecting qualitative data for the grounded theory strategy, which has been used in various previous research projects.

In addition, this chapter presents the first stage of the research design, which constitutes the literature review, in the first year, and the grounded theory at the second stage, which comprise interviews, the selected sample, and qualitative analysis.

4.2 Data collection and time schedule

In the first-year report, the main focus of the research was collecting relevant literature and theoretical knowledge about tacit knowledge, which helped the researchers make the correct decision in choosing the research area, topic and questions. A further literature review would be replenished and updated in the third-year report if any data and theories were changed.

Face-to-face interviews were used to collect qualitative data. These interviews were conducted with 50 interviewees from 30 different companies and different sectors in order to obtain generalisation. These 30 companies are located within various sectors, such as manufacturing, consumer retail, property and finance. In addition, the researcher also selected interviewees from different job levels. The main purpose in this study is to continue to build a practical model for effective management of tacit knowledge. The practical plan for the third year was to put into effect the following steps: results, recommendations, limitations, and conclusions, with the addition of the action model for effective tacit knowledge management implementation.

4.3 Data collection techniques

Data can be defined as "known facts or things used as a basis for inference or reckoning" (Hussey and Hussey, 1997). Data quality is one of the key factors that can affect the quality of the study, and it should have reliability by representing the target population (Myatt, 2006). Sources of data can be classified by primary and secondary data. Primary data, also called new data, are original and specifically collected for a certain purpose within studies (Lewis and Thornhill, 2009). Moreover, primary data "can be qualitative or quantitative" (Adams and Brace, 2006). Secondary data are already existing, through collection by other researchers for other purposes. This data can still offer useful information to a different research topic (Saunders, Lewis and Thornhill, 2009). Secondary data includes both raw data and published summaries. The following sections will discuss primary data and secondary data collection separately.

4.3.1 Secondary data collection

Secondary data can be defined as information that has already been collected from previous research for a purpose other than the current research project, but that has some relevance and utility for the current research (Saunders al et, 2007). It is necessary to search for relevant secondary data, which could identify available theories that could be used, before collecting primary data (Ghauri and Gronhaug, 2005). Secondary data includes both quantitative and qualitative data and are used principally in both descriptive and explanatory research. Many resources can be used for secondary data collection, such as journal articles, books, annual reports, etc. (Hussey and Hussey, 1997). Different researchers have generated varied classifications of secondary data. As shown in Figure 4.1, there are three defined main subgroups of secondary data, namely, document-based, survey-based and compiled multiple source.

Types of secondary data

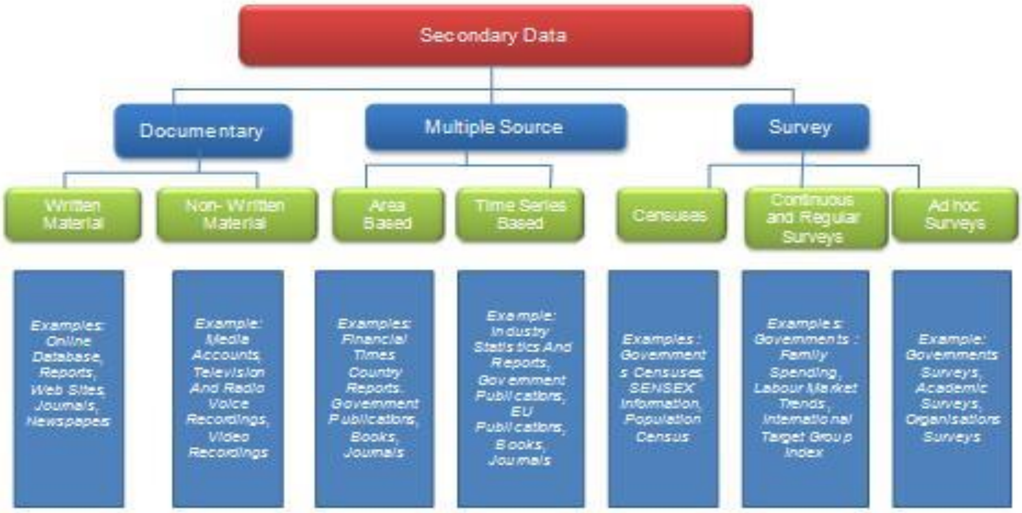

Figure 4.1 Types of secondary data （Source: Saunders et al., 2015）

Documentary secondary data can be seen as data that endures both physically and digitally as evidence. This kind of data is transposed across both space and time and is re-analysed for a second purpose, which is different from the original one that researchers firstly collected (Lee, 2012). With the accelerating development of online techniques, there are two types of secondary data: text materials and non-text materials (Saunders al et, 2015). Text materials consist of reports, notices, meetings, magazine articles, books, journals, newspapers, recordings (voice or video), and pictures, whereas non-text content consists of web pages.

Survey-based secondary data refers to existing data that was used for the purpose of survey strategy in its original research (Lee, 2012). It can be collected through one of three distinct subtypes of survey strategy: censuses, ad hoc surveys, or continuous and regular surveys.

Multiple-source secondary data can be seen as a mixed method to collect secondary data from documents or survey secondary data or can be an amalgam of the two.

Wilson (2010) outlined some advantages of using the three main types of secondary data. Firstly, it is much cheaper and less time consuming, and secondary data can have guaranteed quality. Secondly, secondary data provides an unobtrusive measure, which has benefits for sensitive situations. What is more, longitudinal studies can be undertaken using secondary data. Lastly, researchers can make a comparison between the new data and the existing data. It is useful to place one's own findings within a more general context (Saunders et al, 2015). For instance, if the researchers used a questionnaire to collect new data from a target population, secondary data such as a national census can be used to triangulate their findings and assess the generalisability of their findings.

On the other hand, the disadvantages of using existing data can also be concluded in the following aspects. Compared with new data that is collected for specific purposes, which can meet research objectives to solve research problems more explicitly, existing data may be inappropriate to the research and may not match the research requirements. Secondly, data from reports that are not available online may be costly and difficult to acquire. Thirdly, the data may not have real control over the data quality and the initial purpose may affect how data are presented (Wilson, 2010).

4.3.2 Primary data collection

As mentioned above, secondary data, which is collected from previous research, could not be a good match for solving the current research problem. After researchers have gained some insight into an issue by reviewing secondary data, new data must be collected in order to solve the specific research problems (Ghauri and Gronhaug, 2005). These data that are collected by researchers can be regarded as primary data. It can be defined as original primary data by researchers, which can be gathered through various methods, including questionnaires, interviews and direct observations.

The key advantage of primary data is pointed out by Ghauri and Gronhaug (2005), who indicate that original data is collected for the specific research topic, and has better consistency with the research objectives. Through the use of primary data, particular demographic information can be obtained. Another obvious advantage of primary data is its low cost. Particularly, questionnaires or telephone interviews are two cheap and generalised data collection methods, which can represent a large geographic area with low costs (Ghauri and Gronhaug, 2005)

However, the disadvantage of primary data is that new data collection is generally more time consuming (Ghauri and Gronhaug, 2005). Additionally, it should be noted that a generalised target population is hard to assess with this collection method. What is more, in order to enhance the reliability of a study, choice of suitable tools and methods of analysis is something that cannot be ignored (Ghauri and Gronhaug, 2005). As well, primary data is collected under a controlled situation; unexpected factors may affect the results of data analysis, which should be noted by the researchers (Ghauri and Gronhaug, 2005).

4.4 Data collection in this research

In this research, primary data has been used as the main data source. As argued, by collecting data independently, the research could have a strong control over the research process. Most importantly, the research could target the population of interest and ask tailored questions, which are consistent with the research topics. Additionally, the available dataset regarding tacit management is a limitation, especially in Chinese. Therefore, although there are some limitations in primary data, such as requiring more money and time, data quality, validity, and reliability could still be guaranteed by employing careful research design.

4.4.1 Interviews

Research interviews can be seen as a purposeful conversation between two or more people. By asking unambiguous and concise questions, interviewers can gather and explore the available data and explore them further. One of the advantages of interviews is that they can collect reliable and valid data that are relevant to the research objectives and problems. Secondly, they can work to refine the parts of the research that have not been fully formulated. However, interviews are expensive compared to other methods of data collection. As a research tool, which is costly as well as time consuming, it can only be used when the researcher has plenty of time and resources. Otherwise, it will waste time and money to choose this data collection method and start interviewing. Taking this into account, more than 100 interviews were conducted over a period of six months to complete this research thesis. This was done via a process of continuous analysis of the data obtained from the interviews, re-designing new interview questions, and conducting the interviews again in a re-analytical way.

Interviews are highly formalised and structured but can contain both formal questions and unstandardised or unstructured conversations (Saunders et al., 2015). The main types of interviews are as follows: structured interviews, semi-structured interviews, and unstructured or in-depth interviews. The main type of interview used to complete this research is semi-structured interview.

4.4.2 Questionnaires

The questionnaire is a commonly used tool in data collection for research. They are formulated to target the key information and data on a given subject area. Compared to other primary data collection methods, the questionnaire is cheap, as vast amounts of respondents could submit within a short timeframe and the responses can be obtained easily. On the other hand, the disadvantage of questionnaires is their low effective feedback. Lots of people do not return questionnaires on time, and some respondents do not share their true responses in questionnaires particularly for sensitive questions. What is more, the interviewee's gestures and body language cannot be observed during a questionnaire, which means that the data collector cannot easily gauge truth in their answer. Conversely, interviews allow for direct communication and observation of interviewee body language.

If a questionnaire is finally chosen as the appropriate data collection method, several details should be noted. Firstly, questions should be written in easy-to-understand language, or multiple languages, to make sure that anyone can understand. Secondly, sentences used to describe questions should be simple and non-technical, so that it is suitable for respondents from different education levels. Lastly, the researcher should follow the ethics of writing, and the language of the questions should be considerate rather than careless or humiliating.

4.4.3 Observations

Observation has become a neglected method for management and business research. It can be more enlightening and rewarding to pursue richer research data. Recently, with the development of technology, observation has become a much more popular research method, as the introduction suggests. It involves recording, analysing, systematic viewing, and interpretation of people's behaviour. Participant observation, structured observation, internet-mediated observation, as well as videography are the four normal approaches to observation.

4.5 The design of this research

The main aim of this research is to demonstrate the most important factors that can affect employee enthusiasm when participating in knowledge management activities, sharing their personal knowledge in an organisation, and developing academic insights that differ from those already existent in this area. Also, this research aims to determine the reasons behind the increased interactivity and participation in knowledge management activities from employees in knowledge-based organisations, by analysing the barriers that impede the adoption of knowledge management activities, and the factors that aid the adoption of knowledge-sharing activities.

4.5.1 Literature review

The literature review provides the academic foundation that was used to explore this research topic. It includes a wide range of background and ideas, which includes the identification, overview, and evaluation of what has been published in this research area so far (Wilson, 2010). Researchers use literature reviews to help readers better understand the topic by sharing theories and knowledge that exists in that area. To aid in this research, the researcher learned, collected, and reviewed the professional and academic knowledge regarding the effective management of tacit knowledge in several ways, such as academic papers, theses, professional journals, and books.

The literature review from the first-year report included the following aspects: the definition of and types of knowledge, the definition and benefits of knowledge management, the importance of tacit knowledge, organisational learning and knowledge management, knowledge management lifestyle and challenges, improving knowledge worker performance, critical success factors of knowledge management implementation, and knowledge storage and transferral. The literature review can bring all relevant knowledge together and analyse significant writings on a topic. It can also help researchers to find gaps in previous research, which can then be captured in future research projects.

4.6 Interviews in Grounded Theory

Grounded theory is one kind of qualitative strategy, in which the researcher derives a general, abstract theory of a process, action, or interaction grounded in the views of the participants in a study (Creswell, 2009). In 2010, Wilson defined grounded theory as "a qualitative research method that involves generating theory from data collected in a particular study". Different data-collection strategies can be used to gather several types of data in grounded theory studies (Charmaz, 2006). Furthermore, by shaping and reshaping data collection, researchers can refine collected data.

A variety of data collection techniques could be chosen in a qualitative methods approach, such as interviews, focus groups, questionnaires, observation, and projective techniques etc. (Creswell, 2013; 2008; Saunders et al., 2009). All those methods can offer insight into the research objectives. Interviews are the most common method of literal data collection in qualitative approaches (Galletta, 2013; Denzin and Lincoln, 2011). According to Saunders et al. (2009), interviews can be classified into various aspects: the simplified three forms are structured, semi-structured and non-structured (Bryman, 2008). This project utilises the semi-structured interview, which builds on one-to-one interviews. Semi-structured interviews are an in-depth form of survey, for which the duration will be free and flexible, depending on how much information can be elicited from individuals (Galletta, 2013). As the interviews in general need more time to collect data (Bryman, 2008), qualitative interviews are a way to collect large amounts of data in a limited time (Silverman, 2006), and to establish reliable data from the participant's views. Accordingly, qualitative interviews will be used within this research to achieve the aim of gaining effective management of tacit knowledge.

In this research, semi-structured interviews are conducted to test the hypotheses, which are identified from the literature reviews in the previous chapters. These will focus on the aims and objectives of the research, while allowing free exploration of the participants' views. The process of data collection by interview will be administered in two ways: to ensure the interviews are as productive as possible, and to capture the personal reactions of participants. These two formats are: face-to-face interviews, and Skype-to-Skype recorded interviews (which will offer more freedom, space for interviews, and overcome the regional boundaries of participants) (Hanna, 2012).

4.6.1 Sample selection for grounded theory study

Theoretical sampling can help to offer the correct direction for the following stages of data collection; in a process of concurrent analysis that continues cyclically until all kinds of data are totally developed. What is more, other researchers hold the view that the smallest sample size for grounded theory should be between 20 and 50 interviews. In this research, 50 face-to-face interviews with four directors, 21 general managers and 25 managers from 15 areas were conducted. This varied participation is good for improving understanding, completing theory, and preventing the collection of unreliable data. Those participants work in companies in several sectors, such as banking, economics, education, manufacturing, and farming. Of those companies, 21 are knowledge-based and nine are non-knowledge-based. The main reason behind this selection was to identify the difference between those companies, and thus to conclude the impacts of tacit knowledge management. For this research, more knowledge-based organisations are used in order to benefit from their experiences of implementing tacit knowledge management, and to find out the challenges they faced, the methods they used to overcome those challenges, what they learned from that experience, and ultimately to conclude the impact that tacit knowledge management had on them. The details of the interviewees are outlined in Table 4.1.

In this table, a code name is used in place of the actual company name, to protect the company's privacy and to make the table more clear and concise. What is more, the personal details of the interviewees are hidden for ethical reasons. This anonymity also helps researchers collect more truthful responses which increases the accuracy of the interviews. Therefore, the research used code to improve the analysis qualities of the interviews as follows.

Company	Sector	KM practices	Directors	General Managers	Managers	Total interviews in each company
P-Company	Property	Yes		1	2	3
LS	Lawyer	No	1			1
J-Bank	Banking	Yes		1		1
Y-Company	Banking	Yes		1		1
JY	Education	Yes	1			1
ZGYD	Telecommunication	Yes		1		1
M-Company	Manufacturing	Yes		1	1	2
B-Company	Manufacturing	Yes		1		1
K-Company	Manufacturing	Yes		1	1	2
SD-Company	Property	Yes			1	1
PLCC	Insurance Services	Yes		1		1
H-Company	Manufacturing	Yes		1	1	2
Z-Company	Manufacturing	Yes	1	1	1	3
Y-Company	Marketing-heating	Yes		1		1
BK-Company	Transport	Yes		1	1	2
LM-Company	Manufacturing	No	1	1	1	3

Company	Sector	KM practices	Directors	General Managers	Managers	Total interviews in each company
DX-Company	Manufacturing	Yes			2	2
CB-Company	Computing	Yes			1	1
JD-Company	Food	No		1	1	2
HF-Company	Property	Yes			1	1
CDFY	Medicine	Yes		1	2	3
FXFOOD	Food	Yes			1	1
RTYL	Food	Yes		2		2
YJ-Company	Investment	Yes			1	1
CH-Company	Shopping	Yes			2	2
HTXG	Medicine	Yes		1		1
JYZ	Manufacturing	No			1	1
HN-Company	Property	No		1	1	2
ZX-Company	Shopping	Yes		1	2	3
DJL-Group	Food	Yes		1	1	2
TOTAL			**4**	**21**	**25**	**50**

Table 4.1 Number of interviews in the participating companies

4.6.2 Semi-structured interview design and implementation

In this research, interviewees were contacted by phone or email to explain the research aim and to arrange an available time for a face-to-face meeting. The aim of these interviews was to have a deeper and more comprehensive understanding about knowledge management, Chinese employees' tacit knowledge management, and the characteristics of their knowledge management.

The average duration of each interview was around 45 minutes. In consideration of special cases, the specific length depended on the interviewees' availability and their interviewing status. The minimum duration for each interview was 30 minutes. This was chosen because if the duration of the interview was too short, it would not have been possible to obtain a sufficient amount of data. However, if the interview was too long, the interviewees could become tired and thus reduce the quality of the data obtained. In addition, the time available for interviewees was limited due to their busy schedules. In this research, the total time of all the interviews was 38 hours of audio, transcribed on to over 655 pages over a period of eight weeks. Audio-tape was used to record all face-to-face interviews. By recording the interviews, the responses were accessible for researchers to scrutinise after the interviews had been conducted, which was more convenient for transferring the information to a computer. The recorded file can be used as a backup, which can adjust the speed of the interviews in order to enhance the transcription. Also, recording the interviews can help researchers to have better interaction with the interviewees, and complete interviews more frequently. To be specific, by using digital equipment instead of the interviewer to record information, the interviewer did not need to pay attention to writing down the dialogue details during the interview, which helped them to better focus on the conversation.

Fifty interviews were conducted from 15 different areas, such as property, manufacturing, education, banking, insurance service, marketing, and so on. In this study, four directors, 21 general managers and 25 managers were interviewed using a list of questions. By using a semi-structured interview technique, those questions varied from one interview to another. Most of the questions were regarding employees' tacit knowledge and the methods that companies use in managing tacit knowledge. Additionally, more details about different categories of tacit knowledge in companies can be discovered from deep conversations with employees. However, there are still some limitations in using a semi-structured interview technique. Firstly, due to the lack of time and resources, data collected from these companies cannot cover all details and the results cannot represent mass opinions. On the other hand, the data accuracy fluctuates by using face-to-face interviews in data collection. Tacit knowledge relates to the consumers' privacy, such as religion, which is a sensitive issue to reveal – truthfully or otherwise. Under the influence of the Chinese traditional "face" values, the respondents may not express their honest opinion, which will influence the research conclusion. In order to solve this problem, phone calls and e-mails were used to contact the interviewees and cover the areas that were not mentioned in these interviews.

4.6.3 Qualitative data analysis

The database from qualitative strategy consists of interview transcripts from three dimensions, namely, the open-ended, focused, and exploratory interviews. Once the data was collected by those researchers, the next step was to begin analysing them. Constant comparative analysis is the most general approach for qualitative analysis. This was firstly used by Glaser and Strauss in the grounded theory methodology. By choosing data from face-to-face interviews, it can be compared with other theories, which can then find the relationships between various pieces of data. It is well suited to grounded theory because this design is specifically used to study those human phenomena, which the researcher assumes that fundamental social processes explain something of human behaviour and experience. In this research, semi-structured interviews are firstly transcribed from the tape recorder. Constant analysis is presented by analysing the open-ended questions by concluding responses, structuring, grouping meanings, and ordering of meaning using narrative. The methodological strategy of grounded theory can be described in the following steps:

Step 1: Choose the suitable research area and identify it.

Step 2: Collect background data in the research area using qualitative, quantitative, or both types of data in the grounded theory.

Step 3: Open-coding which is the process of dividing data into suitable units in the grounded theory, which should be completed by a researcher. This allows the main category and core relationships to be more obvious.

Step 4: Memos should be written by researchers, which run through the whole process.

Step 5: By coding the main category and related categories, selective coding and academic sampling can be conducted.

Step 6: The researcher sorts their memos and figures into theoretical codes.

Although some qualitative researchers operate from a similar philosophical position, most recognise that the relevant reality, as far as human experience is concerned, is that which takes place in subjective experience, in social context, and in historical time. Thus, qualitative researchers are often more concerned with uncovering knowledge about how people think and feel about the circumstances in which they find themselves, rather than making judgements about whether those thoughts and feelings are valid.

Qualitative data analysis is the range of processes and procedures whereby qualitative data is collected from some form of explanation, understanding, or interpretation of the situations, or people, that are being investigated. It is usually based on an interpretative philosophy, which works to examine the meaningful and symbolic content of qualitative data. There are five steps in the process of qualitative data analysis:

Step 1: Organise the data

Step 2: Identify framework

Step 3: Sort data into framework

Step 4: Use the framework for descriptive analysis

Step 5: Second order analysis

4.7 Conclusion

This chapter presented the first stage of research design and outlined more details about the processes of data collection. With the aim of meeting the research objectives and gathering valid and reliable data, the methods of data collection were carefully considered and compared. The grounded theory method and qualitative strategy was chosen, with semi-structured interviews (face-to-face interviews) as the main channel for collecting effective data during this process.

In this research, the interviews were conducted with 50 interviewees from 30 different companies operating within different sectors. More details about initial findings of the data collection will be discussed in the following chapters.

Chapter 5 Groundwork and Data Collection

5.1 Introduction

By using qualitative data collection, in the form of face-to-face interviews, this chapter produces some initial findings. In order to ensure the validity and generalisation of the data, interviews in this chapter were conducted with 50 interviewees from 30 different companies, and over 15 different sectors: namely, property, law, banking, telecommunication, production and marketing, education, manufacturing, medical services, automotive-marketing, insurance services, and heating-marketing. In this research, grounded theory, which was developed by Strauss and Glaser (1967), is used as the main research methodology. This strategy has become popular and widely used in qualitative research in recent years (Payne, 2007). What is more, semi-structured interviews are selected as the method to collect qualitative data for the grounded theory strategy, which allowed the questions “what?”, “how?” and “why?” to be solved and explained in this process.

What is more, the initial findings are presented in this chapter using a qualitative approach. It can be split into six vital factors: (i) definition of knowledge management and tacit knowledge, (ii) benefits and the advantages of knowledge management and tacit knowledge, (iii) tacit knowledge employees, (iv) the uses of tacit knowledge, (v) organisational learning, and (vi) technology.

5.2 Profiles of the participant organisations in the data collection

5.2.1. ZGYD

ZGYD Company background

In 1993, China Mobile Limited was firstly incorporated in Hong Kong. In the same year, this company was successfully listed on NYSE and HKEX respectively. Until now in Mainland China, ZGYD is the top mobile service provider that owns the biggest mobile customer base and leads the development of mobile networks. This company was selected by Financial Times as one of the “FT Global 500” in 2011. Later that same year, this group also appeared in the Forbes magazine of “the World’s 2000 Biggest Public Companies”. In addition, it also owns a big share of equity (99.97 percent) in China Mobile Terminal and more than half of the equity interest in Aspire Holdings Limited. In 2011, ZGYD established China Mobile Group Finance through Beijing Mobile and CMCC, which means that the company can share 92 percent of the equity interest indirectly.

At the end of 2011, this company employed 175,336 staff members in total and serviced a huge customer base of around 650 million. In cooperation with its main shareholder, China Mobile Group Limited, it enjoyed nearly 66.5 percent market share in Mainland China.

Number of Interview for this company:1

Interviewee No.1 was conducted at the head office in Shenyang with Mr. C., the General Manager of the Management Consultant Department. The interview lasted about 50 minutes. The researcher code for this interview is ZGYD-GM-12.

5.2.2 J Bank

J Bank's background

J Bank is one of the five biggest state-owned commercial banks in China. It was founded in 1954. The main business of this bank includes several areas, such as banking, personal banking, business, and capital business. With 14,121 branch offices in Mainland China, J Bank, in addition, also owns branches in Hong Kong, Taiwan, and Melbourne, Australia. It provides comprehensive financial services to the customers.

J Bank has an extensive customer base and maintains business relations with several large enterprise groups and leading companies. This bank's marketing network covers the main regions of the country. In 2013, the market value of this bank was around $176.7 billion, which ranked fifth in the world's listed banks. In 2016, it also appeared in "Fortune", an authority report that released the latest rankings of the world's top 500; J Bank ranked 22nd. In the same year, J bank also showed as the top 500 enterprises in China.

Number of Interview for this company:1

Interviewee No.2 was conducted at the regional office in Shenyang with the general manager of Branch Department, Mr. L. The interview lasted about 35 minutes. The researcher code for this interview is J-GM-03.

5.2.3 LS Company

LS Company background

LS Company was founded in 1998; it was the first partnership law firm in the Shenyang district. Nowadays, by its high-quality service concept, and its scientific and standardised management system, it has already developed into the biggest law firm hiring the most lawyers in Shenyang. Based in the centre of Shenyang, LS company has a spacious and elegant office environment with over 1,500 square metres of office space. This institute has more than 20 professional lawyers and 40 paralegals and administrative personnel; these staff consist of an administration department, legal department, administration section, and second-hand building mortgage department. What is more, due to the lawyer's professional knowledge and this company’s main business, the legal department also set up eight major legal professional groups: civil law, criminal law, real estate law, corporate and financial law, labour and social security law, administrative law, intellectual property law, and education law.

With the aim of placing customers and service first, LS law firm won high praise from the public due to its timely, comprehensive, high quality, and efficient legal service and their excellent performance. Recently, China successfully entered into the WTO, in face of the new challenges and opportunities, LS law firm met the challenges with improved quality, more professional knowledge, and more comprehensive services.

Number of Interview for this company:1

Interviewee No.7 was held at the Shenyang District Office with the branch department manager, Mr M. The duration of the interview was about 45 minutes. In this interview, the researcher code was LS-M-05.

5.2.4 JY Company

JY Company background

JY Company has conducted and taught education since 2007. The total construction area of this enterprise is more than twenty thousand square metres. This company follows the rules of education and children's physical and mental development. By absorbing foreign advanced concepts and education, this company provides children with natural, pluralistic, open, and independent activity space.

When it comes to the course design and education quality, this company pays attention to humane environment construction and strives to build a good atmosphere of recognition, respect, care and harmony. Teachers in this kindergarten all have professional knowledge and systemic education. To be specific, five percent of teachers here have a master’s degree, while nearly half of them (40 percent) have a bachelor’s degree. What is more, the others all have college degrees or above. It is a professional, well educated, and young teacher team, which has a multitude of professional experience. By paying attention to the teacher's ethics construction, daily claims love is the foundation of education. Teachers build independent, self-confident, and active development of the human environment for young children, with love.

Number of Interview for this company:1

Interviewee No.9 was undertaken with Mr. D, who is the regional manager in Shenyang Branch Department. The interview lasted about 40 minutes. In this interview, the researcher code is JY-GM-04.

5.2.5 Y Company

Y Company background

Y Company was founded in 2003; it is a large set of joint-stock companies in Shenyang, which includes heating services and heat engineering installation. The company has a registered capital of ten thousand million yuan, with total assets of more than seven hundred million yuan. The goal of this company is to serve the economic construction in Shenyang. By employing a free-thinking attitude, blazing new trails, and grasping the systems of construction and management, Y Company have achieved new progress and improvement in all their operational areas. At present, the company holds responsibility for constantly providing heating for several districts in Shenyang, which totals around 40 million square metres of heating area.

The core values of this company are to keep good faith, service, innovation, and development. By establishing a perfect quality assurance system and implementing management rules and regulations, this company has improved their comprehensive competitiveness. There are three heat sourcing factories that belong to Y Company, which then operate to meet user heat demand for 24 hours. Additionally, they have a customer service centre to handle customer problems and complaints. Timely handling of these issues allows for both a repair rate and customer satisfaction rate of 100%. This work attitude helps Y Company highlight enterprising characteristics in the competitive market, increases its own brand reputation, and sets up a good enterprise image.

Y Company owns several branches in Shenyang. The headquarters are close to the Shenyang international convention centre. The total area of the headquarters is 67,514 square metres, with five floors of office buildings, which cover more than 8,000 square metres. The company staff number more than 500 people, including 25 senior title managers, followed by 42 intermediates, as well as 66 specialised technical staff.

Number of Interview for this company:1

Interviewee No.11 was held at the regional office in Shenyang with the manager of Branch Department, Mr. X. The duration of the interview was about 40 minutes. In this interview, the researcher code is Y-D-10.

5.2.6 SD Company

SD Company background

SD Company was founded in 1999, it is recognised as the top 50th real estate company in China. What is more, it is part of the Chinese Fortune 500. The main business of this company is to develop and manage a complete set of products for residential, commercial, creative office, and property services. By 2014, the total assets of this company total more than 30 billion yuan.

There are more than 50 branches built up in several economically developed cities in China. They provide high quality services for nearly 300,000 citizens all over the country. In this company, the firm’s culture can be described in four ways, namely, faith, excellence, innovation, and win-win. The company is highly responsible for customers, employees, shareholders as well as society. By advancing new technology, the company also continues to provide more quality products and services. Based on all aspects of the real estate industry chain, for the interest of the community, and through the realisation of sustained growth. SD company provides high-quality products and services and has become China’s most trusted, leading real estate company.

Number of Interview for this company:1

Interviewee No.13 was conducted at the regional office in Shenyang with the manager of Branch Department, Mr. Y. The researcher code for this interview is SD-GM-08.

5.2.7 B Company

B Company background

B Company is a high-tech enterprise which integrates the design, product, sales, and service of pump products. This enterprise was founded in 1985. By integrating mature and reliable products, user friendly service, and advanced management concepts, this enterprise is widely regarded as the most well-known pump manufacturing and service provider in China.

During the period from 2006 to 2014, the enterprise produced nearly 400 nuclear power products for the nuclear power field, including the main equipment for the water-cooling system of the pressurised water reactor nuclear power plant. The company also earned high appreciation from Pakistan's acceptance experts, who awarded them with eight three-level safety ratings for their nuclear equipment.

Through continuous development of new markets and new products, this enterprise was issued a factory acceptance certificate and owns several product patents. The company faces challenges and improves development by focusing on the spirit of honesty, progressiveness, efficiency, and innovation.

Number of Interview for this company:1

Interviewee No.16 was recorded at the regional office in Shenyang with Mr. W, who is the director of the company. The interview was approximately 40 minutes long. In this interview, the researcher code is B-GM-01.

5.3 Initial data of the pilot study

The initial open coding of the data collected from the pilot study is presented in table 5.1, which shows the codes and categories for the seven interviews and enterprises.

Based on the grounded theory research methodology, the researcher obtained data through semi-structured interviews. The data was then processed using NVivo software, the subject was extracted, and they were categorised and summarised. Table 5.1 contains two columns. The left-hand column lists the emerging categories, and the right-hand column provides a short summary of the codes based on the study data. The concept column lists the frequent words and sentences that were mentioned during the interviews, and the category column is the extracted and summarised information relating to these words and sentences.

The initial coding of data is categorised into six main concepts as follows: (i) the core value of the company, (ii) definition of tacit knowledge, (iii) competitive advantages, (iv) most vital part in knowledge management, (v) strategies to inspire tacit knowledge and (vi) strategies to share tacit knowledge.

Category	Concepts
The core values of the company	Profitability Good quality Good service Technology Refinement Pragmatism Innovation Customer value

Definition of tacit knowledge	Employees' EQ (emotional quotient), interpersonal quality Can be written down and recorded Available to everybody The source of competitive advantages Informal individual skills The complex social skills and working experience Employees' potential power Employees' characteristics and abilities Can be described and directly used Personal beliefs, ideals, values and mental model
Competitive advantages	Decision making Differentiation Improving brand images Innovation Maximum effectiveness Maximum profits Problem solving
Most vital part in KM	Clear self-awareness about their tacit knowledge

	Effective use of tacit knowledge Excellent reward mechanisms and penalty system Good knowledge sharing methods Good working relationships Innovation Keep checking for tacit knowledge Knowledge sharing Learning and communicating
Strategies to inspire tacit knowledge	Comprehensive social benefits Higher salary Incentive mechanism Social activities

Strategies to share tacit knowledge	Activities Changing company grading standard and evaluation Communication Creating a shared workspace Knowledge sharing seminars Meetings Reward mechanism Time encourage and capital support Training

Table 5.1 Initial open coding that emerged from the pilot study

5.4 An overview of the participating companies in main fieldwork

- The core value of the company

1. Information from J Bank highlights that:

Our management institution is not an independent enterprise, it is a branch. The core value is derived from the head office. Our branch has autonomy in management, but it cannot operate outside of the head office. The maximisation of customer value is the core value of head office (J-GM-03-01).

2. As the information from company T points out:

Good quality and comfortable service is paramount (T-M-09-01).

3. Information from company Y holds the view that:

Heating Service Company runs projects that belong to the government. It means that the main aim of this company is not to make huge profits; it has a strong social responsibility and works for the citizens. With physical products, a better heating service is provided from our company to the public. We contribute to society by providing the best service to everyone (Y-D-10-01).

4. Information from company Z states that:

Creation is the main standard, while quality is the basis (Z-GM-11-01).

5. According to information from ZGLD:

Maximum profit is the core value (ZGLD-GM-12-01).

6. According to the interviewee from Company K:

Our enterprise's business is mainly in furniture. In the development of our firm, we mainly focus on two points. One is the choice of furniture's raw materials; the other is the process of furniture manufacturing. Therefore, the core value of our company is pragmatism and refinement. First of all, during the process for using raw materials, the stealing and exchanging of materials cannot exist. Recently, in order to chase higher benefits and profits, some companies have deceived the consumer by using cheaper raw materials or even fake materials. Such malicious and deceptive consumer practices in our company are prevented as a priority. The *assurance of quality is a priority. What is more, the skill of furniture manufacturing is the other key point in the enterprise's core value. Recently, because of the valid international development, customers have a broader view. Due to this, their demands for furniture technology, such as sculptures, is relatively high. For example, good mahogany furniture requires a brushing with gold paint. Due to the quality of raw materials, our enterprise guarantees higher skills during the production period (K-M-14-01).*

7. Information from Company M states that:

   Our company has been established for a long time. During the process of its growth, our company provided a contribution to the local tax office, and helped to solve the local population's employment problem to some extent. When it comes back to the company's core value, we are integrity-based and innovation is our responsibility. Our enterprise works to benefit the locals and employees. During this process, we treat each employee in our enterprise as a family member. What is more, innovation is also a vital point in the core value of the enterprise. At this stage, even though our firm has not yet completed the listing, we have changed from a local company to a national firm. Our company is already ranked first and is leading in this area (M-GM-13-01).

- Definition of tacit knowledge

1. According to information from B company:

From my point of view, the staffs' potential power in our company has not been explored at all. Managers are looking for some extra elements and effective activities to make the correct decisions in company management and knowledge management (B-GM-01-02).

Tacit knowledge is available to everybody. It is hidden in everyone's minds, which is different to describing and directly using it, such as common sense and unprofessional knowledge. In our company, it is apparent in the employees' thinking, their attitudes towards things and some working experiences. On the other hand, explicit knowledge is some knowledge that can be used in normal daily lives, such as professional knowledge and common sense (B-GM-01-03).

2. Information from bank J states that:

A combination of tacit knowledge and explicit knowledge, is employees' comprehensive quality. It can be seen as professional knowledge for the business when it reacts in one specific major or area. In order to further the development of the business knowledge, different knowledge from different areas is required; it is tacit knowledge. Such as the customer managers, their duties are product selling. However, their emotional intelligence, interpersonal communication and art taste are also important in their work environment. It belongs to the individual's connotation and quality, which are potential (J-GM-03-02).

3. According to information from JY:

Each teacher in the kindergarten is professional. They also successfully passed a series of entry tests and professional exams, and already have enough academic knowledge and theories, which can be recorded in words, visualised, and taught. Tacit knowledge is a class of knowledge that's difficult to communicate. To be specific, each teacher has at least a bachelor or master's degree in education and teacher certification for the state in which they work. Certification typically requires candidates to complete student teaching requirements. However, in addition to education, specific skills, such as patience, creativity, communication, classroom management and flexibility, are some potential skills that are necessary in being a kindergarten teacher. Innovation is an elusive skill. Some individuals struggle with innovation for many decades with little success. Other individuals seem to innovate effortlessly for a period. It can also be called tacit knowledge (JY-GM-04-02).

4. As the information from company P points out:

Educational background, ways of thinking, and work experience are most important when HR recruit staff. When we talk about tacit knowledge, it can be achieved in daily communication. As we all know, professional knowledge can help us to solve 50 percent of problems. The other half of knowledge that is hard to conclude is tacit knowledge (P-M-06-02).

5. According to information from SD:

In this company, the staffs' personal abilities are all very strong. However, they cannot be seen due to limitations in the work environment. In this way, we always choose a suitable position for them to test their characteristics and abilities. The result of it is not one hundred percent correct, but it works a lot in their work. Some good staff have professional knowledge, but they cannot accept the company culture, their tacit knowledge is completely different to this company, so they have no choice but to leave here. On the other hand, the staff that are welcomed and well suited all have great potential. In this way, we always give them a free and big place to express themselves. Through a period of observation and evaluation, the managers would give them a suitable position judging on their performance. Everybody has both tacit and explicit knowledge; it is vital to transfer tacit knowledge, to be explicated, and then be used to the maximum (SD-GM-08-02).

6. According to information from ZGLD:

Tacit knowledge can be divided into two dimensions. On the one hand, it can be seen from the technical side, which is included in the individual's informal skills. On the other hand, it is the cognitive dimension, which is pumped out and taken for granted. It consists of personal beliefs, ideals, values, and mental models. Tacit knowledge can be seen in three different ways. Firstly, common sense, such as things that everyone understands and takes for granted. Secondly, things that are hard to be comprehensively understood, and the last one, knowledge that is tacit *because even though some people can understand it, they do not know how to articulate it (ZGLD-GM-12-02).*

7. Information from company T states that:

Opposite to explicit knowledge, which is physical and can be written down and recorded, tacit knowledge can be recognised as highly internal, personal and context specific knowledge, which is deeply based on personal experiences, emotions, values and ideas. Tacit knowledge is knowledge that cannot be written down and recorded but it can be understood in several ways. In our enterprise, it is social skill, such as sales, which is difficult to teach. Great salespeople are commonly described as "naturals" because it's difficult to transfer the skill to others. Different people have different understanding about it. For instance, for managers, tacit knowledge is complex social skills such as leadership. We cannot guarantee an excellent leader by training or other process, it extends from experience. What is more, tacit knowledge is important because expertise rests on it, and because it is the source of competitive advantage, as well as being critical to daily management activities (T-M-09-02).

8. According to information from M Company:

Ten years ago, our industry existed in the form of handicrafts, which had some big problems. For example, it is different for handmade products to keep consistent quality and appearance. After that, it is also not easy to achieve the expectations of handicraft production. There are several reasons which result in these problems.

For example, each employee's individual ability and professional knowledge is different from others. What is more, they have different knowledge and tacit knowledge. However, this was two decades ago. In recent years, we firstly introduced the international advanced production technology and equipment. Secondly, we employed some excellent graduates who graduated from world famous universities. These changes provided great improvement to our enterprise, especially at the management level. In this premise, our enterprise thinks that the employees' personal abilities and qualities are not important, especially for the employees in the front-line of productivity. However, it is not true. For example, during the production, there are lots of common problems or small accidents, which need to be solved by manual handling, such as mechanical debugging and mechanical failure. In this process, there are always old employees, who had poor educational background, but who had enough experience that gave them good performance. In my opinion, experience is a very important existence of tacit knowledge. From some of the new staff, we can find that they may have good education, graduated from a very good university, or have fitter bodies, but they cannot make the right decision when they deal with some common situations because their tacit knowledge, experience, determination abilities, are not as good as the older employees. Tacit knowledge should be collected using enough time and experience, which cannot be easily gained in a short time (M-GM-13-03).

9. According to information from K Company:

From my point of view, tacit knowledge can be understood as each employee's characteristics, which cannot be copied. Some companies tried to copy our company's design, or apply our company's business model, but these were not effective. Our company is not very concerned with protecting other companies from imitations, but instead we focus on the items that we own. In our area, the use of tacit knowledge is mainly reflected in staff skills in sales and their abilities in satisfying customer needs, such as the abilities to understand and retain customers. For example, staff should use their tacit knowledge to have effective conversations with customers and get their points across during the communication. After that, it is also vital to use tacit knowledge to send the customers' needs to the technical workers correctly. What is more, after-sales service is also the area that requires staff tacit knowledge in communicating with customers and in problem solving. In our enterprise, the use of tacit knowledge can be defined as the staff's personal quality and their EQ (K-M-14-02).

- Strategies to share knowledge

1. According to information from B Company:

Lots of staff treat tacit knowledge as their personal value. They hold the view that it has a close connection with their position in the company. In this way, less of them want to share their knowledge with their colleagues, as they are in competitive relationships. They are afraid that exploration of their knowledge to other staff would affect the stability of their work position and their personal *profits. So, it is important for managers to find out effective strategies to help staff share their knowledge. Recently, the main methods were used in this company to help managers to manage the knowledge. Firstly, the company grading standard and evaluation system were changed from the customers are first, to the contribution is first. In order to enhance enough sharing of knowledge and information in the group, the contribution rate is the only standard in this company to evaluate the staff's value. What is more, a reward system has also worked in helping the employees to share their knowledge with each other (B-GM-01-06).*

2. Information from company H states that:

In this area, our company does not have good performance. At this stage, there are a lot of reward and penalty measures related to performance, but we do not focus on sharing. Because of our unique enterprise nature, it is in the engineering industry, which is focused on construction. Reducing communication and sharing, increasing production. During this standardised process, employees just need to meet the requirements. The company is developed according to the standard requirements, not innovation. To be specific, the construction drawings are fixed without changes. There is no need for innovation, but rather for quality (H-M-02-02).

3. According to information from J bank:

Using some ways to encourage the team to have more mutual communication, such as choosing one model to share experience. By concluding the ways to *achieve, tacit knowledge can be shared. Incentives and public competition are also good methods that really worked to improve staff willingness to have more conversations. To be specific, people who do not have the knowledge and ability cannot progress. What is more, using rewards can also help managers to manage the company better (J-GM-03-04).*

4. As the information from JY points out:

   It is a difficult process to find a person with the knowledge one needs and then successfully transfer it from that person to another. But we still use several methods to improve the conversation. For example, we regularly organise training for kindergarten teachers and impart new knowledge to them in this process. Some new teachers also had opportunities to go out to learn more, to come back to share with colleagues later. What is more, every week we have an intensive research session, which is about discussing teaching technologies, teaching problems and problem solving. During this period, everyone joins in and shares their tacit knowledge. The process of finding and solving problems is the perfect chance to share tacit knowledge (JY-GM-04-04).

5. Information from company P states that:

   On the one hand, we organise regular training every two weeks. On the other hand, working meetings are held weekly. The difficulties in problem solving during the working period would be discussed in these meetings. Employees can share *knowledge and experience, which can help them to enhance their abilities (P-M-06-04).*

6. As the information from PLCC points out:

Training. We provide a lot of forms of training for the employees in different positions. From 2008, the whole enterprise was transitioned and the importance of training was enhanced. Training is seen as the essential way to improve the development of the enterprise. In this company, the most vital part is selling. Some basic knowledge, such as product recommendation, products' advantages are important (PLCC-GM-07-03).

7. According to information from SD:

Communication. It is the best way for people to share their knowledge. The increasing interaction amongst members of the group, together with the enriched context described above, enables members to respond quickly to unusual and unpredictable requests. This is because a community of practice has been in the habit of posing (and exploring) novel questions. Thirdly, the existence of a community of practice means that there is a deeper and wider pool of expertise from which to draw. Through the active processes of the community, tacit knowledge is shared — thus ensuring that it is not 'locked up' in one individual (SD-GM-08-04).

8. Information from company T states that:

We recruited some experienced lecturers to do speeches to the employees. Good employees also did technical seminars, summarised their ways to success and shared successful experiences. What is more, our company's welfare is good. For instance, we use huge bonuses and travelling abroad to reward the employees at the end of the year (T-M-09-04).

9. According to information from Y Company:

   In the party branch, we regularly undertake training about party class knowledge and hire professional lecturers to do speeches about the history of the party. Other aspects of training, such as security training and knowledge training, are also held for staff to better improve their knowledge and build a good place for them to share knowledge. Staff in different positions and levels complete different training, which works for knowledge management. What is more, we also organise some activities, which encourage both old staff and new staff to join in together. By using a one-to-one model, the new staff can learn more effective knowledge about company development from old staff (Y-D-10-05).

10. According to information from Z Company:

    We organise some training, but not regularly. As you know, the products in our company are varied, the production of them are not linear, but customised for the user. In this way, it is useful to provide training about sales or after-sales to employees. What is more, we also have some meetings to share the core idea of product sales experience (Z-GM-11-02).

11. Information from ZGLD states that:

New members of the community are effectively 'given permission' to associate with the more experienced and more senior members in the company, which focuses on improving their practice and developing new tools and techniques. Consequently, community members know which knowledge can be sensibly codified and which knowledge should be shared using other means — such as simply listening to the stories of others, helping each other out on the job, or identifying a mentor to assist with a personal career (ZGLD-GM-12-04).

- The ways to manage employees' knowledge

2. According to information from Y company:

'Two-eight' strategy is used in our company. To be specific, 20 percent of staff in our company are the main managers, which are decision-makers, while 80 percent of employees are normal staff, who perform the tasks and have basic responsibilities. Normally, managers have more knowledge and can better understand the company situation and company needs. In this way, we use the step-by-step strategy, managers are managed by us, while most staff follow the managers, it can improve the management and make it become more effective (Y-D-10-04).

3. Information from company B states that:

Before new staff work in the company, they should do an ability test. It can also be seen as a tacit knowledge test. It tests their professional knowledge and gives a personal assessment. After simple analysis, the managers can determine appropriate jobs for them using their potential abilities. What is more, through the probation period, they will be in professional training, that is tailored and one-to-one. During this period, the company culture, image and values would be instilled in the new staff and achieved consistently. After the training, the second examination would make the final decision about whether the candidates are suitable for this firm (B-GM-01-05).

4. Information from ZGLD states that:

   A symposium for expansive training is a good way to spread the company culture, enhance enterprise cohesion and create a community. It can help staff to converse with each other, which can help to observe staffs' potential knowledge. What is more, organising dispatch meetings regularly in senior leadership is also an effective way to improve knowledge management. By exchanging the work experiences and problem-solving experiences, more useful information and knowledge both in tacit and explicit parts can be explored (ZGLD-GM-12-03).

5. According to information from PICC:

   In order to increase competitive advantage, there are several ways for enterprises to undertake tacit knowledge management. Firstly, you should focus only on key topics in one conversation or meeting, to act strategically. It is important to start *with a few communities to effectively leverage knowledge. Secondly, one group should build up a natural network, such as WhatsApp and WeChat. Since communities of practice arise naturally in most organisations, by utilising these chatting applications or networks, more conversations can take place. What is more, in order to support communities and the sharing of knowledge, the managers should give more time, encouragement, as well as capital to let staff reflect and share ideas with other groups. In this way, in the group party, extra community time should be available (PLCC-GM-07-02).*

6. According to information from LS:

   Creating a shared workspace for employees is an excellent way for eliciting and sharing knowledge. This workspace is not just the physical rooms, such as an office. It can also be virtual, such as a teleconference or email. A working space can provide a platform for advancing individual and collective knowledge. To managers, this means providing an environment, whether it is physical or virtual, that will lend itself to the creation and sharing of tacit knowledge. Knowledge is embedded from people's own experience or reflections on the experiences of others (LS-M-05-03)

7. Information from company K states that:

   In this information age, each company would do something in knowledge management, such as seminars, knowledge sharing sessions, and knowledge exchange clubs. In our company, we also use these methods to manage staff *knowledge and improve the efficiency of the company. However, we do not have a breakthrough from this convention. For example, our company is also opening a number of knowledge-sharing conferences and excellent staff experience sharing sessions. In these, excellent staff are required to share their skills, such as customer communication, how to retain customers, how to meet customers' demands, and so on. Through the sharing of excellent staff experiences, it can enhance the dissemination of knowledge (K-M-14-04).*

8. Information from company M states that:

In this part, the domestic market does not have good performance for a long time. China still has a great short fall in this area. Therefore, in the management of sharing tacit knowledge, we still use the traditional ways, which were learned from the old enterprises. For instance, incentive mechanisms, organising seminars, and learning abroad are some common methods to improve knowledge sharing. Furthermore, we also enhance the effectiveness of knowledge sharing by letting old employees teach new staff. When graduates are just recruited, we will connect them with a senior member of staff who will help them to become familiar with the company in the first three months. This process does not just include the learning of the production line and familiarise them with the operation of the machines, it is also the sharing of experience to some degree. On the other hand, we will also hire professional organisations, such as business development training companies, *to help employees have more conversations and to enhance their knowledge sharing (M-GM-13-05).*

- Ways to inspire employees to share knowledge

1. According to information from P company:

Regular company party, travelling, interactive games. These are all good channels that we use to improve communication (P-M-06-05).

2. Information from company T states that:

We organise hiking. This is a good activity to help employees to relax in their leisure time and also lets them have more communication without barriers (T-M-09-05).

3. According to information from Y company:

In the area of the company culture, we tried to maximise the satisfaction of the employees in both physical and spiritual aspects. Firstly, in the physical aspect, by providing high salaries, comprehensive social benefits, free travelling, and organising literary and artistic activities. It helps employees to get along well with each other and accept company culture quicker and more directly. On the other hand, the company built the party branch unions to develop the staff's level of spirituality and to manage their knowledge through conversation. In terms of trade unions, more game activities are held in leisure time, which helps staff to converse more with each other. It helps them to have more opportunities to share *their explicit knowledge and better inspire their tacit knowledge. What is more, the party branch in our company also motivated young staff to join the party, which helps them to improve themselves. During this period, it is the dual combination of material and spiritual culture for the company to better manage their staff (Y-D-10-02).*

4. From the interview in K company, it states that:

First, we need to know the needs of employees: money. Reward mechanisms work very well to promote knowledge sharing. Through the incentive mechanism, it can promote staff learning and sharing knowledge positively. In our company, we have a performance form in each quarter, or even every month, in the form of a percentage. To make a comparison between the two following months, we would give five percent of the performance commission to the staff who had improved performance. Under the implementation of this reward, we found that some employees spontaneously learned some experiences from older staff. The most intuitive expression is their enhancing monthly performance. In this process, employees tried to use effective ways to take some of the available and implemented sales skills from others. The incentive mechanism is more practical and more effective. Our company is currently using this method to promote knowledge sharing as the effect is significant (K-M-14-05).

5. According to information from M Company:

The methods must be changeable; a single form cannot have a good effect. The management of tacit knowledge must be all-round and three-dimensional. At the same time, one problem should be highlighted: employee psychological activity. What do they want? Employees seek jobs with good income, so incentive measures are available to promote faster and more effective forms of knowledge management (M-GM-13-06).

- Most vital part in knowledge management

1. According to information from B company:

   Sharing knowledge is the most important part in knowledge management, especially considering tacit knowledge. It is hard for people to share something from their minds. In the rapid development of the company, in order to not be replaced by modern equipment and new technical developments, staff should grow together with the firm and become integral to the organisation. Guiding the staff to study more professional knowledge and theories, tacit knowledge communication and sharing are the ways that provide professional and personal growth opportunities; it would enable individuals and organisations to develop (B-GM-01-07).

2. Information from company H states that:

   The mechanism of a reward and penalty system, which is linked to working performance (H-M-02-03).

3. As the information from PLCC points out:

Letting older employees help new employees is a good way to improve the sharing of knowledge, especially tacit knowledge, which cannot be gained from a book. New staff who graduated from universities have high education and professional knowledge and enough theories. However, they lack communication skills and working experience when solving problems. Older employees have more experience in this area and can help them improve quickly (PLCC-GM-07-05).

4. According to information from T company:

Giving staff full trust and enough care. For instance, talking to them frequently. By using supervision and mentor system, you would have a good relationship with staff; it can let you know more about their innermost feelings and tacit knowledge. In our sales department there are 15 employees. However, only two or three have good performance. Personal qualities, life experience, family background, their own capabilities, and affinity are all important in helping them have good performance in their work. Every employee's professional background is the same. The tacit knowledge allows them to be different to others (T-M-09-06).

5. As the information from JY points out:

Everyone has tacit knowledge, like potential power, the most important thing is how can we find it and use it effectively (JY-GM-04-06).

6. According to information from SD:

Tacit knowledge is hard to find, so I think the most important part is to keep looking for it. We do not have the perfect system to find it, so we can just perfect it during the search process. For instance, in our company, one technical person in the engineering department was found to be talented in drawing designs on one occasion. After investigation, we discovered that his major was art design when he was in his first degree, so we transferred him to the design department. It helped him to accelerate his development (SD-GM-08-05).

7. According to information from ZGLD:

   The findings of tacit knowledge can be gained in several ways, such as normal talking, meetings and training. However, the most important part in the management of tacit knowledge is how to effectively use it. The ways to transfer tacit knowledge into explicit knowledge, using tacit knowledge and realising the total value are a priority (ZGLD-GM-12-05).

8. As the information from bank J points out:

   Publicity, such as teaching (J-GM-03-05).

9. Information from company Z states that:

   Knowledge creation is the most important part for us. In our company, the president personally stresses technology. He knows a lot about the development of the industrial environment and pays a lot of attention to it. He invests a lot in innovation (Z-GM-11-04).

10. According to information from PLCC:

Letting older employees help new employees is a good way to improve the sharing of knowledge, especially tacit knowledge, which cannot be gotten from a book. New staff who graduated from universities have a better education, professional knowledge and enough theories. However, they lack communication skills and working experiences when solving problems. Older employees have more experience in this area and can help them to improve quickly (PLCC-GM-07-05).

11. Information from company M states that:

There are ways to help employees to share initiative automatically. To be specific, methods that help employees to express themselves and share tacit knowledge without an incentive mechanism. For example, in our company, some of the older employees may not have a high academic background. When they are faced with prestigious university graduates, they may have a certain sense of distance and lack self-confidence. It may result in cautiousness and negativity during the process of tacit knowledge sharing with new staff. The ways to let them overcome these obstacles, and help them become willing to share knowledge, are the most important part.

What is more, it is hard for employees to be aware of their own tacit knowledge. Making employees aware of this is also very important. In our company, we have a budget for staff to go out for dinner, we provide these funds to help them to *connect; by increasing communication, staff can finish knowledge sharing in a relaxed environment (M-GM-13-07).*

12. Information from company K states that:

Some people hold the view that getting people together is the most important part in knowledge management, to trigger the sharing of knowledge. For example, providing staff accommodation so that staff can live together. Being in the same space is a basic requirement of having a conversation. Enough time and space can help employees to have more effective communication, which can promote the sharing of knowledge. From my point of view, however, this opinion has a certain importance to some degree, but this point is more about having conversations. But in my opinion, the most important part in knowledge management is sharing knowledge. Sharing and cooperation have a basic difference. We need to use appropriate methods to help staff to share knowledge positively. Such as creating a relaxed work environment to reduce fierce competition. In our company, our reward can be divided into two parts, based on the team performance and on personal performance. In this way, employees do not need to compete in the competition process, they cooperate with each other and work towards getting benefits together. It allows older employees to be more willing to share their work experience with new employees, and similarly, new employees are more willing to share their own advanced knowledge (K-M-14-10).

- Competitive advantages in the using of tacit knowledge

1. According to information from B Company:

    I think so. Different people have different abilities in different areas. To be specific, faced with the same problem, different people understand and solve it in different ways. In order to achieve maximum efficiency, knowledge management can help employees to share their knowledge, which can help them to improve their own capabilities and gain complementary skills (B-GM-01-04).

2. Information from Company Y states that:

    As one kind of rare resource, tacit knowledge is vital. Firstly, professional knowledge and theories depend on it, secondly, it brings competitive advantages to individuals or an enterprise; it is critical to daily management activities. Tacit knowledge can be an attribute to both individuals and groups. By rational management of it, it is worked into enhancing the creation of tacit knowledge and in transferring knowledge to other individuals in an effective way. Tacit and explicit knowledge have an interplay effect in organisational learning (Y-D-10-06).

3. Information from bank J states that:

Definitely. Tacit knowledge is a particular challenge for knowledge management. Firms would like to prevent knowledge loss due to employee turnover. However, tacit knowledge almost always goes with the employee. Tacit knowledge is essential to competitive advantage because it's difficult for competitors to copy. It's the reason that some firms can pump out innovation after innovation, while other firms *struggle. A team without core talents is fragmented. What is more, tacit knowledge is an essential ability for core talents. In this way, tacit knowledge as well as the management of tacit knowledge are important in the development of a firm (J-GM-03-07).*

4. According to information from T company:

   Yes. A good knowledge management system can help an enterprise absorb more information and knowledge, which can help with problem solving, decision making, and innovation. In our sales department, there are 15 employees. However, only two or three have good performance. Personal qualities, life experience, family background, their own capabilities and affinity are all important in helping them to have performance well in their work. Every employee's professional background is the same. Tacit knowledge differentiates them for one another (T-M-09-03).

5. Information from Company K states that:

   By using tacit knowledge, such as communication skills and personal experience, staff in our enterprise bring high profitability. These benefits cannot be directly shown as data in a table, but rather, it plays a role in promoting company sales and ensuring the company's performance. Therefore, the strategic value of tacit knowledge on one hand is to help the company get a greater degree of profitability. On the other hand, tacit knowledge can improve the image of the brand to some degree. To be specific, through the staffs' good and effective communication with *customers, it ensures customers' satisfaction with the service, which can help customers to have a positive impression of the brand and improve the brand image (K-M-14-03).*

5.5 Conclusions

In the age of knowledge economy, knowledge has surpassed material assets and financial assets, and has become a vital source of enterprises' sustainable competitiveness. For knowledge-intensive enterprises with knowledge as a core asset, knowledge management is crucial. According to the knowledge characteristics of most knowledge-intensive enterprises, tacit knowledge management should be the focus of knowledge management. Based on the analysis of knowledge-intensive enterprises, this report puts forward some measures for tacit knowledge management, specifically for knowledge-intensive enterprises.

- Explicit knowledge and tacit knowledge

According to the attributes of knowledge, it can be divided into explicit knowledge and tacit knowledge. Tacit knowledge represents knowledge that is based on personal experience and involves all kinds of intangible factors. It exists in individual's minds or certain scenarios, which is difficult to capture systematically, and hard to describe and communicate. In other words, this kind of knowledge has exclusivity. Explicit knowledge refers to the knowledge that can be clearly expressed and communicated in formal language. Written records, numerical descriptions, technical documents, and reports are some common ways that people use to record it. It is the abstraction and generalisation of tacit knowledge, which is also known as coding knowledge.

The difference between these two is obvious. The exchange of tacit knowledge is direct and effective, but its transmission efficiency is very low. On the other hand, explicit knowledge cannot be achieved directly. It must be expressed and communicated linguistically, before being internalised into tacit knowledge (Dummett, 1991). While tacit knowledge cannot be captured in a verbal statement without reliance on context (Davies, 2015). The management of tacit knowledge focuses on conversations between individuals. Knowledge sharing is carried out "person to person"; knowledge is shared and disseminated through direct contact with the person who has corresponding knowledge. The management of explicit knowledge is carried out "person to document", knowledge is created and edited as knowledge, then widely spread and reused.

Although tacit and explicit knowledge are opposite and have several obvious differences, they can be transformed into each other. On the one hand, through books, television, networks, and other carriers of learning, explicit knowledge can be converted into tacit knowledge. On the other hand, tacit knowledge can be transformed into explicit knowledge through analysis, collation, and systematic treatment. This is the process of knowledge innovation. During this process, an explicit knowledge base can be expanded upon. It is possible to have a spiralling process that transforms between explicit and tacit knowledge, building on them and creating new knowledge as it grows.

- Tacit Knowledge Management in knowledge-intensive enterprises

Within knowledge-intensive enterprises, the biggest feature of knowledge is that the proportion of tacit knowledge is much bigger than in traditional resource-based enterprises. With the high rapid development of the technical and marketing environments, the cycle of knowledge creation, collection, utilisation and innovation is shrunk. In knowledge-intensive enterprises, the workers are the source of knowledge creation. Staff in this kind of enterprise have a strong sense of personal-knowledge protection and personal accomplishment. Tacit knowledge management in these enterprises is much more difficult than in traditional resource-based enterprises.

- Particularity of knowledge-intensive enterprise

Due to the characteristics of knowledge-intensive industry, products from these kinds of enterprises generally are usually not standardised, mass produced or highly dependent on machines. For example, in the architectural design industry, based on the customers' individual requirements, the designer should come up with the targeted design. There is no standardisation of operations and products. By using their skills and professional knowledge, designers need to integrate customers' requirements, geological environment, budget, and other factors to finish their design. Part of the knowledge and skill used by the designer is common knowledge, which is present amongst all designers. Most of the knowledge, however, is tacit knowledge, such as personal experience, inspiration, unique interpersonal skills, and work skills. This helps customers to have highly specialised services and products.

- The characteristics of relationships between knowledge-intensive enterprises and customers

Typically, in knowledge-intensive enterprises, not only vital products and services are dependent on the individual who owns the knowledge, the whole customer relationship is also dependent on the individual. To be specific, when an important employee leaves the enterprise, the corresponding customers can also be taken away. On the one hand, this is a customer relationship problem. On the other hand, it is the customer's dependence on specific knowledge. Therefore, it can be concluded that the essence of customer relationships is customer's dependence on knowledge. The relationship between the enterprise and the customer devolves into the relationship between the employee and the customer, because of the monopoly of knowledge and the inseparability of the individual. This relationship indirectly indicates that knowledge-intensive enterprises are completely knowledge-driven.

- Tacit knowledge management strategies

The aim of knowledge management in knowledge-intensive enterprises is to achieve the business aims and goals through mining and transforming tacit knowledge. The core of tacit knowledge management consists of methods of system design, rewards systems, cultural construction, and so on. By overcoming some obstacles, tacit knowledge sharing can be achieved within the enterprise. This process can be attributed to the establishment of an enterprise knowledge culture, and the construction of a tacit knowledge development model.

- Creation of knowledge and culture

The knowledge monopoly amongst employees, mutual distrust, and egotism are not conducive to the exchange and sharing of tacit knowledge. In order to create a positive atmosphere and culture, where everyone is willing to share tacit knowledge with others, enterprises should focus on the status of their knowledge management, strive to create core knowledge, and a culture which focuses on knowledge "sharing".

The interviews show that the bottom of the pyramid is "do not know", which means that employees lack full understanding of tacit knowledge and knowledge sharing. To be specific, most staff in knowledge-intensive enterprises have no idea about how to manage knowledge. It requires clear consensus and communication to establish aims for the staff, which can inspire staff to become willing to share knowledge. “Cannot do” is the second problem that prevents staff from knowledge sharing. As each staff member relies on their individual knowledge to achieve better performance in knowledge-intensive enterprises, knowledge is their most important individual asset that they cannot share with others easily. In order to solve this problem, teams should be strengthening the organisation. In particular, the management systems need to set up a strong driving force for teamwork. More training is allowed to help employees change their attitude and acquire the necessary skills to ensure organisational change. On the top of the pyramid, some staff, especially vital staff, show an attitude of unwillingness to exchange tacit knowledge. Change necessitates accepting new advanced ideas and abandoning some old habits, patterns, or methods, within the bounds of a standardised management system. In this way, human resources should be accompanied by supporting follow-up measures, and effective methods to encourage employees to actively participate in knowledge management activities should be developed.

- Construction of tacit knowledge development model

Tacit knowledge can only be used when it is explicit or delivered. Several strategies are shown in the following aspects, which are suitable for knowledge-intensive enterprises.

Creating a knowledge community. By using the advantages and characteristics of a community network: interactive mechanisms, a knowledge discussion space can be established, such as discussion forums, columns, message boards, chat rooms, bulletin boards, and so on. Knowledge communities allow internal staff to select specific areas of expertise and to interact with other professionals in the same area to achieve the full sharing of knowledge. There are three major parts to building effective and live knowledge communities. Firstly, letting more people join in. Secondly, encouraging people to have conversations and share knowledge. Finally, tapping into valuable knowledge.

Whilst holding on to the professional meeting of knowledge sharing in the professional areas, employees can communicate about specific projects or professional issues. Through knowledge sharing and professional exchange, special technical or business problems can be solved. Staff can get help from colleagues from other groups, which promotes a culture of mutual learning. It also establishes a strong network of contact between employees. Inter-professional exchange: A special seminar for employees with special knowledge structure needs. What is more, cross-disciplinary meetings, which focus on knowledge sharing in different areas, is also a method for knowledge-intensive enterprise to share knowledge. Exchanging, sharing and learning knowledge from different areas is conducive to staff career progression and personal development.

- Promoting the excellent work methods to others

Even if knowledge-intensive enterprises have non-standardised and difficult to reuse characteristics, it does not mean that all its business processes need to be original or cannot be learned. In fact, a highly effective method can be seen as the standard and can be used for most projects.

Overall, tacit knowledge is the core of knowledge-intensive enterprises. In large-scale development, effective management of tacit knowledge and reuse of knowledge to the maximum extent are core to knowledge-intensive enterprises. Knowledge-intensive enterprises must profoundly analyse the characteristics and structure of their knowledge, and systematically sort, utilise, and innovate the existing tacit knowledge, under the prerequisite of creating a corporate culture suitable for knowledge sharing.

Chapter 6 Overview of Coding Procedure

6.1 Introduction

In this chapter, the data analysis procedure for grounded theory is outlined in detail, as is the process of coding data. Firstly, the overview of the coding process is presented, then the first conclusions resulting from the open coding stage are introduced. Text data was not only extracted from the interview transcripts, but it was also examined and sorted into categories. Codes and concepts were labelled based on incidents occurring in the data.

The acquired codes emerged in this paragraph. The initial categories have been developed from both the organising and grouping of data. These categories are tacit knowledge sharing; transferring; competitive advantage of knowledge management; key factors of knowledge management; barriers to tacit knowledge sharing; knowledge is power; and more knowledge than we can say. Moreover, this chapter explains the second level of coding and presents the categories that emerged from the axial coding stage. According to the different platforms for open coding stage and team suggestions, the data is combined into three main categories: communication meaning; the impact of knowledge management on OP; and the limitation of tacit knowledge management field. Additionally, detailed information on data coding will be discussed during this chapter, divided into several concepts.

According to the statement presented by Strauss and Corbin in 1998, during the coding selection stage, data collected from interviews can be described as the fundamental basis for the relationship, which has helped to link categories to each other. One uses the integration process to link main categories to the core category and the refinement process to better develop poorly saturated categories and to remove any excess from other categories. The selective coding process will end when theoretical saturation is reached. The core category was selected and other categories and concepts that emerged from the data will provide context around the core category.

Data analysis procedures

There are a number of resources that helped the researcher in analysing data and codes during the early stages of the research process, such as memos, file notes and organisational documents obtained from face-to-face interviews. The researcher analysed data based on a variety of organised data collected from different organisations and sources. Furthermore, resources do not only facilitate the researcher to analyse data better, but also help to generate new ideas.

6.2 Coding procedures

Many authors define the term coding in different ways. Birks and Mills (2011, p.93) define it as follows: “Codes are a form of shorthand that researchers repeatedly use to identify conceptual reoccurrences and similarities in the patterns of informants’ ‘experiences”. Charmaz (2006, p.43) defines coding as “the process of coding means naming segments of data with a label that simultaneously categorises, summarises, and accounts for each piece of data". Birks and Mills (2011) state that the coding process of grounded theory is not a linear process but is rather a retrieval process. This means that even the researcher in the advanced stages of developing the theory will need to go back to the initial stage of coding in order to ensure that his theory remains grounded. Corbin and Strauss (2008, p.159) define concepts as "Words that stand for ideas contained in data. Concepts are interpretations, the products of analysis". Birks and Mills (2011, p.173) define concept as "an idea or notion that encapsulates a descriptive explanation of a phenomenon or characteristic of a phenomenon". Moreover, concepts are not only derived from data, but they also represent the researcher's impression of the interviews and understanding of the expression of informants' experiences, problems, actions, interactions, and spoken words. Also, concepts help the researcher to group and organise his data (Corbin and Strauss, 2008).

6.3 The first level of coding: open coding

There are two resources suggested by Corbin and Strauss (2008) as main sources, which come from deriving names for the following categories: utilising terms emerging from the collected data or from existing theory and literature. Corbin and Strauss are against names derived from existing theory and literature in a grounded theory approach because this could confuse the reader when interpreting these names and codes according to their prior understanding of such theoretical concepts, rather than the particular meaning being placed on such terms in the new research.

Categorisation is derived from the data that could have significant indicated issues, to help researchers consider where they should pay attention in future data collection. This will not only help the researcher to develop a sharper focus in relation to his research questions, but it will also help him to refine and limit the scope of his research questions. In this study, the researcher began with an examination of each data fragment, and he made an initial effort to sort the data collected from the interviews through the process of categorising and labelling.

After transcribing the interviews, the researcher must understand the transcripts by reading each line many times. Open coding includes the in depth reading and even repeated reading of the interview transcripts before writing notes. It is very important to review all the data collected and not to overlook any information or collected data. The idea of using open coding was to establish as many codes as possible. Then, the researcher disaggregated data into units and provided them with an agreement, having similar units of data at the same name.

Birks and Mills (2011) state that memos are a record of thoughts, feelings, insights, and ideas in relation to a research project. Moreover, Corbin and Strauss define memos as a *"written record of analysis".* Additionally, Corbin and Strauss also present that memos are the running logs of analytical thinking, and are like a storehouse, which generates ideas based on interaction with the data (Corbin and Strauss, 2008, p117).

Charmaz (2006, p.72) states that “memo-writing is the pivotal intermediate step between data collection and writing drafts of papers”. Charmaz has also stated that memos are very crucial during the development of grounded theory, since they can both help and engage the researcher in analysing the collected data, as well as code early on during the research process stage. Memos have not only helped the researcher to think about the data, in addition, they have helped to discover his ideas, analyse and compare the differences between data and codes, codes of data and other codes, codes and categories, and categories and concepts to assist in illustrating the researcher’s conjectures of those comparisons.

The categories have been divided and developed based on the open coding process, and then the data has been reviewed, compared, as well as categorised. Due to the approaching saturation point, no further reading or understanding has been necessary, because few new codes have been discovered. This process of refining the codes and constantly comparing the concepts and coded data with new data continued until all the transcripts were coded. Open coding continued until all categories were saturated. Therefore, there was no need to conduct more interviews as gathering more data would not have revealed any new unidentified codes and categories began to emerge as a result of grouping similar concepts together.

6.4 Initial categories

The researcher analysed qualitative data and information collected during the interviewing period according to the ground theory approach. In the analysis stage, it could be considered as open coding the data, as mentioned in the previous section. The next important step was to thoroughly learn about each different kind of organisation, which helped to determine similarities and differences between the candidate's organisations. The interactive learning process has come from the data and is considered a vital stage of the analysis process, because it has been helpful for the researcher when collecting data and researching new data as well as information. The initial findings have been combined based on organising different levels of data as categories, and concepts. Moreover, it also helped the researcher to reduce the numbers by combining similar concepts into similar categories. The concepts are developed from initial data. In addition, the aims of this stage can be defined as: to establish a broad range of concepts in order to help the researcher to thoroughly understand the subject in detail, before organising or combining it. After that, the next stage will be to link codes to one another, which will be helpful for the researcher to refine them into role categories. So, the five initial categories that have been generated and developed are (i) impact of knowledge management; (ii) barriers to tacit knowledge; (iii) means of communication; (iv) strategies of tacit knowledge management; and (v) knowledge is power. In the first category, impact of knowledge management, there are many data and information that have clearly shown the impact of knowledge management; how it has helped the organisation to improve its processes, effectiveness, productivity, and efficiency. Knowledge management can both help organisations to reduce costs and improve productivity. Additionally, knowledge management has also helped to meet client demands, and identified new markets that increases market share, and becomes more efficient and effective for organisations. Furthermore, data has indicated that tacit knowledge management is helping the organisation to gain greater competitive advantage. The data also supports the idea that tacit knowledge has provided a positive impact for the organisation as well as its employees. Knowledge management has also always facilitated tacit knowledge sharing, as well as transferring. Such as the information from M company:

> *"Because of the correct management of tacit knowledge, our company has introduced a number of production lines. Experienced staff with tacit knowledge are our enterprise's core competitiveness. To be specific, the company management believe that the most important thing is businesspeople. The manager, the associated constants, the technical workers with enough tacit knowledge are vital. For example, some companies have strong economic power and productivity, they also own the support of the locals, but their final performance in sales is not excellent. The reason for their failure is that they do not have the core competitiveness of enterprises. There are no employees with good experience. The*

most important thing in company operation is the staff and the staff's knowledge management." (M-GM-13-04)

Many informants stated that tacit knowledge is both private and important. Information from bank J states that:

"A lot, especially in state-owned enterprises. The enterprises operated from the will of the boss, they don't like privacy, national policies and systems." (J-GM-03-06).

There is some evidence that the employees prefer to follow the chairman's ideas and authority, so that is a slight barrier of innovation and creation within organisations in China. However, because people have followed organisational rules or culture, it will reduce some limitations of created tacit knowledge transfer. According to information from Z Company:

"In China, employees are always very passive; they are all pushed by the senior managers. In our company, this situation is also common. Employees' innovation consciousness is not strong, people all follow the chairman's ideas." (Z-GM-11-05).

As the information from company H points out:

"Because of the single production line, little knowledge can be shared." (H-M-02-04).

Before establishing a knowledge culture for encouraging employees to share and transfer their knowledge is considered one of the main objectives of implementing tacit knowledge, organisations need to assist employees to learn about tacit knowledge comprehensively and deeply. It could be seen as the most important factor for impacting whether the employee wants to share their tacit knowledge with other people. The following information is according to information from T Company:

> *"Property and employees' abilities are the biggest bottleneck in KM." (T-M-09-07).*

As the information from company M points out:

> *"How to help staff recognise their tacit knowledge and how to push them to share their useful tacit knowledge are two ways of disseminating knowledge management. However, in the process of high-intensity development, production is much more important, and we do not have much energy to focus on knowledge management and tacit knowledge sharing." (M-GM-13-08)*

From the above, there is evidence that the company does not focus a lot of attention on knowledge management. Thereby further affecting employees' understanding of tacit knowledge and hindering the possibility of knowledge sharing amongst employees.

There is some support for facilitating and encouraging employees to share tacit knowledge in the form of government support; establishing a better environment for pushing people to give support by transferring any created tacit knowledge with teamwork in the same organisation. As the innovation space of information from B company states:

"Obviously. Real estate is closely related to our daily lives. Recently, the government supported sustainable and green environmental protection. In this way, building materials should change to some sustainable or friendly-environmental materials. The improvement of the building materials can help citizens to have a better living environment - it is also a breakthrough in this area. So, it is possible to say that the development space is still very large." (B-GM-01-08).

During the opening code step, the researcher has produced several concepts that are helpful for developing initial categories, and then comparing the initial categories to each other again across the interviewee's organisation. Without implementation of tacit knowledge management, some organisations have developed and found another strategy to enhance their competitive advantage and to achieve more market share occupancy. However, tacit knowledge management will make organisations that achieve the objective more efficient when it is implemented. The following information from company H points out:

"In my company, compared to the innovation in engineering, we are more concerned with the innovation of methods of management." (H-M-02-05).

According to the information from company K, it points out:

"Mahogany furniture is a very old handicraft. When you make a comparison between customers' requirements about mahogany furniture's appearance with some furniture in Shanghai Museum, it is clear that there is no significant

difference between these two. It can be concluded that the innovation in the furniture industry is not about its design. In our company, we focus on the innovation in technology skills and brand image promotion. On the one hand, we do lots of big events, such as exhibitions in different cities and help social charities to improve our brand image. We also try to be innovative by cooperating with other luxury brands, to enhance our brand's competitive advantage. This is one area where we focused on innovation to enhance the brand image and help our brand to build a better reputation. On the other hand, we learned from international advanced technologies and improved our production skills. Better quality can help customers create more brand loyalty and come back as soon as possible." (K-M-14-07).

Knowledge is power category has been integrated into the "barriers of tacit knowledge management" category. Almost all people know the saying that knowledge is power, so that is the major reason for influencing the willingness of people to share or transfer tacit knowledge. Tacit knowledge has been treated as a main competitive advantage for them over their peers, after they recognised their capacity for tacit knowledge.

6.5 Constant comparative analysis

In this chapter, the theory of constant comparative analysis, developed by Glaser (1967), for developing a theory around main variables using systematic processes is discussed. Birks and Mills (2011) state that the initial generation of codes are produced based on the constant comparison of incidents in the data. Furthermore, the researcher has organised the codes into similar categories, which has compared with other categories. The constant comparison of data has been derived theoretically or by insisting on collecting data. Constant comparisons of data have been described as “the analytic process of comparing different pieces of data for both of similar and difference” (Corbin and Strauss 2008, p.65). Moreover, there is another definition of it as “an umbrella term for recurring actions, characteristics, experiences, phrases, explanations, and images are analysed in order to underlying concept that can be coded” (Birks and Mills 2011, p.174).

During the open coding step, the research has produced hundreds of concepts that can be helpful to the researcher for developing the initial categories, and then the researcher has compared and extracted the similar initial categories to each other again through the involved organisations. So that the number of categories has been reduced to five, and the combination in the open coding step has been decreased to 39. Some categories were integrated and accompanied by other categories because they have the same conceptual label. A good example of that is the ‘knowledge is power category’ which was integrated into the ‘barriers to KM’ category. People know that knowledge is power, and many people do not want to share what they know, as they think this helps them to keep a competitive advantage over their peers. So, this category is considered one of the main barriers to knowledge and implementing knowledge management in an organisation. On the other hand, some codes were moved from their former categories to others, and some categories were removed altogether.

6.6 The second level of coding: axial coding

The second level of coding is also given different names by different authors, as shown in Table 6.1. The distinction between open coding and axial coding is artificial and for explanatory reasons only. It means that the idea of breaking data apart is to identify concepts to represent the data, then to group it again by relating those concepts to each other. In addition, Birks and Mills (2011) state that this level of coding is about grouping codes, which leads to the formation of categories as the researcher commences to identify explanatory and conceptual patterns in his analysis.

Reference	**Definition**
Glaser (1978)	This stage is selective coding and focuses on generating codes around an identified core variable.
Corbin and Strauss (2008)	Named as axial coding, and defined as "crosscutting or relating concepts/categories to each other".
Charmaz (2006)	Terms it as 'focused coding' and she defines it as: "Focused coding means using the most significant and/or frequent earlier codes to sift through large amounts of data. Focused coding requires decisions

	about which initial codes make the most analytical sense to categorise your data incisively and completely.”
Corbin and Strauss (2008)	Axial coding aims to group ideas into fewer categories than initially existed in open coding and present them in a more abstract framework. Axial coding focuses on disaggregating categories into subcategories and reassembling the data that have been fractured during initial coding in order to give coherence to the emerging analysis.
Creswell (1998)	The aims of axial coding are to sort, combine, and organise chunk amounts of data and reassemble them in new ways after open coding.
Saunders et al. (2009)	“This stage refers to the process of looking for the relationships between the categories of data that have emerged from open coding. It indicates a process of theoretical development. As relationships between categories are recognised, they are rearranged into a hierarchical form, with the emergence of subcategories.”

Table 6.1 Various definitions of knowledge

The purpose of this coding is to explore and explain a phenomenon, such as the subject of the research project or one of its parts, by understanding what is going on in the data; what the reasons are behind it; how it is being managed within the context being examined; and what the outcomes are of the action that has been taken. At the end of the day, the purpose of analysis is to attempt to explain the relationship between these aspects, or categories. After the researcher identifies these relationships, he will search for validation by comparing them against actual data collected.

6.6.1 Findings from axial coding

The researcher focused the axial coding analysis by relating categories to subcategories that emerged from the 24 participant interviews through constant comparative analysis. Then, data that had been fractured during open coding were grouped in order to give coherence to the emerging analysis. In other words, axial coding not only combines data differently from the open coding process, but also groups ideas into fewer categories than initially emerged in open coding. As a result of the constant comparative analysis of open coding, four categories emerged:

- ➢ Barriers to KM
- ➢ Organisational learning
- ➢ Means of Communication
- ➢ Impacts of KM on OP

The first category formed was ‘barriers to knowledge management’. All codes relating to challenges and barriers were gathered in this category. All informants strongly emphasised that the most common challenge of knowledge management is managing tacit knowledge so that people are willing to share and use it, because many people do not want to share what they know, as they think this helps them keep a competitive advantage over their peers. In addition, the participating interviewees stated that increasing spending on IT will not necessarily lead to increased sharing and use of knowledge, because this also depends on the willingness of individuals to share and use tacit knowledge. Nine codes are grouped together to form this category: (i) knowledge is power; (ii) the unwillingness of employees to share knowledge; (iii) employee culture; (iv) lack of trust; (v) resistance to change; (vi) time consuming and costly; (vii) lack of money; (viii) poor verbal and written communication; and (ix) some types of knowledge are difficult to document.

The second main category is ‘OL’. Many interviewees argued that focusing on processes and technology while ignoring the employees’ development could lead to the failure of knowledge management implementation. Also, many interviewees emphasised that employees must be qualified through training and coaching to ensure the success of implementing knowledge management. Moreover, they stated that people must be open to knowledge management and they should have the desire to develop and promote themselves through self-learning or e-learning. Six codes relate to this subject: training courses (teaching); On-the-Job training - OJT (learning by doing); e-learning (self-learning); investment in R&D; knowledge worker recruitment; and SOP (standard operation procedure). The third category is ‘means of communication'. Several participants argued that having a good communication system is a vital factor for knowledge management success. There must be direct communication and contact in order to find common solutions to problems. Examples of the communication practices are newsletters, websites, meetings, presentations, e-mail, and magazines. Also, all participating interviewees noted that a good communication system can ensure that a message will be passed to the right person.

The fourth and fifth category is 'impact of knowledge management on OP'. Many interviewees emphasised that knowledge management helped their organisations to improve their processes, effectiveness, and efficiency. Moreover, knowledge management helped their organisations to reduce costs, increase speed, meet customer needs, improve return on investment (ROI), increase profits, identify new markets, improve market share, improve efficiency, and be more effective. Also, many interviewees explained that knowledge management helped their organisation to solve recurring issues and problems instead of 'reinventing the wheel', or, starting from the beginning. In addition, knowledge management has a positive influence on the employees themselves, by encouraging them to work harder because there are a lot of learning and development opportunities.

6.7 The third level of coding: Selective coding

The third level of coding is the final coding step and, as with the previous levels, it is given different names according to the author. It is named 'theoretical coding' by Glaser (1978) and Charmaz (2006).

Birks and Mills (2011) name this stage of coding 'advanced coding', and they define it as "techniques used to facilitate integration of the final grounded theory". Saunders et al. (2009) define selective coding as "the process of integrating categories to produce theory in grounded theory". Moreover, Strauss and Corbin (1998) state that the researcher in the selective coding stage uses the data collected from interviews as the fundamental basis for the relationships and stories which help the researcher to link categories to each other. Also, the researcher undertakes integration and refinement of the developed theory in this stage. The researcher uses the integration processes to link main categories to the core category; he or she uses the refinement process to better develop poorly saturated categories and remove any excess from other categories. The selective coding process will end when theoretical saturation is reached.

Several definitions of theory exist, such as Birks and Mills' (2011) description of it: "an explanatory scheme comprising a set of concepts related to each other through logical patterns of connectivity". Wilson (2010) defines theory as "a set of principles on which an activity is based". Another definition of theory by Saunders et al. (2009) describes it as a "formulation regarding the cause and effect relationships between two or more variables, which may or may not have been tested". Corbin and Strauss (2008) argue that the researcher needs to refine the theory after outlining the overarching theoretical scheme by reviewing the scheme for internal consistency and gaps in logic, filling in poorly developed categories, and trimming excess, validating the scheme. Birks and Mills (2011) state that "theoretical saturation occurs when no new codes are identified pertaining to a particular category. Categories are clearly articulated with sharply defined and dimensional properties".

Moreover, theoretical saturation is reached when the compilation of the data has ceased. That not only means there is no new data to be yielded from the interviews, but also all categories are saturated, well-developed, easy to understand, and the relationships between categories have been confirmed (Corbin and Strauss, 2008).

6.8 Conclusions

This chapter presents and concludes an overview of the coding procedure, including an overview of the coding for data from interviews, with the information selected for this research. A detailed explanation of the coding procedure is also presented in this chapter. The coding process turns raw data from all the informant interviews into theoretical concepts and categories, which emerge from the interviews. Most authors agree on the division of the phases of coding into three levels, while most authors differ in the naming of these levels. The levels will be referred to in this research as open, axial and selective coding. The first step of the grounded theory approach is open coding. In this process, the researcher derived text data from the interview transcripts and examined and sorted it into unique categories or combined it with similar categories. According to the concepts that arose out of the data, Charmaz (2006) names them as codes and concepts. Researchers capture coding by using language from the data wherever possible, assisted by using word processing software. Axial coding combines data between the open coding, and groups ideas in order to divide data into different categories from those initially combined in open coding. There are five combined categories after comparative analysis has concluded, they are as follows: limited barriers of knowledge management; communication meaning, organisational learning; implementation of knowledge management; and knowledge management's impact for OP. Subsequently, the next level of coding is selective coding.

The selective coding process ends when theoretical saturation is reached. Saunders et al. (2009) define selective coding as "the process of integrating categories to produce theory in grounded theory". The coding level has always focused on integrating categories for producing theory by combining categories with each other as well as linking main categories into the key category. Moreover, the willingness of employees could be considered as the final core category selection, which will be explained as well as discussed in detail in the next chapter.

Chapter 7 Data Analysis

7.1 Introduction

This chapter covers the research results and the specific nodes in the study. After two rounds of data collection, and two rounds of data analysis, the results of this chapter were obtained. Data collection and data analysis are based on grounded theory. The data in this chapter is based on interviews with organisations in 15 different fields, including but not limited to manufacturing services, finance, and education industries. This research attempts to extract from these data to summarise the theory on how to effectively manage knowledge in organisations.

Through the process of open coding, axial coding focuses on the categories which are representative. For this study, through open coding and axial coding, five categories emerged:

1.Core value management

2. Advantages and bottlenecks in tacit knowledge management

3. Methods and steps in tacit knowledge management

4. Key points of tacit knowledge management

5. Further plans about tacit knowledge management

7.2 Core value management

After interviews, most of the respondents believe that the core value of the company plays a very important role in the development of the enterprise. These organisations also believe that the core value of the enterprise is very suitable for the first step in tacit knowledge management. After the interviews, it was found that new employees entering these organisations will be prioritised to inculcate the core values of the company. The management believe that this can increase the adhesion between employees and enterprises, increase the cohesiveness between employees, and improve the operational efficiency of enterprises. This category can be sub-divided into three concepts:

1. Definition of core values

2. Relationship between core value and remuneration of the employees

3. Management instil core values at the bottom of the enterprise

7.2.1 Definition of core values

The definition of core values of an enterprise is divided into many types. The definition of core value of its own enterprise is different amongst the many enterprises surveyed, but the frequency of two core values is higher than others. One is based on customers, the other focuses on the company and the employees themselves. These are the two opposing answers.

MC: Our management institution is not an independent enterprise; it is a branch. The core value is derived from the head office. Our branch has autonomy in management, but it cannot act outside of the head office. The maximisation of customer value is the core value of head office.

HC: Our company has been established for a long time. During the process of its growth, our company provides some contribution to the local tax, and solves the local population employment problem to some extent. When it comes back to the company core values, they are to be integrity-based and to have innovation responsibility. Our enterprise works for benefiting the locals and employees. During this process, we treat each employee in our enterprise as a family member. What is more, innovation is also a vital point in the core value of the enterprise. At this stage, even though our firm has not yet completed the listing, we have changed from a local company to a national firm. Our company is already ranked first, and is leading in this area.

In addition, many companies have given more specific answers to what their core values are, such as technology, service, and the implementation of management decisions.

LS: Our enterprise's business is mainly in furniture. In the development of our firm, we mainly focused on two points. One is the choice of furniture's raw materials. Another one is the process of furniture manufacturing. Therefore, the core values of our company are to be pragmatic and to practise refinement. First, *during the process of using raw materials, the behaviour of stealing and exchanging the material cannot exist. Recently, in order to increase higher benefits and profits, some companies deceived the consumer by using the cheaper raw materials or even fake materials. Such a malicious deceptive consumer practice in our company is prevented as a priority. The assurance of quality comes first. What is more, the skill of furniture manufacturing is the other key point in the enterprise's core value. Recently, because of the valid international development, customers all have a broader view, therefore their demands for furniture technology, such as sculptures, is relatively high. For example, good mahogany furniture requires a brushing of gold paint. Due to the quality of raw materials, our enterprise guarantees higher skills during the production period.*

BC: This firm mainly provides corresponding product support, especially related to water pumps, petroleum and petrochemicals, power chemicals, and other industries. The enterprise's core value is mainly manifested in providing convenience for national development and promoting people's basic living standard. In this company, we should provide a great work environment and treat each other with respect and dignity. Profitability is integral to future development. By having effective communication, the company can provide a higher quality service to the public.

7.2.2 Relationship between core values and remuneration of the employees

Through interviews with non-management employees, it was found that the employee's satisfaction with their income is related to the employee's acceptance of the core value of the company. Many employees will mention their income status when facing this problem. Most of them mentioned that they will become more accepting of the core value of the company after they receive a raise in their salary. Later, when interviewing management, they expressed that they knew this phenomenon and will make some changes in this area to make employees more willing to accept the core values of the company.

> *PC: The core value of our corporate promotion is to give employees a sense of belonging. From my personal point of view, I believe that higher compensation can make me more willing to recognise the core value of our company, and make me more willing to integrate into this collective. To be honest, I am not satisfied with my current remuneration. As a post-job employee, I don't have enough security to believe in the core values of our business.*

In the face of such problems, management gives the answer.

> *JY: I admit that there is such a situation, we are also working hard to improve the treatment of employees. But I must honestly say that the welfare of employees can not completely improve the mentality of the employees. I think management should do more in various aspects. It is not enough to encourage employees to join this*

group, not just to please employees in terms of salary. We should give more care to employees' personal lives.

7.2.3 Management instil core values at the bottom of the enterprise

After the interviews, it was found that the core values of all the companies surveyed were proposed by the management. Good core values are only the beginning. How to instil the core values of the company from management to each employee is a difficult point in the core value management of the enterprise.

From top to bottom, going through the conference is a major way, but it is not efficient.

Zhang: The way is basically the company strategy externally, a level of training. Interior has team training.

Li: In a few ways, first, a meeting for mobilisation. This is our Chinese characteristic and the perception through projects.

About instilling core values at the bottom of the enterprise, the composite mode will be better.

Su: Two ways. Because the core value of the company is generally reflected in two aspects, one is the product side, one is the sales side, the two ends are where the greatest value and core benefits are created for the company. All the products and sales services are all around the customer, and any decision of the management will be clearly reflected in the final sales. Because the same sales team may sell *different products, but the capacity and customer acceptance are completely inconsistent. So, from the management point of view, sales and final KPI data will be significantly different. If you want to consider how to overcome this problem, it is very simple; the management of the company and lower sales staff should communicate with clients, then they need to fully communicate, understand, and design their investment direction and management mode according to the customer needs. Only in this way can the core valued be implemented from the upper level to the lower level.*

7.3 Advantages and bottlenecks in tacit knowledge management

In the interviews, most companies admitted that tacit knowledge management is helpful for enterprise optimisation, but there are also problems in the implementation. The advantage is that tacit knowledge management makes the enterprise more efficient and increases employee potential to be effectively developed. However, there are also disadvantages about tacit knowledge management, in that it can encounter bottlenecks, human and financial consumption, and the drawbacks of the tacit knowledge management effect is not obvious. Those are three concepts as follows:

1. Beneficial aspects of tacit knowledge management

2. Negative aspects of tacit knowledge management

3. Bottlenecks of tacit knowledge management

7.3.1 Benefits of knowledge management

Management and staff fully understand the benefits of tacit knowledge management in helping employees to improve their initiative in tacit knowledge management and eliminate the sense of uneasiness. After summation, the benefits of tacit knowledge management are as follows: enhance cohesion; improve team efficiency; improve their capacity; quickly integrate into the team.

> *Cai: It helps to strengthen the cohesion of the team, including giving direction for one's own efforts.*

In addition to improving cohesiveness, it is also beneficial to integrate new employees into the team quickly.

> *Su: The advantage is that the transfer rate of knowledge is relatively fast, which is very significant for the improvement of employees, especially newcomers.*

> *Ye: Performance will be improved, and a more loyal team will be developed. Also, the benefits of TKM can be seen in the performance of an employee.*

> *Zhang: The benefit is because everyone has different sales skills, and everyone can learn from each other. Maybe I learned something I did not realise during his sharing of experiences. Then in fact, this thing cannot be said to be completely copied, but everyone's operating practices, and everyone’s skills are different, there are many worthwhile benefits of learning.*

Li: First, all kinds of people in this company; we don't all know about energy and chemicals. But now that everyone has come to this company, it must be that some experts who understand chemicals teach the employees that don't, to allow them to enter this field.

Wan: In this mode, new recruits can quickly develop. Unlike other design institutes, their overall strength may be strong, but we have an advantage in nurturing the next generation. There is no denying that in those design institutes where the strength is relatively high, there will be more employees in prestigious schools. They may be gifted more personally than we are, but it is possible that in this mode, they have been in the same place for a few years or so, but we have a bigger space for development.

Huang: For example, one of our team members, he reads 30 pages of the book today. During the meal, what is important is mutual trust, which makes us particularly happy to share from the heart.

Li: There must be some benefit, the knowledge background is similar, but it is not the same, and employees will get some new knowledge. Because we are not in the same department, I may learn some knowledge from other departmental employees through this kind of communication, find out about their departments, and discover the starting point of the problem.

7.3.2 Negative impact of tacit knowledge management

Each coin has two sides, and tacit knowledge management will also have some negative effects during the implementation process. The probability of triggering a negative impact during the data collection process is considerable.

The most important reason for that is because tacit knowledge management sometimes takes up personal time to conduct team training.

> *Huang: There are some bad effects; the whole team is going to spend a lot of time together. There's no problem elsewhere. I have a girlfriend, but if I need to give some time to her, then there will be conflict. But I tried to get my girlfriend to contact the team and get to know them. I believe that she will support me because our team is doing the right thing, and it is correct.*

> *Li: There must be. First, the company requires classes every Wednesday afternoon. This is a mandatory target. It must involve people, some who are interested, some who are not interested. Not everyone can be satisfied with this kind of class. The mood isn't always good; sometimes the staff are bored, treating the class as a kind of pressure. And then forcing the staff to attend school, just like a child who doesn't want to go to school. There may be a backlash before the course begins, which means that learning is not cultivated. For example, some people are born to not love classes, it is their nature. Whether or not to accept this model is not related to his performance; then learning can have some negative effects.*

In addition to taking up time, tacit knowledge management also involves the limits of personal qualities of employees.

Li: The disadvantage is that everyone's knowledge is narrow. If someone creates something negative in one part of the company, and the message is a superposition of negative emotions.

The personality of the employee is also considered in tacit knowledge management.

Su: For example, if you're an expert, I'm your student; if I don't like you and I'm against you, it will lead to a significant decline in my learning efficiency.

Ye: Yes, like some vicious competition, an old employee sees new employees doing better than him. He will have reservations when he passes his own experience on. Perhaps even passing some false information.

Especially in our enterprise, it is a characteristic for everyone to have their own scope of work, many employees do not trust other employees, you may pass on some new knowledge, but he still follows his own methods. There are many difficulties with management.

Tacit knowledge management also may put organisations at risk.

Wan: The negative side is that companies must take risks, and our business, especially my profession, carries more risks, because I do structural design. We are responsible for security, so the responsibility is great. If the building collapses and the houses and bridges are destroyed, they are the architect's responsibility.

And the pressure is bigger, for example, as a lot of fresh graduates are only able to do simple work, but on our side we have done these things, but if the number of people involved in the project is not enough, companies may be more willing to use you, so you can do the project on your own initiative. Enterprises are now very active, and the flow of people is very large.

7.3.3 Bottleneck of tacit knowledge management

Almost all tacit knowledge management models encounter bottlenecks, and several bottlenecks are summarised in the process of data collection.

The time taken in modern enterprise management is extremely vital, no matter which mode of tacit knowledge management, all require time.

Cai: Time is not plentiful enough, leadership is still relatively lacking in attention to this aspect, resulting in more time and energy spent on performance.

Some organisations believe that the personal character of employees plays a decisive role in tacit knowledge management, and whether there is a good environment is also one of the bottlenecks.

Cai: In three ways; the first is the human factor, that is, some people are born with negative characteristics, so we try to avoid recruiting these people. If they've been recruited, in a short period of time, the leadership will have to determine whether they can change. If not, we can only dismiss him, because such a reason can affect the atmosphere of the team. So, the first step is to solve the human factor, and then *the process; there will certainly be quarrels because of the different views of the business, but in fact, as long as it is the normal debate, the leadership will not have to intervene.*

The second is to maintain a more transparent and open environment that will have a positive impact on the entire team.

The third is the thing itself. You are doing this, sometimes, if everyone can feel that we are all together, then no matter what the outcome, we feel that it is all right. Because of the market environment, the competitive environment is always changing; sometimes you will feel that we cannot continue in this market, and sometimes we will feel full of hope, because the market is always changing. So, if we can face it together, then it is good, so the internal information transparency of the transfer of tacit knowledge is very important.

The company's personnel structure is also a bottleneck for TKM.

Li: People like to be together with people of the same age group, who often have similar knowledge. However, there may still be a blind spot of knowledge between employees after the exchange. Younger employees, like me, need a senior to give them some work experience. But objectively, it's hard to blend in. There is a generation gap, sometimes it is difficult to communicate, and sometimes they may have a purpose to communicate with the old staff, the effect is not good. It is easy to be alert to employees. And older employees don't necessarily have time.

The company's operating conditions are also one of the factors to be considered.

Su: I think it will encounter some bottlenecks when the whole company's benefits are not good; the income of each employee is not very good; when everyone's income is declining, knowledge management also faces great challenges.

7.4 Methods and steps in tacit knowledge management

Finding a TK management method suitable for your own organisation is a good way to help enterprises improve their efficiency. According to interviews, many Chinese companies adopt a traditional mode of mentoring relationship, in which employees have moral constraints. In addition, team building is also a popular tacit knowledge management method. Most companies believe that this method is more convenient and more efficient. The key point is that this method can be contracted by third-party training institutions to reduce the burden on management. There are three concepts:

1. Tacit knowledge management method

2. Differences in management strategies

3. Differences in their personalities due to their cultural background

7.4.1 Categories of tacit knowledge management

It turns out that the current Chinese companies rely on tacit knowledge management for both mentoring and team building. This also forms a unique pattern. This is a typical case of mentoring relationship.

This is because team building can increase communication between members, through which they can discover each other's strengths and weaknesses and thus learn from each other. The master-apprentice approach is more direct, as the master will help the apprentice to learn skills through face-to-face teaching, helping, and coaching.

> *Su: The first is regular meetings for training, that is, face-to-face skills teaching, and then we will find excellent people to share their cases and to explain new knowledge. On the other hand, it increases people's recognition and understanding of each other, and learn how to learn from other people's strengths. In this case, we will regularly carry out some team building, such as going to dinner or to bars, or to travel, and even some outdoor activities. In this way, we can not only recognise our own shortcomings, but also recognise the merits of others. In the third way, we will cultivate employees' sales skills in practice, which is implicit. For example, I will find an excellent member of pure sales staff, let him contact some very specialised institutional clients and some expert clients that have enormous assets. At this time, I can be clearly aware of his skills including that his knowledge is not enough to support him to talk about this customer, so we will take the student and teacher model, we find an expert to go with him, and then let the two go together with customer communication. This lets him understand how an expert handles these customers. On the one hand, he can understand the merits of others, on the other hand, he can understand his shortcomings*.

Some companies think that weekly meetings are good.

Huang: We have 2 or 3 meetings a week. We discuss together and review our previous performance. Find out the reason, praise good performance, and badly need to learn from the former.

Some companies choose to hire foreign trainers when conditions permit.

Li: In foreign countries, tacit knowledge management is relatively small, but in China, companies may offer courses. Our company now has a special seminar every Wednesday, inviting experts in the industry to teach.

There also are some companies that force employees to learn actively and put pressure on them to work hard.

Ye: I think this is a kind of corporate culture; if a team has ambition, then with good KPI indicators, you can motivate your team to continue to compete. In the process of competition, employees will actively observe and learn tacit knowledge from others. Another point is the employee performance pay, if these two aspects are OK, I think even if he is new, he also has his goal, his wolf sex, he has his own ambition.

7.4.2 Strategic differences in tacit knowledge management

Different business types and different corporate cultures have created different ways of managing the enterprise, which has led to different strategies in tacit knowledge management. The difference is obvious from the perspective of having a detailed plan or not.

Cai: I can't feel it at the moment.

Even some very successful companies have expressed that they don't care about TKM.

Cai: I don't really need to know everything about him; if his skills are enough to support the job, and he can keep up with the company during the development of the company, that's enough for me. As for other things, I don't need to pay much attention. And then on the other hand, because we're still an entrepreneurial team, we have a very close relationship, we sit within 10 meters of each other, so that the exchange or communication costs are very low. We have a certain advantage in the cohesion of the company, if your small team does not use this advantage, what can you use to compete with other companies?

Some have a very complete tacit knowledge management model.

KE: There are several points to this: one is the knowledge base, the platform community search, the process management manual, the professional manual, the design manual, as well as the customer information base, product knowledge base, competitive intelligence database, and expert group. You must do a good job; you must have a bunch of experts in various fields who can constantly summarise and refine knowledge. There is also team learning. We don't have enough personal study. Our work is the whole team working together, so we need the whole team to study together. There are also virtual communities that are important. Most of us rely on discussion and chat to develop innovation.

7.4.3 Differences in their personalities due to their cultural background

China is a country with a large land mass and strong ethnic diversity. In the process of high-speed economic development, the massive flow of people is inevitable. How to better integrate people from different cultural backgrounds and improve their efficiency in TKM becomes very important.

Most companies recognise that employees have differences between the North and South of the country.

> *Cai: Northerners may find it easier to communicate, and in the beginning, you can be more accessible to contact with northerners and gain entry into their circles.*
>
> *Southerners have some more introverted qualities, a little bit of obstruction, but you later will find that the southern people may be more resilient, whereas northerners may easily give up, right? That is the idea. To make them more integrated, we need to cater to each other's personality, to make some adjustments, that is, to communicate, or to work in a way with more communication, in the treatment of Southerners and the Northern people.*

Therefore, mutual respect and understanding the different cultures of each other is a very important point of the work.

> *Wan: Personality differences are certainly there, living environment, educational background, family atmosphere. And if the region is different, the differences are*

considerable in all aspects. Small things like diet or living habits can be big enough to affect your work and your people; differences in the different regions are very large. But, after all, it is the workplace that is going to work together to complete a project as a benchmark. So, in many cases, such as when personality differences or interpersonal communication is not too good, but the staff can accomplish this work together, can achieve common goals; this is enough. So, you're not paying too much attention to someone else's character or life, and neither do they. At work, because in the early days, we were a Northeastern institute, then the Shanghai institute was formed, so many leaders are Northeastern people. Some may speak more direct, when they and other professionals cooperate, the way of speaking will be stronger, but they are to complete a common project, their goals are the same, the Southerners may favour a more tactful approach. The difference between people in the south and the north will also affect teamwork.

They will create positive activities for employees in the team.

Wan: This is what the leader should think about, not what I should think about. However, I personally feel that it can be coordinated in different ways. For example, you can try incentive mechanisms, such as to take out more money or improve opportunities; everyone in this way works hard, so people will not care about so many north-south differences. In addition, companies can often organise activities, such as some ball games or some team training, which can promote the *integration of the different cultures of north and south. Although the effect may be smaller, but after all, the company will have tried. Like our birthday parties in every month, if the person is born in this month, then he will be invited to hold a party upstairs. During this time, whether you are Southern or Northern is unimportant. This is also an embodiment of corporate culture.*

7.5 Key points of tacit knowledge management

In the process of tacit knowledge management, there are many nodes that are very important. They are collectively referred to as key points. They include: How to improve their co-operation in tacit knowledge management; Ways to inspire employees to share knowledge; and Running employees with different cultural backgrounds in the company.

7.5.1 How to improve their co-operation in tacit knowledge management

The study found that most companies believe that better employee cooperation is the key to tacit knowledge management, directly affecting the efficiency of tacit knowledge management.

Zhang: Efforts in this area may be more out of work, more is in the personal life. For example, we engage in some dinner activities and some team building, organise everyone to travel together, and the like. In the spirit of relaxation to build this team is the best choice. If this kind of activity was held in the office, *everyone would be uptight, they will not be too relaxed mentality to the team's internal relations training, after all, in the office we will still feel the competition.*

In the answer to this question, some managers once again mentioned regional cultural differences. They believe that solving regional cultural differences is the first step in promoting teamwork.

Li: Company colleagues can coexist because they have a common interest in existence. For example, ten people do a project, everyone's geographical background is different, personalities are different. But the goal is to agree that they are going to make this project, for their performances' sake. If everybody is interested, then it is okay. This is a simple approach, but if the project fails, some problems will easily erupt. This is also the drawback of this model.

7.5.2 Ways to inspire employees to share knowledge

If you can enable employees to actively explore and share their own tacit knowledge, this will greatly improve the efficiency of tacit knowledge management. But no matter how difficult it is to achieve the optimal solution, there are a few successful solutions.

Communicating more during non-working hours can be an option.

Cai: To organise more team building or dinners. Our culture? Right? Try to communicate during non-office time. Everyone's working time is not the same, first, we have less time, and not everyone will be at the company at the same time, people will be more relaxed, instead of having so much mental defence.

This company, which has made great progress after the interview, believes that team building is far less important for management to adjust a good attitude to tacit knowledge management.

> *Cai: We have done a few team building activities, and then found that there is no difference between the fact that the difference is not very obvious, after the regiment was built. In fact, we still play separately, and it is hard to get people together through tough means, but Liu Tang put forward a theory: we prefer to use the money for team building to have a drink or through the organisation of staff dinners, to improve the integration of the team, so that everyone is more willing to share some of their knowledge. In fact, as a company, if you lay down your identity first, many times you will worry that you speak to your subordinates and they will not listen, then the dignity of the leadership will be missed. So, this is a contradiction, and you want everyone to listen to you and hope that everyone will tell you anything, which is not possible. In an enterprise, it is very difficult to keep your authority in the working hours and to be a good friend with your employees in private. But the problem is much better in internet companies, in fact, the problem is more serious in traditional companies. In internet companies, because everyone usually sits together, and the food and clothing are not much different, we are very similar and so the decision-making is very democratic.*

7.5.3 Case analysis on TKM application with different cultural backgrounds

When asked about the key points in tacit knowledge management, it was unexpected that many business managers focus on employee personality issues and cultural differences. They think these are more important than management.

Cai: To make them more integrated, we need to cater to each other's personality, to make some adjustments, that is, to communicate, or to work in a way with more communication, in the treatment of Southerners and the Northern people.

Su: I don't know if there's a better mode of operation. The way I'm doing it is simple.

First, I will let each team have full communication with each other, because the teams below me have their own characteristics, and I will integrate them through large activities to let them get to know each other.

The second aspect; in the early stage, when I was teaching, helping and leading, I would help their teams to go through a cross-service from the business level and let them communicate with each other, to improve their team cohesion.

Some managers think that good HR can solve these problems.

Ye: I think this is also a question that HR should consider. Because a company's corporate culture is the development of HR, team building is supposed to be the responsibility for HR; HR should help newcomers to integrate more quickly into the team.

Some managers believe that management's understanding of employees is more necessary.

Zhang: After new employees come to my team, I will have a separate understanding, including their future career plan and their personalities. After I've properly got to know them, there are different ways to promote them to help each other and integrate publicly. But according to my own experience, if they satisfy their own interests, the other problems are not problems.

7.6 Summary of the research

Through the second level of axial coding, the researcher compared and extracted the data obtained from the second round of the interviews. Also, analysed and summarised the five categories which can influence tacit knowledge management, and the corresponding detail for each category.

Categories	Concepts
Core value	Accumulation Brand Business model Capital background Culture Innovation Loyalty of users Peculiarity

	Service Technology Quality Profitability Customer value Recruiting ability Employee Benefits
Bottleneck of TKM	Communication problems of different ages Income status will have different effects Management does not pay attention No significant effect Not enough time Personality Employee mobility Change of strategy Staff expression skills Industry characteristics Employee awareness Employee personalities
Differences in management strategies	Subjectivity
Differences in their personalities due to their cultural background	Differences between the north and the south No difference

How can their co-operation be improved in TKM	Interests Non-office time team building Selection of team members Set a good example Understand employee's personality
Knowledge management is beneficial	Enhance cohesion Grow together Improve team efficiency Improve their capacity Quickly integrate into the team Save on learning costs Tap the potential of employees Decision making Improve work efficiency Improving brand images Innovation Maximum of effective and profits Problem solving
Management instils core values at the bottom of the enterprise	Indoctrination Products Team training
Negative aspects of tacit KM	Costs money Costs time

	Internal competition Passing knowledge on is limited Personality issue There may be conflict between employees
Supervising different cultural background employees in a company	Character Common interests Different ways of communication Respect of different cultures Team building
Tacit knowledge management method	Communication Good cohesion Master-apprentice relationship Team training Activities Communication Creating a shared workspace Knowledge sharing seminars Meetings Reward mechanism Time encourage and capital support Training
Ways to inspire employees to share knowledge	Bonus system Create opportunities & platform Little teamwork

	Master-apprentice relationship Selection of team members Social time Travel together Higher salary Incentive mechanism Social activities Difficult system Honour system
Definition of tacit knowledge	Employees' EQ The source of competitive advantage Informal individual skills Complex social skills and work experience Employees' potential power Employees' characteristics and abilities Can be described and directly used Personal beliefs, ideals, values and mental model

Table 7.1 Categories of analysis

7.7 Theoretical model

This section discusses data obtained after two rounds of data acquisition. Summary of open coding, axial coding and selective coding. After these data analyses, the theoretical model in Figure 7.1 was created. The five categories will directly affect the performance of tacit knowledge management in improving business efficiency. Including (i) core value management, (ii) advantages and bottlenecks in tacit knowledge management, (iii) methods and steps in tacit knowledge management, (iv) key points of tacit knowledge management and (v) future of tacit knowledge management.

These five categories not only have a direct impact on tacit knowledge management, but they also interact with each other, which further, indirectly, affects tacit knowledge once again, and finally further affects the management effectiveness of the organisation.

Because the research method of this research is grounded theory, the research methods of this theoretical model are also based on grounded theory, which is composed of the core categories of the six months of interviews. Each part of the model interacts, and each piece is indispensable.

Because the region of research is in China, this theory also applies to China. The core purpose of this theory is to improve the role of tacit knowledge management's enterprise efficiency, and those five categories can achieve a positive effect towards core objectives under the influence of each other. It is worth noting that the emphasis and respect for regional culture is a major priority.

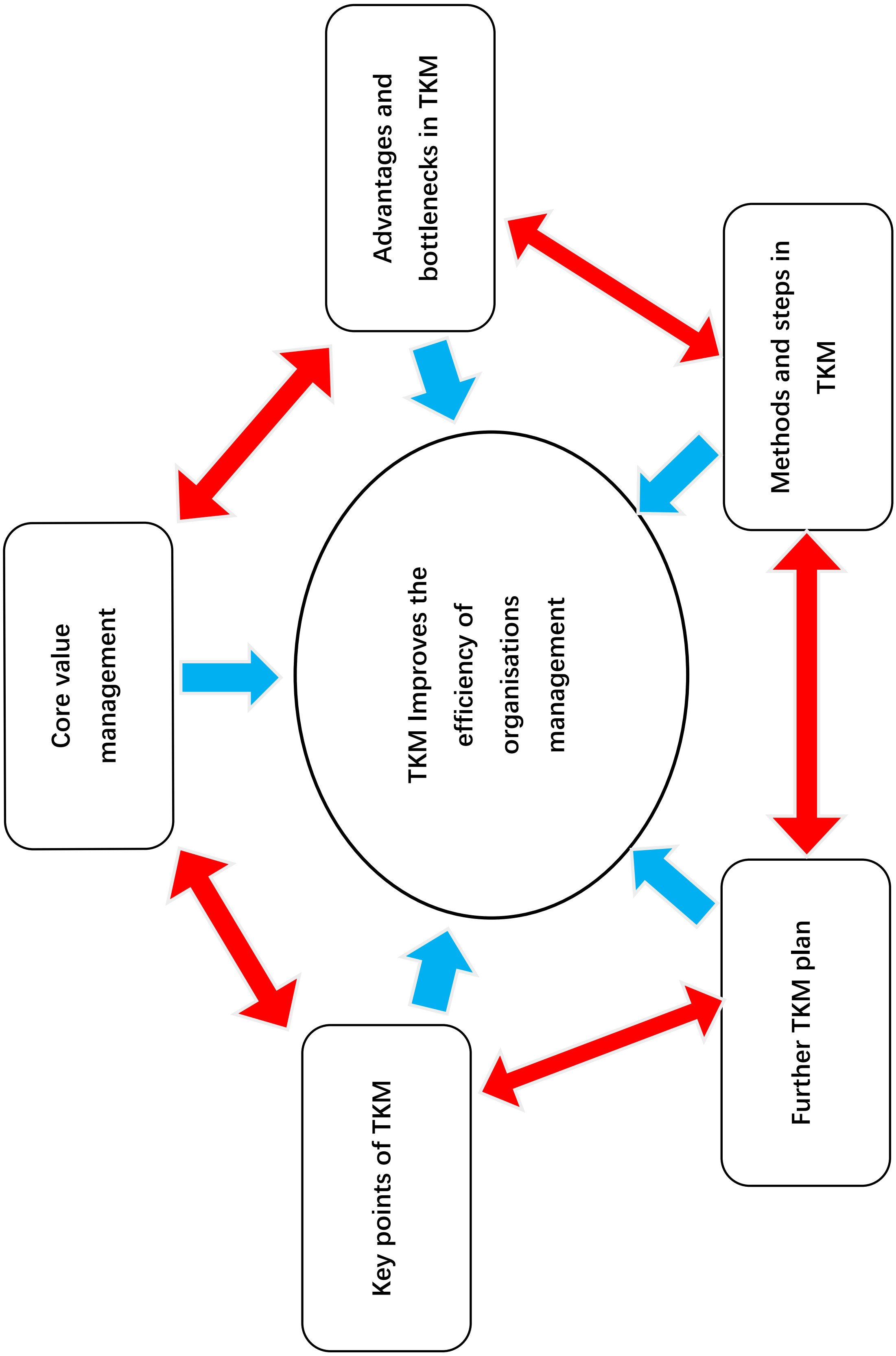

Figure 7.1 Tacit knowledge management model

7.8 Maturity model

Amongst the various types of organisations, tacit knowledge management has always been defined as an important factor for organisations according to the five different concepts of analysis, such as the core value of the company, definition of tacit knowledge, competitive advantage, strategies to inspire tacit knowledge, and strategies to share tacit knowledge.

The maturity of strategies can impact the efficiency and result directly in sharing tacit knowledge between employees. Although there are numerous advantages to sharing tacit knowledge for an organisation, a potential conflict arises between their employees (Walker & Chandler, 1977; Patin & McNiel, 1991). Therefore, based on the maturity of the established core values, a company can influence the willingness of employees to share tacit knowledge.

This model is inspired by the Learning Capability model (Eltigani et al., 2019) and is based on the existing knowledge maturity model. According to the characteristics of this study, including the fact that the data collection location is in China, China's corporate management characteristics and the employee's cultural characteristics have informed this model. This model shows the process of tacit knowledge management generally accepted by the surveyed companies from another perspective.

The design of this model is based on the existing knowledge maturity model. It is an enlargement of the steps in tacit knowledge management, the purpose is to solve the difficulties of tacit knowledge sharing in tacit knowledge management. Specifically, it highlights ways to inspire employees to share knowledge, which makes tacit knowledge collection, definition, and sharing more efficient. This model is divided into five levels:

The core value of the company

Definition of tacit knowledge

Competitive advantages

Strategies to inspire tacit knowledge

Strategies to share tacit knowledge

In each category, an important method of feasibility in this aspect will be mentioned. This model is summarised in the actual data collection. Those five levels are progressive, and in practice they are circular.

Category	Concepts
The core value of the company	Good quality. Brand. Service, Technology.
Definition of tacit knowledge	Can be written down and be recorded.
Competitive advantages	Problem solving. Improve team rapport. Improve employee ability.
Strategies to inspire tacit knowledge	Make more changes to sharing tacit knowledge. Discuss the ideas presented. Summary of Tacit knowledge.
Strategies to share tacit knowledge	Training. Meeting. Team building

Table 7.2 Categories of TKMM

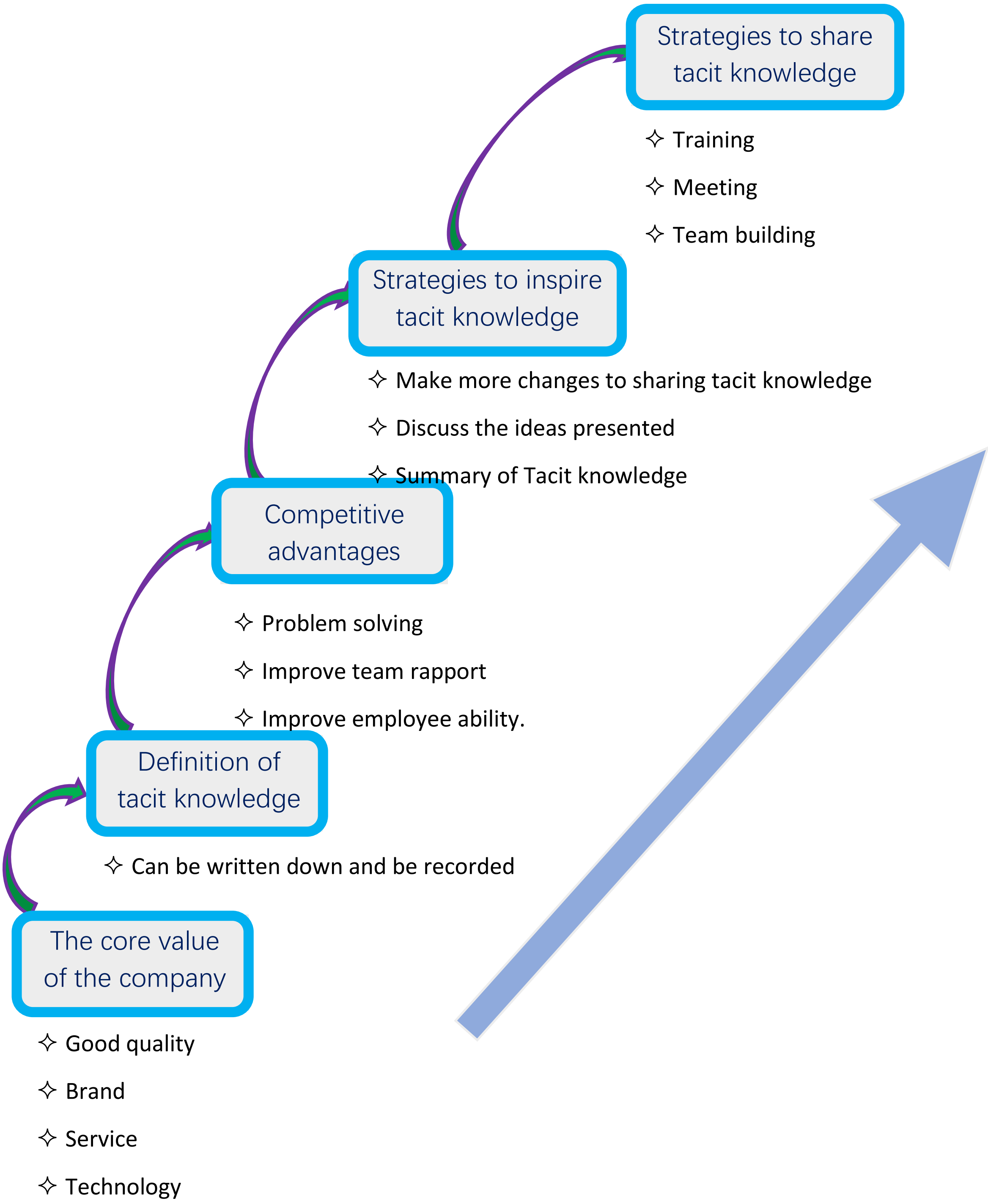

Figure 7.2 Tacit knowledge management model

Chapter 8 Conclusions and further work

8.1 Introduction

The conclusion and recommendation chapter of this research presents an overview of the research, as well as concluding it in detail. The aim of the research design must reach the objective of the research, to understand how the knowledge management concept could be harnessed, such as a vital factor for enhancing productivity, performance, and competitive advantage for organisations. Moreover, the achieved objective of this research is presented in this chapter and these questions will be answered as follows:

1. What is knowledge, tacit knowledge and knowledge management in a project context?
2. What are the relationships between explicit knowledge and tacit knowledge?
3. What are the critical success factors for effective knowledge management implementation?
4. How can tacit knowledge create competitive advantage by the use of more effective management?

The research has found the willingness of employees to participate in knowledge management activities as well as to influence knowledge sharing, which also can be considered as one of the important factors that can impact whether knowledge management implementation will be successful or not. Moreover, the theoretical contribution of the research is presented during this chapter, and the validity of the study found is also presented, to prove the researcher has chosen the most suitable research methodology for this study. Before the end of the chapter, the researcher presents the limitations and recommendations for future study.

8.2 Overview of the research

In-depth understanding and managing knowledge can be seen as a key factor for understanding how to develop the competitiveness of an organisation. Therefore, each organisation needs to comprehensively know about the concepts of knowledge for managing it more efficiency, as well as creating more competitive advantage on the market. The marketing environment in China has become increasingly competitive. However, tacit knowledge management can be identified as a new type of knowledge management in China, that has only been developed for a few years, so that there are not large numbers of organisations which have successfully developed or implemented tacit knowledge management. Thus, there has been little research into these organisations successfully using tacit knowledge management and improving employees' performance within the organisation, in China. So, the objective of grounded theory research is to contribute to this area and examine the relationship between tacit knowledge and employees' performance within organisations in China.

Chapter Two presents the general research methodology of tacit knowledge and knowledge management implementation, by reviewing academic papers, books, and professional journals. The research methodology provides numbers of related useful information for the researcher and provides different ideas to collect and analyse data, as well as information, relating to knowledge management and tacit knowledge. Furthermore, it has helped the researcher to understand the existing knowledge management method. The grounded theory methodology is adopted in this study for collecting qualitative data. Dunne (2011) states that the researcher conducting grounded theory has not totally concentrated on testing existing theoretical hypotheses, especially from the same field of research, instead they focus more on developing a new theory based on empirical data collection. So, this method of grounded theory is becoming increasingly popular in qualitative research (Payne, 2007).

In Chapter Three and Four, the process of data collection from interviews has been presented. Those interviews were conducted with 50 managers from 45 different companies and different sectors in order to enhance understanding, develop theory, and to overcome the risk of failing to collect reliable data. The researcher adopted semi-structured interviews and prepared a list of questions, but those questions varied from one interview to another. Most of the questions have been designed around tacit knowledge implementation and the benefits of implementing tacit knowledge in an organisation. While most interviewees have discussed their own ideas about behaviour, events, and related habits to this topic of research, discussions with the participating interviewees provided many insights; a clear list of aims and objectives; the impact of tacit knowledge within an organisation; and the biggest challenges of implementing tacit knowledge.

Chapter Five, Six and Seven present the data analysis procedure and conclusions, such as the data analysis procedure of grounded theory as well as the coding process of this research in detail. Analysing data includes assessing and evaluating the collected data in this study for understanding tacit knowledge management concepts as well as issues, and then to explain how these bodies of knowledge could been used for enhancing productivity, performance, and competitiveness within organisations in China. The researcher investigated the five main categories across the 50 organisations participating in the study.

8.3 About research aims, objectives and questions

8.3.1 About research aims

This study has drawn on the five most important categories for current tacit knowledge management in China, namely: Core value management; Advantages and bottlenecks in tacit knowledge management; Methods and steps in tacit knowledge management; Key points of tacit knowledge management, and further plans about tacit knowledge management. The existing ways in which organisations in China can motivate employees to share tacit knowledge are summarised, such as the bonus mechanism and providing enough time and opportunity to promote the sharing of tacit knowledge.

This research created a new tacit knowledge management model centred on improving business efficiency. The existing knowledge maturity model has been changed to create a new tacit knowledge maturity model. Because all the data comes from China, the new knowledge maturity model is more in line with the existing Chinese company's tacit knowledge management model.

After data collection and analysis, a conclusion is that it is very important to encourage employees to willingly share knowledge. In the whole process of tacit knowledge management, management should eliminate employees' anxiety, provide reward mechanisms, enough opportunities, and time.

8.3.2 About research objectives

After research and analysis of existing data, it is concluded that identifying, sharing, and summarising knowledge are critical in knowledge management or tacit knowledge management.

From collecting and analysing the data, most organisations believe that tacit knowledge management plays a significant role in improving organisational efficiency, and it plays a role in enhancing teamwork. At the same time, a good tacit knowledge management will enhance the staff's own abilities. In the process of tacit knowledge management, each organisation has different ways of using, sharing, and summarising knowledge, but stimulating employees' individual wishes is the common purpose of each method.

Through the discovery of tacit knowledge in the actual data, the reasonable method increases the speed of sharing the invisible knowledge and enables the recipient of the invisible knowledge to use the newly acquired tacit knowledge more quickly, thereby improving the efficiency of the organisation. The new tacit knowledge management model can be used to better share and transform knowledge.

8.3.3 About research questions

What is knowledge, tacit knowledge and knowledge management in a project context?

Tacit knowledge is a kind of knowledge. Both explicit and implicit knowledge are indispensable for projects. Knowledge management improves the efficiency of the organisation.

What are the relationships between explicit knowledge and tacit knowledge?

After the literature review, it was found that both explicit and tacit knowledge are two of the knowledge types. Tacit knowledge refers to the highly individual knowledge that is difficult to formalise or communicate and share with others. It usually exists in the form of personal experience, impression, perception, team tacit understanding, technical know-how, organisational culture and customs. It is difficult to express clearly in the form of words, languages and images. Explicit knowledge refers to formal and normative knowledge that can be expressed in a systematic way. Explicit knowledge is objective and tangible knowledge, which is usually stored in structured forms such as language and text.

What are the critical success factors for effective knowledge management implementation?

After data analysis and model construction, the five key points in knowledge management are as follows: Core value management; Advantages and bottlenecks in tacit knowledge management; Methods and steps in tacit knowledge management; Key points of tacit knowledge management; Further plans about tacit knowledge management.

How can tacit knowledge create competitive advantages, by the use of more effective management?

As a result of the research, it was found that tacit knowledge can improve organisational efficiency, improve employee ability, enhance team tacit understanding, and improve the potential in the development of the organisation.

8.4 Summary of findings

As mentioned before, the objective of this research was to identify that the research has investigated tacit knowledge completely and how tacit knowledge can impact organisations deeply, to enhance, as well as improve productivity of the organisation directly or indirectly. Therefore, it is important to comprehensively understand the relationship between tacit knowledge management and the performance of an organisation within China, although there are limitations of sharing tacit knowledge within an organisation. To conclude the findings of this study, for analysing the difference between implemented and developed tacit knowledge within an organisation. In order to establish a theory that determines the relationship between implemented tacit knowledge management and employee performance of organisations in China. Moreover, to reach the objective of the study, these following four areas have been understood and answered: determining how tacit knowledge management can influence the success of an organisation, to determine the benefits of implementing tacit knowledge management in an organisation, to analyse the difference in performance between knowledge-based and non-knowledge-based organisation, and propose the methodology for implementing tacit knowledge management for organisations in China. The core objective of this research concerns tacit knowledge management implementation in China and explores the problem impacting the success of an organisation. Some critical benefits for organisations have been found during the research, such as marking differentiation, improving decision making, and innovation. Moreover, having a good communication system in order to ensure and facilitate the spread of knowledge amongst people. Examples of the communication practices are meetings, newsletters, magazines, public lectures, presentations, direct phone calls, help desks, and emails. Furthermore, OL has been considered as the one of main objective of knowledge management, which can impact employee performance within an organisation. It has facilitated organisations to improve the learning curve of employees, such as to create a good environment for employee learning.

The second objective benefits tacit knowledge management in organisations within China. Seven role benefits achieved by tacit knowledge management implementation can be described as follows: gaining more competitive advantages, making information available, better process of decision making, maintaining critical tacit knowledge of losing, enhancing the process for solving issues, improved employees' performance, and avoiding the loss of critical knowledge.

The third objective can be considered as the most common limitation of tacit implementation in organisations within China. This study identified that most barriers to knowledge sharing activities in organisations within China is the unwillingness of employees to share knowledge and managing tacit knowledge so that people are willing to share and use it, due to a number of reasons: the belief that knowledge is power; lack of trust; resistance to change; lack of time; poor verbal and written communication; and the existence of types of knowledge that are difficult to document. People know that knowledge is power, and many people do not want to share what they know, as they think this helps them to keep a competitive advantage over their peers.

In addition, increasing spending on IT will not necessarily lead to increased sharing and use of knowledge, because this also depends on the willingness of individuals to share and use tacit knowledge. Tacit knowledge only exists in people's minds, and they cannot be forced to share and use this knowledge. In other words, knowledge management implementation cannot be successful unless organisations increase their employees' trust and willingness to share and use tacit knowledge.

The fourth objective is concerned with the relationship between knowledge management in organisational learning implementation within organisations in China.

The study found that there is a clear relationship between knowledge management and tacit knowledge, productivity and efficiency.

The fifth objective is concerned with determining the difference in performance between two types of organisations: knowledge–based and non-knowledge-based – in order to determine the impact of implementing knowledge management on OP. The study found that there are eight main benefits achieved by knowledge-based organisations due to the implementation of knowledge management, as follows: retaining a sustainable competitive advantage; making information available, obtainable and accessible; increasing employees’ learning curve, commitment and loyalty; making better decisions based on required information; sustaining critical knowledge of losing and avoiding losing mission-critical knowledge; lessons learnt and solving recurring issues and problems; benchmarking; and thus, improving OP and efficiency. In contrast, non-knowledge-based organisations suffer from losing mission-critical knowledge, reinventing the wheel when recurring problems and issues occur, duplicating effort and wasting time, reducing employees’ loyalty and morale, and thus negatively affecting OP and competitive advantage.

8.5 Employees’ willingness to share knowledge in knowledge-based organisations

During the research, three key factors can be considered as three major categories that considerably influence the employees’ willingness: barriers of tacit knowledge sharing as well as transferring, the limitation of tacit knowledge, and organisational learning in knowledge-based organisations. Drucker (2001) presents that the character of knowledge-intensive organisations, which means the organisation has treated knowledge like the main strategic factor and to manage it efficiently as well as effectively. While Zack (2003: p.88) defines knowledge-based organisations as:

"Knowledge-based organisations (KBO) are usually considered to be those whose product or service is knowledge-intensive. The characteristics of a KBO, however, go beyond product to include process, purpose and perspective. Process refers to an organisation's knowledge-based activities and processes. Purpose refers to its mission and strategy. Perspective refers to the worldview and culture that influences and constrains an organisation's decisions and actions. KBOs exhibit knowledge-intensive processes, purpose, and perspective, regardless of their product".

The first one of the major categories is the barrier of tacit knowledge sharing and transferring. Due to most organisations facing this issue; it also could be considered as the most common issue, while the difference is only between how the knowledge-based organisations deal with it and face it. However, these type of knowledge-based organisations have created a comfortable environment for sharing tacit knowledge by affecting employees positively when they share tacit knowledge within the organisation. The healthy organisational environment can facilitate employees to share tacit knowledge easier and can even remove barriers, which factors have influenced employees to become unwilling to share their tacit knowledge within an organisation.

The second category is the limitation of tacit knowledge. After the interview, it was discovered that people sometimes do not actually know that they have tacit knowledge in their own minds, so the researcher needs to deeply communicate to ensure they completely obtain information about tacit knowledge from the employee, such as when they have had many different kinds of work experience, some tacit knowledge is common sense for them and is forgotten if the researcher does not ask. Moreover, Lehner and Haas (2010) present that it should be a direct relation between employees at face-to-face meetings for pushing contact between employees in order to encourage tacit knowledge exchange. Understanding and developing tacit knowledge can be described as a very important issue for supporting tacit knowledge sharing, such as meetings and e-mails (Oliverira et al 2012).

The third category is organisational learning. Organisations will have a better environment for knowledge sharing when using organisational learning (Ellis et al., 2012). Furthermore, according to the usefulness of organisational learning, organisations need to create a better environment to encourage employees to share their tacit knowledge before implementing tacit knowledge management. Also, during this process, it was required for each employee to be willing to develop it. Otherwise, the researcher has found that organisational learning can be treated as an extremely important category of tacit knowledge management, and it has helped organisations to gain greater competitive advantage, as well as to even enhance employees' performance. Organisational learning encourages staff learning by creating a better environment for learning.

Firstly, for the top management, commitment and support could be considered as extremely important factors for tacit knowledge management implementation. Top management is the initiator, sponsor, and promoter of tacit knowledge management. However, management also has always provided necessary resources, such as financial resources, while also making time available for tacit knowledge management implementation. Lehner and Haas (2010) argue that top management is the initiator, sponsor and promoter of knowledge management, and it needs to provide enough financial resources and time. The top management's continuous support as well as commitment could be an important factor, which is the role of top management for defining the priorities and supporting tacit knowledge activities. The second factor that can impact employee willingness could be described as the provision of awareness campaigns for gaining employees' attention, indicating the importance of knowledge management implementation, and asking them to personally commit to the project. Thirdly, creating a tacit knowledge management project team within an organisation. Many informants believe there should be a tacit knowledge team, which is responsible for coordinating as well as obtaining knowledge from the expert employees. The main role of creating knowledge, as well as a teamwork culture is to optimise knowledge and to encourage employees to share tacit knowledge. Furthermore, a knowledge management committee should consist of employees from different departments in the organisation with different backgrounds. The role of this team is “to involve and delegate the organisation as a whole, communicating that it’s everyone’s responsibility to make knowledge management a successful process in the organisation” (Neto et al. 2009, p.598).

This research has found that the organisational structure has influenced the distribution of ideas as well as removed all limitation of ideas to make them flow across the organisation. The role of organisational structure is to motivate teamwork, share tacit knowledge between employees, and integrate different departments within the organisation (Oliverira et al., 2012). Some techniques have been used by organisations to encourage as well as motivate employees to share their tacit knowledge by offering promotions or bonuses. Reward programmes are the most important factor in increasing employee tacit knowledge sharing (Mayfield, 2010). Oliverira et al. (2012) state that participation reward programmes are a motivating factor for people participating in knowledge management projects, by considering knowledge management participation in the employee performance evaluation, in order to highlight the importance of their participation to the employee. Managers must plan as well as implement the structures for encouraging employees to share tacit knowledge (Cross and Baird, 2000). The roles of leaders can be defined as those who plan and facilitate the implementation of processes that help employees to share their tacit knowledge.

8.6 Data validation

This statement was presented in 2009 as “validity is concerned with whether the findings are really about what they appear to be about” (Saunders et al., 2009, p.157). Corbin and Strauss (2008) also state two main ways to validate the scheme. The first way can be described by performing high-level comparative analysis, and the second way is by going back to the participants as well as asking them for comments. The final stage is the integration of literature with an emerged theory. The researcher needs to confirm the validity as well as credibility of these study findings to prove the researcher selected the suitable methodology for the research. Therefore, numbers of excerpts collected from different kinds of interviews transcripts, which have been stated during this research, which are also used to prove the findings of this research, have been derived from information or data statements. Furthermore, to ensure that the researcher has considered all the important information, they reviewed and summarised all main points at the end of each interview. The researcher has not only based findings on the data or information statements, they also obtained sources of information through organisations’ documents. During this research, because using literature has three important objectives, the literature was revisited after collection and data analysis. The first purpose has helped the researcher to clarify the relationships between categories, which indicates the theoretical saturation. The second purpose could be defined as to discuss the data or information collected and place them in the context of previous research. Finally, the third purpose is to serve as a final check on the combined theory and complete the process of relevancy.

Additionally, the researcher compares the data as well as information collected against the initial data by going back to the written versions of the transcripts and writing memos of comparative analysis. The researcher returns to a cross-comparison of the written versions of the transcripts and written memos in order to compare the findings against the raw data. The interactive factors have impacted tacit knowledge implementation, and then, if established, the effective framework as the conceptual framework of knowledge management, which can facilitate knowledge management implementation efficiency and could be considered as a good guide for it. Tacit knowledge management would also be considered to be successful. Given that the conceptual framework could be suitable for any sized organisation, to establish tacit knowledge management this model and method would also have to be considered.

Therefore, the researcher took these comments into consideration and modified the conceptual model for the impact of knowledge management on OP based on those comments, in order to make it easy to use. Then, he emailed the model after modification back to these participants for their feedback. They replied that the modified model is easier to follow, clearer and more understandable. They believed it is applicable for implementation in any type of firm. The model shows good steps/sequences for managers to follow. It might be helpful to effectively achieve companies' goals in a shorter time and with less cost.

8.7 Limitations of the research

During the investigative period of this research, there were some limitations which have not been ignored, which could produce recommendations for future work. Timing could be identified as one of the limitations, as the researcher needed to research organisations during a limited time period. Furthermore, most organisations in China preferred not to share information openly, especially in detail, and some of them were not interested in participating in this study, so this is another limitation during the research of the organisations. Therefore, the processing of data collection could be described as a little difficult. Most organisations treat internal documents as top secret, because some unique strategy about knowledge management has gained a number of competitive advantages in marketing for them, so for the researcher, obtaining that organisational information was very difficult. In addition, because of the length of research, there was insufficient time for the models that were created through data collection and analysis, to be returned to these organisations for verification and testing, to help these organisations to improve existing deficiencies, which is also a regret in this study.

Furthermore, the numbers of interviewees have been limited due to organisational restrictions. For example, some organisations only allowed one or two interviewees to participate in this research with limited interview time. However, the researcher also contacted those interviewees again to finish the interviews despite some organisation's rejections. However, most interviewees finished the interview and provided relatively complete information about tacit knowledge management in their organisation. Therefore, despite all the limitations, the research was well structured and was not significantly influenced by the limitations. Moreover, this study has a large body of relevant previous literature which has been reviewed.

8.8 Future work

For choosing a suitable research methodology in this research, numbers of existing literature have been reviewed in the first year regarding tacit knowledge, knowledge definition, and knowledge management, to understand the knowledge deeply and comprehensively. The researcher, according to the research methodology, selected the most suitable methodology to collect data during the second year of research. Therefore, finishing the data collection and data analysis in year three and four. In future, the researcher hopes to have the opportunity to return to the interviewed organisations again to observe how their business efficiency has changed under their own knowledge management model, and to compare the growth of their performance under different knowledge management models. The researcher hopes to have the opportunity to convince them to try out the models from this study and to observe the changes that have taken place after using the new model.

According to the literature review, data collection, and data analysis, there are three factors that influence organisations directly: the barriers to knowledge sharing, holding meetings as the only means of communication, and the willingness of employees is the key that can impact whether transferring tacit knowledge will be successful or not. Tacit knowledge sharing as well as transferring can not only create more competitive advantages for organisations, but will also help an organisation to gain more profit and market share. Therefore, to improve and facilitate the willingness of employees to share or transfer their tacit knowledge to another, is the role of using tacit knowledge to change as well as make organisations become successful. Moreover, it is not enough to analyse the willingness of employees by just using a literature review and a few months of interviews, the researcher also needs to collect actual data by researching the subject and deeply understanding the willingness of them.

Most organisations have faced common phenomenon as barriers for transferring or sharing knowledge to other people within an organisation, and the barriers mostly come from the following reasons: different culture of employees, difficulty to communicate with other people because of poor communication skills, and unwillingness of employees to share their knowledge. Moreover, Gupta et al. (2000) present that it is a huge challenge to manage tacit knowledge, because most people are unwilling to share their tacit knowledge to other employees, since it would result in them losing their competitive advantage in marketing (Stenmark, 2002).

The study found that employees do not share their knowledge because knowledge is power, and they believe that knowledge makes them valuable and powerful. Pawlowski and Bick (2012) state that individual traits also cause some potential barriers to knowledge management utilisation, such as fears about job security and a lack of trust. Santos et al. (2012) point out that the difficulty in building trust is one of the knowledge-sharing barriers. The study found that lack of trust negatively affects employees' willingness to participate in tacit knowledge. People are unwilling to share their knowledge because they are afraid to do so, believing that they will be abandoned or lose their value and power. Furthermore, it has been found that one of the biggest challenges is employees' resistance to change, or resistance to use any new system, and this is one of the most common barriers to the implementation of knowledge management projects.

Therefore, in future, research to establish the effective framework of tacit knowledge implementation will be concerned with employee willingness. Then analysis of this information, as well as data to summarise and resolve the major reason, to improve using tacit knowledge, gain objectives, or more competitive advantages for an organisation.

8.9 Recommendations for further research

The main aim of this research is to establish a framework, which facilitates the productivity and effective implementation of tacit knowledge management for organisations. Organisations demand more detailed information, roadmaps, and implementation processes of tacit knowledge management for comprehensive understanding. It has allowed the consideration of numerous elements or factors that are effective for organisations. However, to establish an effective framework, understanding every element completely, and the role they will play in the framework, each element must be examined. Otherwise, another important factor of this research that has to be considered is the willingness of employees to share and transfer knowledge within an organisation. Also, researching how to make the tacit knowledge sharing complete between employees within the same organisation. Moreover, if some organisations have successfully developed tacit knowledge management to improve both performance of employees and productivity of the organisation, this research could be useful for addressing those organisations that have not used or developed tacit knowledge, to consider the various forms of tacit knowledge in different organisations and in order to make the tacit knowledge management model better.

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