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Investigation into knowledge management in SMEs: Case of a Finnish telecommunications company

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<p>Abstract</p> <p>The study investigates knowledge management in a Finnish SMEs and proposes appropriate practices to improve the status quo of the case company. Knowledge management is the management practice to leverage organizational knowledge to add value to the organization. Knowledge management is a significant source of competitive advantage, a crucial element of organization core competencies and a fundamental need for the learning organization. In spite of its enormous contribution to the organizational success, knowledge management has not received much attention from SMEs. It is indeed a challenge to have an appropriate approach towards knowledge management in SMEs context.</p> <p>The theoretical framework is developed based on the theory of knowledge management in general and knowledge management in SMEs in specific. The nature of knowledge, the two main types of knowledge and its difference with data and information are discussed. The organizational knowledge and the three main competences of knowledge from managerial perspective are referenced. Furthermore, the challenges, special needs and distinct characteristics of implementing knowledge management in SMEs are addressed. This research is a qualitative study. A single case study is used to conduct the research. Primary data is collected via semi-structure interview method.</p> <p>The findings emphasize the need for knowledge management and present the challenging environment of knowledge management in the case company. Resources constraint, threat of employee turnover and high demand from growth are such challenges towards knowledge management. The role of knowledge management from the strategy perspective, the distinct nature of organizational knowledge and the weak interaction of knowledge management elements are criticized. The research outcomes stressed the role of technology in knowledge management. Technology should be the first focus in knowledge management in this context. Based on the research, a technology solution, Enterprise Wiki, is suggested to implement in the case company.</p>	
Keywords	Knowledge management, SMEs, Enterprise Wiki

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1 Introduction

"Knowledge is at the core of what it is to be human, the substance which informs our thought and determines the nature and course of our actions." (Bennet, et al., 2015)

The study of knowledge has been widely recognized from many disciplines and domains varying from philosophy, economic and business, etc. From the business viewpoint, many academic works declare knowledge as "important asset" (Nonaka, 1994), "important resource" (Nahapiet, 1998), "competitive advantage" (Teece, 2000), "core competencies" (Ipe, 2003) for the organization.

Knowledge management is the management practice to leverage knowledge to add value to organization advantage (Bennet, et al., 2015). Majority of literature emphasize that knowledge management generates plenty of benefits for individual employees and organization itself. For example, it helps people get their daily job done faster and more effectively. It helps to advance today business drivers such as increasing the potentiality for business globalization, becoming leaner and more efficient organizations and creating better- adapted mobility organization. (Dalkir, 2005)

Nevertheless, Pawlowky & Schimdt (2011) criticized that knowledge management activities are not seen as enterprise strategy or core competencies for SMEs. Holger Kohl (2014) added that knowledge management initiatives have not been implemented widely in SMEs due to the lack of resources. It is a need for SMEs to include knowledge management activities as a strategic approach because Alwert (2008) insisted that poor knowledge management resulted in the huge loss for the organization such as increasing cost, reducing efficiency and scalability.

Thus, this research attempts to study about knowledge management practices in SMEs, focusing on the business perspective. The work is a commission for the company where the author is serving as a trainee.

2 Research question

The research aims to answer the question:

“What is the best practice for knowledge management in SMEs?”

To answer the main question, these sub-questions will be investigated:

- What is knowledge management? What is the origin and current state of knowledge management as a distinct management concept? Why is it important to organizational study?
- What is knowledge? What is the difference between data, information and knowledge? What is the nature of knowledge?
- What is organizational knowledge? What is the relationship between types of organizational knowledge? What are main elements made up of organizational knowledge?
- What is SMEs? Why is the study of knowledge management important to SMEs? How does knowledge management implement in SMEs? What is the difference of knowledge management between SMEs and large corporations?

3 Literature review

3.1 Knowledge Management as a management concept

Knowledge management is a highly multidisciplinary field of study. Dalkir (2005) indicated that the field of knowledge management experience the difficulty in classification. There are more than hundreds of definitions of knowledge management today.

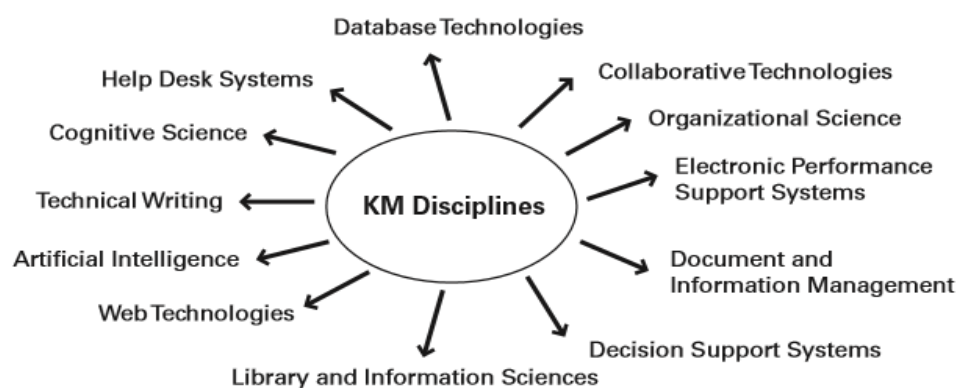


Figure 1: Multidisciplinary nature of knowledge management (Dalkir, 2005)

Figure 1 shows that knowledge management has its origin in plenty of diverse fields, for instance, organizational science, organization behaviour, information technology, linguistics, library and information science, etc.

In general, knowledge management is approached and examined from three main perspectives which are business perspective, knowledge asset perspective and knowledge science perspective (Dalkir, 2005). In this work, the author approaches knowledge management mainly from the business perspective.

Below are few definitions from the business perspective:

Nonaka and Takeuchi (1995) defined knowledge management *"as the process of applying a systematic approach to the capture, structuring, management, and*

dissemination of knowledge throughout an organization to work faster, reuse best practices, and reuse costly rework from project to project”.

Bhatt (2001) recognised knowledge management as *“a process of knowledge creation, validation, presentation, distribution, and application.”*

McInerney (2002) commented that knowledge management is *“an effort to increase useful knowledge within the organization to encouraging communication, offering opportunities to learn, and promoting the sharing of appropriate knowledge artifacts.”*

Huysman & de Wit (2004) stated that *“knowledge management is perceived as organizational practices that facilitate and structure knowledge sharing among knowledge workers.”*

There are even more ways to define knowledge management as a management concept. In general, most knowledge management practitioners and professionals agree that knowledge management is to leverage knowledge to add business value to organization, which is usually referred to as intellectual capital or asset (Stankosky, 2008). Stewart (1991) explained intellectual asset is the organization knowledge that can be used to generate organization wealth. Therefore, from the author point of view, knowledge management definition should cover both the process of how to capture, store and share of organizational knowledge as well as practices to utilizing knowledge resources as intellectual assets.

3.2 The role of Knowledge Management

Organization competitive advantage is the unique attributes that help organization outperform their competitors. Many researchers affirm that knowledge management is the crucial attribute for organization competitive advantage. (Pais, 2014)

First, knowledge is the most powerful company asset. This is the only resource that is not easily depreciated. Not like other assets, when it is used, the value of knowledge increased instead of decreased. Omerzel (2011) investigated that organizational knowledge has a positive effect on market value. It helps increasing profitability and

organizational competitiveness. Hence, knowledge is an important factor that contributes to organization competitive advantage.

Second, knowledge is organization core competencies. Core competencies refer to things in which organization knows how to excel. Core competencies, thus, provide or add to organization's competitive advantage. For example, organizational knowledge such as business process, know-how or expertise, etc. are core competencies. Organizational knowledge, especially tacit knowledge is unique. It helps differentiate company to its competitors. Organizational knowledge is essential because it helps organization solve problems quickly and increase opportunity for innovation. Nonaka (1994) emphasized it is very important for the organization to know how to create new knowledge as well as utilize current knowledge to improve their products and services.

Last but not least, knowledge management is fundamental for the learning organization. "Learning organization is an organization that is capable of continual regeneration from the variety of knowledge, experience and skills within a culture that encourage questioning and challenge" (Johnson, et al., 2017). In this fast-changing business environment, organization and its workers are expecting to continue learning to catch up with the latest trend. A successful learning organization will provide a good community to help employees develop their professional skills and strengthen collaboration within the organization. In general, it helps establish a sense of community within the organization.

To summary, knowledge management is an essential source of competitive advantage. Knowledge management is the important organization resource, core competencies and the basic need for a learning organization.

3.3 History of Knowledge Management

Knowledge management has its own distinguished history. In the early 1960s, Drucker first mentioned the term knowledge worker (Drucker, 1964). Knowledge worker refers to the one who needs to utilize and transform different kinds of information and knowledge into products and services. For example, engineers and consultants are typical knowledge workers. After that, in the late 1980s, the term knowledge

management was used popularly in academia work. There were more books, conferences and business journals about knowledge management.

		<i>Knowledge Creating Company</i> HBR Nonaka	Emergence of virtual organizations		<i>Your Company's Most Valuable Asset: Intellectual Capital</i> Stewart	Certification of knowledge innovation standards
ARPANET		<i>Organizational Learning</i> Sloan Mgmt.	Measurement of intellectual assets	<i>Community of Practice</i> Brown		
1969	1985	1988	1991	1994	1997	2000 +
	Proliferation of information technology	<i>Fifth Discipline</i> Senge	<i>Knowledge Management Foundations</i> Wiig		<i>The Balanced Scorecard</i> Kaplan and Norton	First KM programs in universities
			<i>First CKO</i> Edvinsson Corporation		APQC benchmarking	

Figure 2: A summary timeline of knowledge management (Dalkir, 2005)

As seen from the abstract timeline, there are significant events in the evolution of knowledge management. Knowledge management has developed in parallel with the era of computer or information technology. In 1969, the ARPANET knowledge portal was launched to help scientists and researchers exchange their work easily. Large data sets were transferred to that researching community using a network protocol.

In the mid of 1980s, there was more knowledge-based systems existing thank to the advance of internet and technology. Early 1990, knowledge management attracted more attention from management viewpoints. Plenty of management theorists such as Peter Drucker, Peter Senge, Ikujiro Nonaka, Hirotaka Takeuchi, K. Wigg and Thomas Stewart has significantly contributed to the development of knowledge management. In 1986, Dr K.Wigg was the first one who coined the concept knowledge management at the UN conference. In 1989, some consulting companies started to implement knowledge management projects inside their organization. In 1990, Senge presented the term "organization learning", which stressed the importance of the organization that can learn

from their past experienced, lesson learned from their knowledge-based systems. In 1993, the first book about knowledge management was published by Dr K.Wiig.us In 1994, the first conference about this study field was organized in the USA. In 1995, Nonaka studied the process of producing and utilizing knowledge in organization and how it contributes to the organization innovation (Nonaka & Takeuchi, 1995).

After that, knowledge management has been widely recognized as "competitive asset" (see Stewart (1991), Sveiby (1997), Lank (1997), Hamel & Prahalad (1990)). Kaplan and Norton (1996) also incorporate knowledge management in their balance scorecard framework. APQC's president Carla O'Dell (1996) led to conduct a cross-industry benchmarking study to measure intellectual asset. In the mid of 1990s, knowledge management then reached its highest momentum. There are plenty of international conferences about knowledge management such as the World Congress on Intellectual Capital Management. Besides, consulting firms started to offer knowledge management services and its benefits were widely recognized. From 2000 onwards, knowledge management has become an important subject in universities. Over hundreds of universities today have offered courses and degrees in knowledge management.

3.4 The nature of knowledge

3.4.1 What is knowledge?

"We know more than we can tell" (Polanyi, 1966).

Knowledge is a subjective concept. Knowledge relates to abstract features such as beliefs, values, perceptions, judgments and practical features such as skills, know-how, experiences (Dalkir, 2005). In daily life, people often misuse the concept of data, information and knowledge.

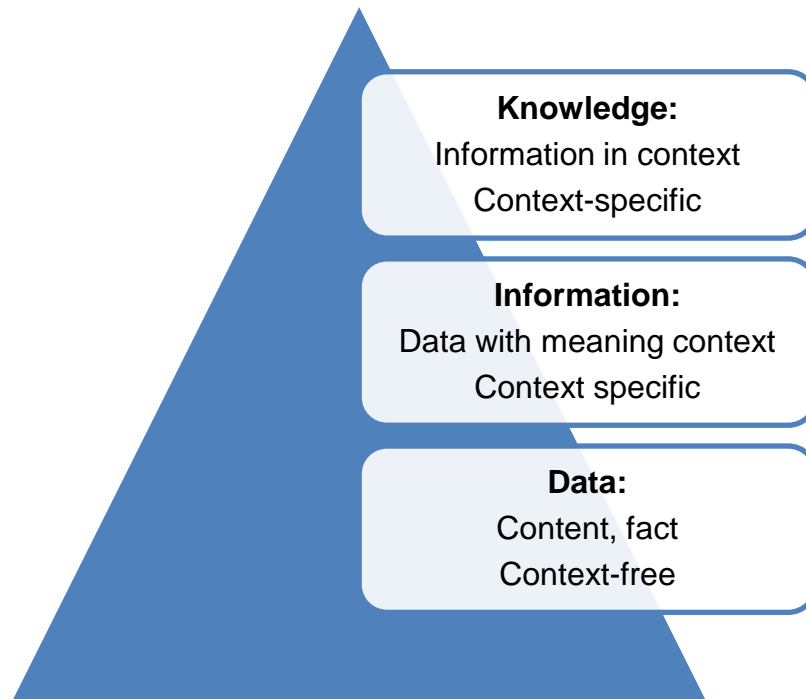


Figure 3: Comparison of data, information and knowledge

There are plenty of literature on knowledge management discussed the difference between data, information and knowledge. As seen from the figure 3, knowledge is more complex than data or information. Data is the content that is directly observed and verifiable. Information is the content of processed data. While data is context-free, information and knowledge are context-specific. Information is "data that have been arranged into a meaningful pattern". Knowledge is "information put in context, dependent on time and space". Knowledge is the decision made on facts or information. Knowledge is affected by experience and highly contextual. Therefore, strictly speaking, when mentioning about sharing knowledge, it relates to not only sharing data and information. Sharing knowledge can be interpreted fully correct if there are judgment, decision mental model or know- how involved in the sharing process. (Dalkir, 2005)

In fact, knowledge management deal with both knowledge and information. Therefore, a large part of knowledge management sometimes can be addressed as information management. (Dalkir, 2005)

3.4.2 The Two Major Types of Knowledge: Tacit and Explicit

In the field of knowledge management, there are plenty of knowledge classification. The most commonly used classification is distinguishing knowledge into two types: tacit knowledge and explicit knowledge. Ipe (2003) demonstrated that different types of knowledge have different characteristics, hence, they need to be managed differently.

Table 1: Comparison of tacit knowledge and explicit knowledge

Tacit knowledge	Explicit knowledge
<ul style="list-style-type: none"> • Knowing how 	<ul style="list-style-type: none"> • Knowing what
<ul style="list-style-type: none"> • Highly personal 	<ul style="list-style-type: none"> • Formal
<ul style="list-style-type: none"> • Hard to formalise 	<ul style="list-style-type: none"> • Easy to capture and follow
<ul style="list-style-type: none"> • Implied in actions, procedures, routines, ideas, commitment, values and emotions. 	<ul style="list-style-type: none"> • Embedded in systems, guidance's
<ul style="list-style-type: none"> • Context-specific, highly subjective 	<ul style="list-style-type: none"> • Context-specific, objective
<ul style="list-style-type: none"> • Difficult to transfer, communicate to others 	<ul style="list-style-type: none"> • Can be stored in the form of hard data, manuals, formulae, etc. • Easily to processed, transmitted, shared.

The table summarises the main different properties of tacit and explicit knowledge.

Tacit knowledge can be explained as the expertise, technical or physical know-how, know-why, and care-why, acquired through personal experience, to obtain the desired end-states (Nonaka, 1994). Polanyi (1966) first discussed the concept of tacit knowledge. He argued that "a large part of human being knowledge cannot be articulated and made explicit easily". Indeed, knowledge usually resides in the brain of people. Tacit knowledge, first, is implied in actions, procedures, routines, ideas, commitment, values and emotions. Tacit knowledge is highly personal, context specific and difficult to formalise. Tacit knowledge, thus, has the tendency to be "sticky in nature" (Hippel 1994). Therefore, tacit knowledge is difficult to put into concrete forms such as words, text, or drawing. It is quite difficult to communicate tacit knowledge to others.

Meanwhile, it is much easier to capture explicit knowledge in tangible forms and store it at a single location. Explicit knowledge, then, can be processed, transmitted across time and space relatively easily. Explicit knowledge is the knowledge that "can be expressed in words and numbers and can be easily communicated and shared in the form of hard

data, scientific formulae, codified procedures or universal principles” (Ikujiro Nonaka, 1995). Explicit knowledge is highly formal and objective in compare to tacit knowledge. Thus, explicit knowledge can be processed, transmitted and stored relatively easily.

3.5 Knowledge in Organization

Organizational knowledge is “organisation-specific, collective intelligence, accumulated through formal systems and people’s shared experience” (Johson, et al., 2017). It is the combination of information related to skate holders, technologies and processes. From the skate holders’ group, it is knowledge about employees, customers, suppliers, partners and competitors, etc. From the technologies group, it is the knowledge about the products, materials, services, etc. From the processes group, it is the knowledge about the structure, process and further development. Organizational knowledge is embedded explicitly in documents, databases, etc. Or it is implied in business processes organizational routines, practices and norms. Organizational knowledge locates mainly in two levels which are individual level and organization level. Knowledge in organization is “fuzzy in nature” and relates strongly to the individual who holds it. Thus, it brings up the challenge to define, measure and manage knowledge in organization and then move knowledge from individual level into organization level. (Ipe, 2003)

3.5.1 Relationship with Types of Organizational Knowledge

It can be referred to as explicit knowledge is to “know something” and tacit knowledge is “to know how to do something”. In corporate, it is easier to distribute, to access, to apply, to reproduce and to reapply explicit knowledge than tacit knowledge. Explicit knowledge can be transferred via products, services and documented processes. Meanwhile, tacit knowledge can be transferred by other methods such as coaching and mentoring.

Both types of knowledge are essential to the process of knowledge creation. They are complementary to each other. Knowledge is created through interactions between tacit and explicit knowledge. Tacit knowledge is created when explicit knowledge is used to generate observable actions. Likewise, explicit knowledge requires tacit insights to

generate its meaning. It can be explained simply that explicit knowledge represents in the product, meanwhile tacit knowledge is all the know-how, the technique used in process of producing that final product.

In corporate, tacit knowledge is considered to have more value than explicit knowledge. From the business and operational perspectives, it is important to turn tacit knowledge inside people's brain into explicit knowledge that is visible and reusable to help making decisions and actions. Indeed, it is much harder for organization to articulate their tacit knowledge. However, once knowledge is operationalized, it turns into important organizational assets (Ipe, 2003).

3.6 Three main competences of Knowledge Management

Organizational knowledge is created through the interaction of processes, people and technology. (D.Bhatt, 2001)

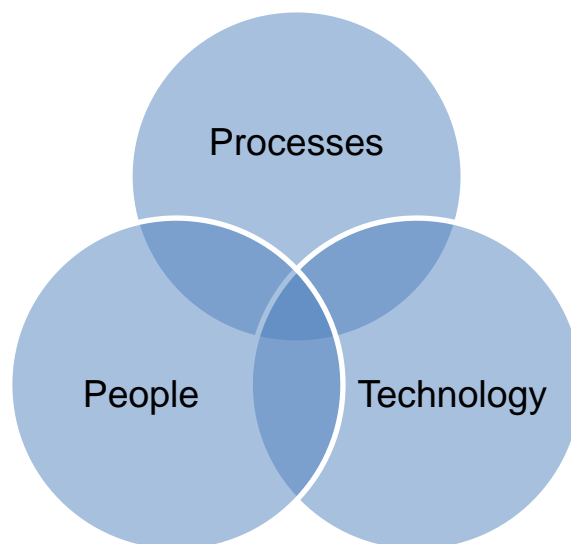


Figure 4: Three main elements of knowledge and competence management

Figure 4 illustrates the interaction between processes, people and technology in knowledge management.

Knowledge management processes describe the way organization acquires information and knowledge, the way employees interact, transfer and integrate that information and knowledge, and finally how that knowledge and information is transformed into products and services.

People plays the central role in knowledge management. First, employees need to have appropriate skills, competencies and knowledge to do their work. Second, employees are willing and motivated to share their information and knowledge. Moreover, employees are empowered with appropriate methods and opportunities to share information and knowledge.

Technology plays the support role in knowledge management. Technology supports collaboration and interaction between employees. Firstly, technology shortens the process of finding the right people who has the appropriate knowledge. Secondly, technology enable faster flow of data, information and knowledge sharing throughout organization. Furthermore, technology provide systematic approach to support storing, finding and retrieving data and information.

The interaction between processes, people and technology are based on organization's unique history and culture. Therefore, the change in corporate culture and way of working is essential in knowledge management initiative. Literature also emphasizes that the balance among processes, people and technology are important. The efficient knowledge management program take all three factors into consideration.

3.7 Knowledge Management in SMEs

3.7.1 What is SMEs?

Small and medium-sized enterprises (SMEs) has played an essential role in the economy. SMEs account for almost 95 percent of enterprises in worldwide. They employ approximately 60 to 70 percent of the total workforce. (OECD, 2000)

The definition of SMEs varies from different countries (C.Desouza, 2006). In the Finnish context, SMEs are enterprises that have fewer than 250 employees with either annual turnover less than euro 50 million (euro 40 million if before 2003), or annual balance-sheet less than euro 43 million (euro 27 million if before 2003) and fulfil the requirement of independent enterprise. Independent enterprises are enterprises of which not more than 25 percent equity or capital are owned by one enterprises; or jointly by several enterprises that do not meet the definition of SMEs.

Besides, small companies are usually differentiated from medium companies. Small companies are the one with fewer than 50 paid employees. Small company have either annual turnover or balance sheet that does not exceed euro 10 million and meet the independent enterprise criteria. The company case in this research belongs to the small company context. (Statistics Finland, 2017)

3.7.2 Knowledge Management in SMEs

Even though knowledge management programs are widely recognized and adopted by large organizations, it is still not a significant concern for SMEs. In SMEs, there are also few knowledge management activities but usually, they are not recognized officially as "knowledge management". Knowledge management in SMEs is still a new study field with lots of misinterpretation and misunderstanding. The insight of knowledge management in SMEs is provided unsatisfactorily from existing empirical study. (Susanne Durst, 2012).

There are plenty of studies emphasize the importance of managing knowledge in SMEs. Dollinger (1984), Brush (1992) and Salojärvi, Furu and Sveiby (2005) all confirmed that the level of effective knowledge management approach has a high positive correlation to the performance level of SMEs. Besides, many researchers support the view that knowledge management contributes to the success of SMEs as "core competencies", for instance, Beijerse (2000), Frey (2001), Edvarsson and Durst (2013). Frey stated that knowledge management supports SMEs to "work faster" (S.Frey, 2001). Edvarsson and Durst (2013) also listed out the benefit of knowledge management in SMEs including employee development, fast innovation, high level of customer satisfaction and organizational success.

However, Beijerse (2000) also pointed out that the matter of how knowledge management contribution to SMEs innovation has not been addressed carefully. Moreover, in his comprehensive study on how Dutch SMEs implement knowledge management, he argued that most of the current study on SMEs knowledge management has been conducted either by qualitative study or by quantitative study with very small samples, so they still have a considerable limitation. (Beijerse, 2000).

Literature also address the specific challenge SMEs might encounter when adopting knowledge management. Lim and Klobas (2000) found that small companies also face the similar needs and challenges in their strategic knowledge management as bigger companies. Furthermore, Lim and Klobas also developed a framework of six main factors based on current knowledge management theory that small companies should consider for their knowledge management strategy. In turn, Wickert and Herschel (2001) added some suggestions on how SMEs can address unique issues when implement knowledge management approach. (Anja Wickert, 2001)

Within the scope of the research, the author reviews and borrows some findings from the current literature to address the importance of knowledge management in SMEs and compare how SMEs approach and implement knowledge management different from large organizations.

3.7.3 The importance of Knowledge Management in SMEs

3.7.3.1 Significant resources constraint

Firstly, the definition of SMEs implies that SMEs have really limited resources such as land, labour and capital. Hence, they are usually expected to do more with less. In fact, SMEs always need to work faster and smarter to catch up with this fast-changing business environment and compete with their bigger competitors. C.Desouza (2006) demonstrated that SMEs mainly survive and compete on its know-how, therefore, knowledge is considered as the valuable commodity for the organization. Knowledge is can be the internal knowledge that spread all around the organization or the external knowledge from stakeholders such as customers, suppliers or competitors. SMEs face a

high need to utilizing its current knowledge and creating new knowledge to develop new products and services within its low budget. Indeed, it is crucial for SMEs to leverage its own current knowledge as a company competitive advantage.

3.7.3.2 High employee turnover threat

Secondly, SMEs are especially vulnerable to employee turnover. In this current fierce competitive and high mobility work environment, companies face the real problems with considerably high employee turnover. People nowadays do not work for the same business anymore. SMEs managers, when asked, admitted that it is the huge loss for the enterprise when the employee leave their work. SMEs usually do not attract the brightest workforce from the starting point. With their limited budget, they usually prefer recruiting average experienced but high motivated, fast-learner talents. Besides, SMEs do not also usually hire managers externally but promote from within the organization. Usually the most valuable knowledge, for example, company core processes are held by these managers. However, "the most knowledgeable employees usually leave first" (Lesser, 2001). And apparently, when they walk out of the door, they take with them the most valuable intellectual asset, organizational knowledge. Thus, knowledge management efforts can help minimize the risk of knowledge loss in SMEs. (C.Desouza, 2006)

3.7.3.3 Strong link to company growth

Thirdly, knowledge management has a strong link with company growth. Even though there are still a lot of opposing opinions, growth is still considered as one of a main performance variable for SMEs. External stakeholders such as customers, investors, suppliers still evaluate the success of SMEs based on their growth rate. In their study, Salojärvi, Furu and Sveiby (2005) confirm that knowledge management has an undeniably strong link to the sustainable growth of the organization. They also support the view that the learning ability of the organization is among the key "antecedent to company growth". Furthermore, effective knowledge management approach creates a strong strategic learning for the organization, which does not only create short-term success but also long-run growth. Besides, when SMEs start growing, they might consider expanding geographically to gain more market share. When the organization is

spreading all over different geographical locations, it creates a need to gather the existing knowledge that scatter everywhere. Therefore, for these reasons, SMEs which want to continue its expansion should consider taking knowledge management initiatives. (Sari Salojärvi, 2005)

To sum up, knowledge management is an important skillset for SMEs. It helps SMEs utilize their resources effectively, protect them from knowledge loss of high employee turnover and sustain them with their fast growth rate. SMEs which success-fully leverage their knowledge achieve high level of efficient operation, in-creased rate of innovation and better satisfied customer service level.

3.7.4 Knowledge Management in SMEs vs large organizations

The basic ideas and principles of knowledge management adopted successfully by large organizations can also be applied in SMEs. Nevertheless, knowledge management in SMEs needs to be approached in a different way due to its unique natural characteristics. SMEs, in general, are small, flexible, less formal. SMEs have fewer resources and lower turnover rate than larger organization.

Knowledge management processes, therefore, are perceived and applied in a distinct manner to serve the specific need of SMEs. (Susanne Durst, 2012)

The author then summaries the main approaches SMEs take on knowledge management that different from large organizations.

3.7.4.1 Utilizing the current existing resources.

Knowledge management application in SMEs encourages not to reinvent the whole wheel but to utilize the currently existing resources. Keogh (2005) categorised the number of constraint factors such as small size, lack of resources, availability of personnel. Obviously, the major constraints for SMEs when adopting knowledge management practice is again the resource. So, every decision about using the resource is made with very careful consideration. In fact, SMEs are struggling to integrate their knowledge management process while having to take care for their daily operation. Hence, knowledge management solutions in SMEs are therefore usually cost-focused. Overall,

SMEs need to pay attention to their resources constraints and therefore develop creative solutions to overcome these constraints. (Keogh, 2005)

3.7.4.2 Exploiting external sources of knowledge

SMEs' knowledge management initiatives place more emphasis to exploit and utilize external sources of knowledge because of their resource constraints. Chen, Doan, Edwards and Lehaney (2006) concur that external knowledge is important for SMEs and accentuates the strong need of inter-organization knowledge transfer. (Chen, 2006)

Organizational knowledge, as discussed in the previous part, are not produced only inside the organization. SMEs have difficulty to spend resources and efforts to produce knowledge inside the organization. Organizational knowledge is generated from both internal and external resources. Because of its resources constraint, SMEs often need to leverage resources externally. For example, SMEs take advantage of the knowledge they gain from their suppliers, customers, and consulting companies, etc. Sometimes they even cooperate in knowledge sharing with their competitor for their best interest. Knowledge management activities, therefore, happen from inter-company level. (Kevin C.Desouza, 2006)

3.7.4.3 The informal knowledge management approach

Knowledge management in SMEs is organized in a less formal manner than big organizations.

SMEs tend to focus on managing their tacit knowledge than explicit knowledge. They usually do not have formal strategic policy for knowledge management. Instead, they prefer to treat knowledge management at the operation level. In the study of knowledge management targeting on Icelandic SMEs, Edvardson (2006) found that most of the case companies applied an unsystematic approach of managing corporate knowledge. Most of them implement unsophisticated ICT technologies to support knowledge management activities. Only a few of them have knowledge management strategy. (Edvardsson, 2006).

In another study, Hutchinson and Quintas (2008) also revealed that most of SMEs implement knowledge management in an informal way.

Knowledge sharing activity, for example, happen at some of very informal occasion such as lunch time, coffee break or at employee personal party. However, knowledge management in SMEs are managed in a structured and deliberate ways. SMEs do have system and instrument relate to knowledge management but they do not refer to as knowledge management program. (Hutchinson & Quintas, 2008)

As described above the natural characteristics of SMEs are small and flexible. They are less bureaucratic and less formal than big organization. Besides, it is important to stress again that they have limited resources. Therefore, SMEs cannot adopt formal and systematic knowledge management strategy as big organization. SMEs do not have enough capability to take the similar solution and might lose its distinct characteristics in that case. Due to these factor, SMEs embrace knowledge management in an informal but structured way.

3.7.4.4 The crucial role of company culture

One of the first essential step in implementing knowledge management in SMEs is to create a sharing organization culture. The element such as trust, commitment and cooperation considerably contribute to the success of knowledge management in SMEs.

Wong and Aspinwall (2005) recognised and ranked company culture as the second important factors to help SMEs achieve their success in adopting knowledge management. To be more specific, trust and commitment among employees are key factors that need to be taken into consideration in knowledge management approach (C.Desouza, 2006). As a concrete example, Bozbura (2007) reported that Turkish SMEs have difficulty in sharing knowledge even within the company. The reason is that managers think that they will lose control over the knowledge. This is the real challenge for SMEs to manage trust in their culture to foster the process of knowledge management.

SMEs tend to focus more on tacit knowledge than explicit knowledge. Knowledge is usually centralized and kept by key people in SMEs, for instance owners or managers.

They often act as “knowledge repository”, which means that knowledge is stored and retrieved mainly from their head. SMEs are having more flat, organic and flexible culture than larger organization. Human interaction, therefore, play an important part in the success of implementing knowledge management in SMEs. It is worth mention that human, by nature do not share knowledge (Davenport, 1998). It takes time and effort to get human know what they know, to share what they know and to utilize what others know.

To sum up, it is the important need for organization, especially for SMEs to build up and support their sharing culture if they want to gain advantage from their knowledge management initiative.

3.7.4.5 The supportive role of technology

The role of technology in knowledge management in SMEs is still a controversial matter since knowledge management in SMEs tend to be more human-based approach.

In SMEs, core knowledge is held by key personnel and the knowledge is transferred mostly in a casual way. Therefore, SMEs focus to manage its knowledge in the humanistic approach and technology is not in the central of knowledge management implementation. Moreover, technology solutions are considered expensive, so that SMEs are not likely to invest in. It can easily understand why there is not much electronic knowledge repositories in SMEs knowledge management, for instance intranet or company database. (Beijerse, 2000)

On the other hand, several knowledge management practitioners have placed technology as an important factor in their guidelines for successful knowledge management in SMEs. For example, Egbu (2005) endorsed the important role of IT tools in knowledge management in SMEs. Nunes (2006) confirmed that knowledge management in SMEs has assisted by purposely designed ICTs system (Baptista Nunes, 2006). Lim and Klobas (2000) analysed that many managers in SMEs just recognized how knowledge management might help to add value to the organization. They affirmed that appropriate technology solution is the right way to make that value become more tangible. Marshall (2000) agreed and added that if SMEs want to success with their

knowledge management, they need to consider the appropriate technology that fit their needs and capabilities. He advised that SMEs can choose the inexpensive technology and easily integrated it into their everyday operation and company culture. Finally, he stressed that regardless of which solution or ICT system SMEs pursue, it need to be maintained dedicatedly. It is a must that the content or the knowledge always need to be kept up to date. (Marshall, 2000)

To sum up, technology indeed has a considerably supportive role in the success of implementing knowledge management in SMEs. SMEs can develop and tailor technology solutions to fit with their own needs and capabilities.

4 Theoretical framework

This part represents the key takeaways from the literature review that is relevant to the research question. The table summarize and compare the main part with respect to the generic context and SMEs context.

Table 2: Theoretical framework

	Generic	SME-specific
Knowledge management as a distinct management concept	<ul style="list-style-type: none"> • Knowledge management is a multidisciplinary field of study. • Knowledge management is to leverage organization knowledge to add value to organization. 	n/a
The role of knowledge management	<ul style="list-style-type: none"> • Knowledge management is widely implemented into practice. • Knowledge management is a significant source of competitive advantage • Knowledge management is company "intellectual asset" • Knowledge management is important to "learning organization" 	<ul style="list-style-type: none"> • Knowledge management is still a new area for SMEs • Knowledge management is important but is not integrated into enterprise strategy • Knowledge management is especially important in SMEs due to: the constraint of resources, the high threat of employee turnover and the strong link to company growth
The nature of knowledge	<ul style="list-style-type: none"> • Knowledge is different from data and information • There are two main types of knowledge: tacit knowledge and explicit knowledge 	<ul style="list-style-type: none"> • SMEs tends to focus more on tacit knowledge

Organizational knowledge	<ul style="list-style-type: none"> • Organizational knowledge resides into two level: individual level and organization level • Organizational knowledge includes internal and external knowledge • Organizational knowledge tends to be "fuzzy in nature" and relates to individual level 	<ul style="list-style-type: none"> • Organizational knowledge is generated mainly from external sources • Organizational knowledge is not distributed equally. It is hold mainly by key personnel.
Three elements of knowledge management	<ul style="list-style-type: none"> • Three important elements of knowledge management are people, process and technology • It is important to maintain the balance of these elements in knowledge management practice. 	<ul style="list-style-type: none"> • Knowledge management in SMEs is more human-based focus. Company culture is crucial. • Technology starts to play an important role in knowledge management

How knowledge management is approached and implemented differently from big corporation?

1. There is a strong need to utilize the current company resources.
2. It is important to exploit and leverage external knowledge sources.
3. Knowledge management is approached and implemented in an informal manner.
4. Company culture is essential to the success of knowledge management.
5. Technology play an important supportive role in knowledge management.

5 Research Method

5.1 Research approach

This section describes the method used to carry this research.

The purpose of this research is to investigate the experience of knowledge management at the case company. The topic was chosen based on the mutual understanding of the importance of knowledge management in SMEs. After having completed a preliminary overview of the current literature related to this topic, the author found that there was a gap in this study field.

Therefore, it is necessary to collect empirical evidence for this research. Since the data is not existing naturally, we need to collect it by ourselves. So that a primary research was conducted.



Figure 5: Research approach

The author summarizes the major steps used to conduct this research as in the figure 5. The first step is to access the general situation and define the scope of the research and most importantly the research question. The second next step is to determine the research approach. Case study method is chosen in this context. The third step is to prepare a data collection process. Qualitative methodology is applied to collect primary data via semi-structure depth interview. The fourth step is to analyze the data. The data will be analyzed using thematic analysis. The next step is to evaluate the level of validity and reliability of the data. And the last step is to present the result findings in the written report form.

5.1.1 Case study

Case study is the method used to investigate and understand the dynamics in a specific context. The case study is advised to use when there is not enough information about the phenomena. According to Yin (2009), case study is "...an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident".

In this study, the author decided to use case study because there is still a gap in literature of knowledge management in SMEs. Furthermore, the research topic knowledge management has different characteristics in the context of SMEs. There is an obvious difficulty of generalization the application of knowledge management in SMEs. Case study, therefore, will help provide more holistic and meaningful understanding about the subject in particular context. The case (unit for analysis) for this research is the company the author currently do the traineeship. This single case study approach suites the purpose of the research to develop knowledge management practices at the case company.

5.1.2 Qualitative research: semi-structure interview

The research topic knowledge management in SMEs is quite subjective, hence, the author decides to do qualitative research instead of quantitative research. The author chooses semi-structure interviews to get primary data about the phenomena.

According to Galletta (2013), semi-structure interviews aim to create space for respondents to reflect on their experiences about the topic. Thus, it will help providing more holistic understanding about the subject. Semi-structure interviews consist of questions prepared in advance to cover critical parts of the topic. However, these questions are used as guidance only. The interview will not have to follow the question list strictly. Semi-structure interviews provide a flexible context where the interviewee can freely express their own views in their own language. Because it engages both the respondent and the researcher in meaningful conversation that could also generate new meanings about the topic. Furthermore, the author has worked for the company almost 10 months. Therefore, there is a mutual trust between the author and the employees. Hence, it is considerably easy and convenient to conduct semi-structure interview with the employees.

However, semi-structure interview has its own limitation. It is difficult to generalize from the research result. Besides, it is somehow time and resource consuming. So that the process needs to be carefully planned in advance. The interviewer should have a good interviewing and listening skills to manage the interview process. Furthermore, interview questions should be open and excluded researcher's bias.

5.1.3 Case company

The target organization is a Finnish telecommunications company. The company was founded in 2008. The company is categorized as small and medium-sized company. The company has four main offices in Finland which are Helsinki, Lappeenranta, Kouvola and Turku. The company has 41 employees. The company offers services for telecommunications and electrical power network varying from planning, construction, documentation and maintenance service. The company is growing considerably fast.

The organization is a project-based organization due to its nature of business. Their work come usually in the form of project. Project is the organizational unit which has a specific purpose, time and resource constraints. To be specific, project has a start and an end. Company resources are planned in order to get the project done, which is the highest organizational goal. Thus, the company is organized according to specific project, not by traditional department structure. They have project managers lead different teams that operate at the same time. These teams do not need to interact with each other because they have different focuses and needs. To the current state of this research, the company has not defined any common process to handle their projects. Thus, there is a lack of standardization in the company operation.

The company is a knowledge organization. It means that knowledge has more importance role than other inputs such as labor or capital. Employees are typical knowledge workers such as engineers, designers and office workers. The company works directly with its customers. The work or project is different from time to time. Employees has the ability to apply their knowledge in different context. As stated above, there is little or no standardization in company operation, so that employee is learning basically by doing the work. Therefore, the speed of learning and unlearning knowledge is important to the organization. The organizational knowledge is more about tacit knowledge than explicit knowledge. Knowledge still resides mostly at individual level. Therefore, the company faces a high threat of losing important knowledge associate with their people.

Due to its rapid expansion, the company experience quite challenging issues. There is a significant communication problems across organization. Information and knowledge flow is not managed appropriately both from the internal and external level. Therefore, there is a real concern for the organization to develop its knowledge management practices.

5.2 Data collection

This part describes the data collection process. The data of the research were mainly collected by qualitative method, to be specific through semi-structure interview. The interviews were organized aiming to gain the most valuable and meaningful data for the

research. First, the author chooses potential samples for the research. Second, the author plans the process to approach the sample. Last, the author designs the structure of the interview process.

5.2.1 Identify potential samples

The respondent for the semi-structure interview was selected purposefully. 15 employees from different six employee groups were invited to participate in the interview. They were C-level managers, production managers, project managers, network designers, system specialists and project assistant. Different respondent groups were asked with different targeted question groups. The questions were grouped into themes at the beginning to provide clear guidance and structure for the interview.

To be specific, there were three main groups of questions in the interview questionnaire including knowledge management perception, knowledge management strategy and knowledge management practices. The CEO and the COO were asked all the question groups. The rest of the interviewees were asked more about knowledge management perception and knowledge management practices.

The author chose these targeted groups to understand different theoretical themes in the literature review about knowledge management in SMEs.

First of all, C-level managers were chosen to learn about the special needs of SMEs regarding knowledge management from the strategic level. They can provide information about how the organization perceives knowledge management concept from the managerial perspective. It is important to learn whether the role of knowledge management is imbedded into enterprise strategy or not.

Secondly, production managers and project managers were chosen because they are considered as "knowledge repository" in these SMEs. They have interaction with both internal and external stakeholders. They acted as "help desk" because they usually keep the most important information.

Thirdly, network designers, system specialist and assistant were chosen because they are also important knowledge workers. They are the one who have the most exposing experience with the knowledge management on daily basis. The authors aim to

understand the three main important elements of knowledge management which are process, technology and people from their daily work.

5.2.2 Way of accessing samples

The participants of the semi-structured interview were approached by either email, phone meeting or face-to-face meeting. First, the author sent the general email invitation to all respondents about the study and request their time for this research. Since the employees works in different locations, the author decided either to travel to their office to meet them in person or to conduct a phone meeting.

5.2.3 The structure of the interview

Before the interview, the author conducted a pilot study to gain understanding about the research topic and company case study. The author set up a short interview with the COO to learn about their specific needs and expectation from the project. After that the author defined the research question and the scope of the research. Then the author started to design the concrete interview questionnaire.

Because of the nature of semi-structured interview, the questions were chosen to encourage respondent to discuss freely about the subjects. The author planed carefully what to ask the interviews and what kinds of question would be used. There were three types of question in the interview including main questions, follow-up questions and probes. Main questions were used to answers the broad research question. Main questions were categorized by groups. These question groups were the theme of the topic based on what the author learn from the literature review. Main questions were asked to shape the attention of the interviewee to the focused themes of the research. Main questions were asked in the close-end question form, so that interviewees could freely express their opinions and feelings. After that, follow up questions were asked to gain in-depth and detailed answer about research themes. Such follow up questions were "What did you mean by saying that...?" or "What is your opinion by stating that...?". The author tried not to ask leading question such as "When you said that...did you mean...?". The author believed that such leading questions will direct the interviewees'

answers towards the authors' bias. The author also used probe question in the interview. Probe questions enable the respondent to provide more accurate and detailed answer. Such probes questions like "Can you give me some examples with that?" or "Can you clarify this a bit more?" help respondents provide more clarification for their answer.

During the interview, the author tried to provide the best relaxing environment that the interview was just somehow the conversation between the author and the employees about the subject. The interview was conducted mainly by face-to-face meeting. Therefore, the interaction between the participation was important. It was a strength for the author to have worked in the company for 10 months. Therefore, there was some level of trust between the author and the employees. The interview was recorded with the permission of the participant. Since this was the first interview between the author and the interviewee, some of the basic employee information were asked. Such background information were the employees job titles and work responsibilities, the time they work with the organization and their general opinion about the topic of the research. This could help warm up the interview and provide more time to the respondent to get used to the interview. During the interview process, the author noticed the interviewee non-verbal language to lead the interview to the appropriate direction. For example, if the interviewee feels suspicious about any question, the author might ask whether he or she wants to continue with it or not. Sometimes the author would stay silence once the interviewee postpones thinking more about the answer. This would encourage the interviewee to continue with their answer. The author tried not to interrupt the interviewee at any cost.

At the end of the interview, the author asked the interviewee some closing questions. The author tried to ask the interviewee if they had any opinion or feedback about the research. The author also asked the interviewee to keep contact later if any party has additional questions. The interview ended when the recorded was stopped. After that, the author checked the quality of the record and noted down the main result and the impression of the interview.

5.3 Data analysis

This part explains the process of data analysis using thematic method. Thematic analysis is a popular method for qualitative research in social study. It is “the method for identifying, analyzing, and reporting patterns (themes) within data” (Braun and Clarke, 2006). To be specific, the raw data from interviews will be processed and interpreted using identifying themes and codes.

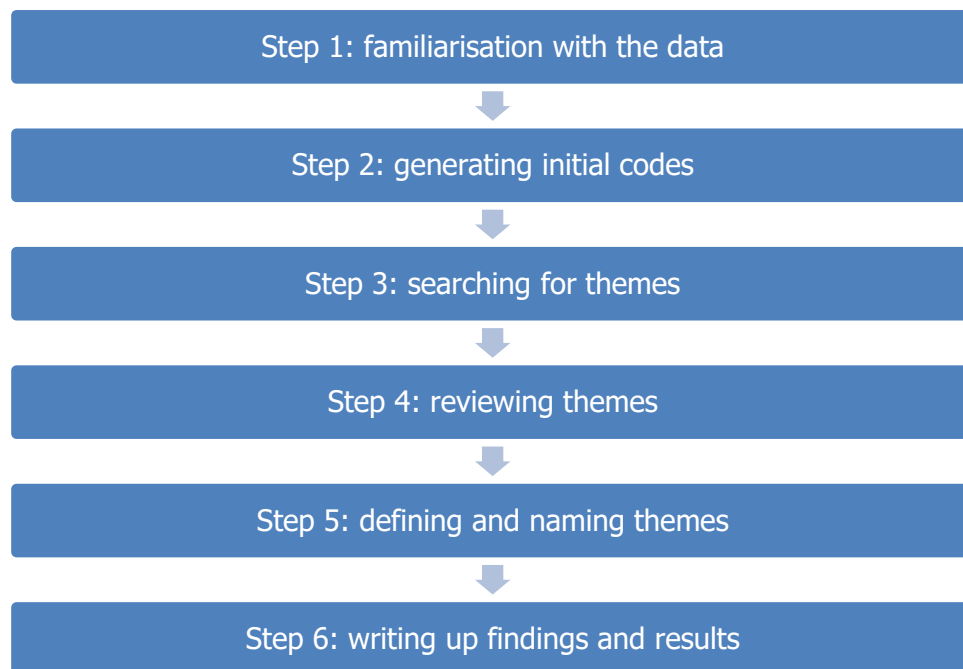


Figure 6: Phases of thematic analysis (Braun and Clarke, 2006)

The author followed the six phases of the thematic analysis as in the figure 6 to compare and synthesize the data with the research theory from the literature review. First, the author transferred all the interview into transcript. The author listened to each recorded of interview three times and noted down the answers. The author tried to keep the highest original of the responses. Second, the author made some primary codes from the transcript. These codes were identified from concepts or repeating phenomena presented in the interviews. This step was highly time-consuming since there would a possibility of a long list of codes. Third, the author organized these codes with similar features into possible themes. The codes without apparent relation was ignored. Fourth, the author compared these themes with the theory framework of literature review. The

author analyzed whether these themes had positive or negative correlation with the theory, whether they supported the theory or not. After that, the author revised once again and defined the name of the final themes with respect to the literature review. Finally, the author summarized and presented the result in the formal written form. The author used some extract of interview transcripts to support the argument.

5.4 Data evaluation

5.4.1 The validity and reliability of the research

The data collection and analysis process is pretty much subjective. Therefore, it generates a high concern about the reliability and validity of the research.

Validity is the degree to what is supposed to be measured is actually measured. Qualitative research is affected by the insights and capabilities of the researcher. For example, the ability of listening and conducting the interview. The researcher has advantage of ten months working experience in the case company. Thus, the knowledge about the case company and employees has some level of validity. The validity of this research based on the sources of knowledge and the primary data generated from the semi-structure interviews. Most of the theory of knowledge management in SMEs used in this research are quite up to date. They are mostly referenced from well-known research journals. The questions for the interview are designed to investigate the knowledge management at the case company.

Reliability is the level the research generates the consistency in the result. First of all, as stated above, there is a considerable level of trust and openness between the researcher and the employees. Therefore, the answers from the interview are highly reliable. The questions were used to guide the interview to the appropriate order. Later, these questions are used to check the consistency of the interview result as well. The interviews are recorded, so that the result will be processed consistently. However, the question is prepared both in English and Finnish, which are not the author's mother tongue. And some of the interviewee were not comfortable with communicating in English. Therefore, there is a high potential of misunderstanding and misinterpreting.

5.4.2 Ethical in the research

This research was conducted with high ethical consideration from the planning phase to the executing phase. The author believed that ethical research will generate quality research outcome. Therefore, the author included ethic principles to prevent any possible harm to the participants. Ethical dimensions were implemented in the process of collecting, analyzing and reporting data.

First, the data was collected with high code of ethics. The participants received all important information about the interview process. Before the interview, the author prepared a short introduction to brief the participant on the purpose of the interview. The author explained clearly the structure of the interview, how long the interview would take and how the data from the research would be used later. The participants' right of privacy was highly concerned. The author stressed that their participation and data would be processed with confidentiality and anonymous. The author explained to the participants in detail of their right to withdraw from the interview any time they wish. The author also asked permission to record the data for analyzing purpose.

The introduction part of the interview was prepared in both English and Finnish, since some interviews are done in Finnish. Below is the extract from the interview introduction.

"Thank you for your participation in this research. The purpose of this interview is to gather information on knowledge sharing perceptions/behaviors among employees in the company X.

The interview has six parts. The interview will take approximate an hour.

The responses will be processed confidentially and anonymously. The interviewee takes part in the interview voluntarily. Therefore, the interviewee has the right to refuse any question that he/she finds unsuitable. The interviewee may also end the interview any time he/she wishes. During the interview, should you find any question unclear, please do not hesitate to ask or speak up.

The interview is going to be audio recorded for convenience purpose. Hope that we will have a successful interview."

Second, the author applied code of ethics in the process of analyzing data. The author had a plan how the data will be kept and processed safely and ethically. As stated above, the data will be processed anonymously to protect the participants' privacy. Interview data is transferred to written transcript carefully. The data is kept at its highest original form. The author tried to avoid any interpretation, selection or bias opinions when processing the data.

Last but not least, the author take responsibility and accountability for the result of the research. All theories, ideas, information in this research were studied carefully. The author presented the research findings with integrity. The author tried to avoid plagiarism at any cost. The research result will be kept confidentially inside the organization due to the agreement of the author and the case company.

6 Data Analysis

6.1 The role of knowledge management

For the case company, knowledge management is still a new area. The company understands its needs with knowledge management. However, at the current moment, knowledge management is still not a part of enterprise strategy. There are some knowledge management activities in the company but they are not recognized as "knowledge management" officially.

Knowledge management is a new field to employees at the company. Most of the employee, when asked, stated that they are not so familiar with the topic. Only one employee has studied the subject before. Few employees knew about knowledge management from the technical perspective. The rest of the employee, answered that they have heard about it but did not have any clear view on how it works in this company.

Extract answer from the interview:

"I have studied knowledge management myself. But I don't have exposure experience with it, not here, in this company."

"...Sure, a bit. Mostly from the technical angle only. Different technical solutions to manage knowledge. I do understand the importance of it and how rubbish we are now."

"In some parts I am familiar with it. Knowledge management is a challenging area. It needs work every time. It never gets done. It needs constantly develop always."

"Not much, but I think there's a lot to get better here at this company".

"Very little, not so much..."

The company considered knowledge management is important in their business. As a small company, they encountered some significant challenges such as the lack of resources, high threat of employee turnover and strong demand from growth. First, the company admitted that they do not have much resources, for example labor, equipment, capital, etc., so that they always have to “do more with less”.

Extract answer from the interview:

"[...] We don't have enough people"

"Time. I need more time. [...]. I don't know. But I think the biggest challenge is that I don't have enough time to get everything done, to communicate with others and share information that everyone need."

"I am not doing it so much. Because I don't have much time."

Besides, the company also have personnel issue. Most of the employee have worked for the company since the start. Even though the employee turnover is quite low, there is significant amount of employee are quite close to their retirement period. One of the member of management team, when asked, admitted that they do not know how to keep the knowledge if their employee leave. Furthermore, the company is growing considerably fast in their business area. They need to constantly change the way of work to keep up with the customer requirement and changing environment.

Extract answer from the interview:

"Yeah. Well, I have seen a lot of changing in the past 10 years due to digitalization. [...] You have to change to keep up with the modern working day. You work with this company for a while. Then you have some habits, way of working for years. But it may be the most cost-efficient any more. And there's more smaller company with less personnel but they do stuff more efficiently and they take more jobs and then they have better revenue, profit, etc. You must change with the time."

Nevertheless, as other SMEs, knowledge management is not involved in enterprise strategy at the case company. The management team had taken that into consideration but there is not any obvious initiative relate to knowledge management from the

managerial perspective. They value “intellectual asset” and have a vision for a “learning organization”. However, they are not certain on how to execute that vision.

Extract answer from the interview:

"Intellectual asset here are knowledge, process, the way the company work. It's very important to us."

"Learning organization, well, it's very close to my eyes. We have new solutions for our employees to learn on their preferred time and some efficient ways to help them learn and acquire business skills."

"That's certainly the thing we need to develop and think about it in the future. The COO is the right person to discuss with."

To sum up, in this small company, despite its essential role, knowledge management is still not taken into consideration in the company strategy. It is a high need to integrate knowledge management into both strategical level and operational level.

6.2 Organizational knowledge

Organizational knowledge at the case company has distinct characteristics. First, there is more attention on using and sharing tacit knowledge. Second, the high source of organizational knowledge is generated externally. Finally, organizational knowledge is held by key personnel.

In the case company, tacit knowledge plays the bigger crucial role. Employees tends to seek for tacit knowledge. Tacit knowledge is the company know how, expertise on how to carry on the project, customers' special needs, opinion, feedback on the work, etc. Explicit knowledge in this case is system instruction, work guidance, customer requirement and regulation, etc.

Extract answer from the interview:

Tacit knowledge:

"I ask many advice or opinion on how they are thinking about the work?"

"How projects are going? What do they think about working at the company?"

"Mostly about status change. I don't ask much about opinion but I asked most about view. Well, I have to think about it for a while. I mostly ask something specific. It can be about one job, project, price. Everything relates to the project."

"They ask me how I build projects, how I made the offer and knowledge about that. Maybe strategy, plan for the company also."

Explicit knowledge:

"I sometimes ask about technical things about network. Maybe financial information or information about past projects (historical data)."

"I'm pretty new here. [...] It usually relates to some certain systems, so I do have to ask that kind of things."

"I ask, maybe, advice on different kind of system, on ERP, customer network system, in general."

Organizational knowledge is made up of the large percentage of external knowledge. Currently, the company do not have the capability of generating knowledge internally. It depends a lot from external sources such as customers, authority and consultant companies.

Extract answer from the interview:

"[...] I need mostly customer instruction, city/town requirement for permission"

"[...] mostly instruction from customers. They have special needs how the work should be done. I could not make it up myself."

Organizational knowledge is not distributed equally. Knowledge tends to be located at individual level, usually inside people's head. The key employee, such as managers, hold most of the important knowledge. They are considered as "help desk" or "company knowledge repository".

6.3 Three elements of knowledge management

There is quite weak interaction between processes, people and technology in creating organizational knowledge in the case company.

6.3.1 Processes

First, the knowledge management processes are not defined yet. It is not clear how the company create, acquire and utilize knowledge. Most of the knowledge seem to come from external sources, mainly from the customers and sub-contractors. Employee also create new knowledge by documenting their work. However, it is still not the common practice in the company. The knowledge is kept at individual level because there is still not yet a place to store and share knowledge. Furthermore, it is also a challenge to evaluate how the employees share or transfer the knowledge and how they integrated that knowledge into their daily work. The knowledge sharing process is quite ad-hoc and informal now. Knowledge is shared mostly through informal meeting, phone call or even WhatsApp (a freeware message application).

Extract answer from the interview:

"No. I do not document work often. Everything is in my head. I only document for client system."

"Maybe I should document my knowledge more and put in the place that everyone can get it. But it's a bit problematic that we don't have a place now."

"No, not for me. I do not document much. Maybe some instructions from the customer I'll document myself to use for another project. It's much easier to work when you don't have to ask anymore. And I can easily tell my co-worker later."

"I do take note. But I don't make it available for anyone else."

"Yes. I usually write down some instructions whenever I receive some new jobs. I usually do not write it in paper because I will forget the next day. So, I usually write it in Words. So, it will be better instruction. When needed I'll share my instruction to my co-workers."

"We share information through face-to-face meeting most of the time. Sometimes Skype/email/phone and WhatsApp."

6.3.2 People

Second, employees do not have a clear understanding about their role in knowledge management. They are willing to share knowledge but they do not understand when and how to share the knowledge. They only share the knowledge when asked. On the other hand, they are quite motivated to acquire new knowledge. Because the nature of project works requires employees to constantly update knowledge to catch up with customers' requirements. The positive thing is that the company has a quite relaxing and collaborative culture. Employees usually know who has the knowledge that they can ask from. However, employees do not have the well-defined methods or approach to get or share the knowledge they want in the more efficient manner. Besides, employees react quite positively with changing in company structure or new ways of working. When asked about failure in workplace, they all empower it with a positive attitude. All of them agree that changing is an important part in the working life.

Extract answer from the interview:

"I usually ask for knowledge when I don't know something. That's the first thing. Or when I want to learn something new."

"I ask something like how should we name our documentation, requirement from customer. We get instruction usually from the phone. It's not in written form. I got all the instruction from my co-worker."

"Yeah why not? Because that's when I fail, I get the feeling that I have to learn it again."

"Only thing that constant is change."

6.3.3 Technology

Last, technology has a weak role in knowledge management in this context. Employees rarely use the company information system to find or share knowledge. They do not "find it useful" or "convenient" to use it. There is not yet a systematic approach to support knowledge management activities. Corporate documents are still stored in network drive to which only certain employees can have access. Company has their

enterprise content management system and corporate social network; yet the potentiality of these systems is not fully leveraged.

Extract answer from the interview:

"Not so often, I don't find it much useful. Information is everywhere. It is not well-organized."

"It's hard to find document in the network drive."

"We need some kinds of system to find all the document. Or some place to store document. It could help save more time for me."

6.4 Summary

From the analysis above, it seems that the case company has quite a lot similar feature of SMEs towards knowledge management. The company has common challenges such as resources constraint, threat of employee turnover and high demand from growth. From the managerial perspective, knowledge management is crucial. However, from the operational perspective, it does not have a clear role. Knowledge management is not integrated into the business context. Organizational knowledge still locates mainly at individual level. The large part of organizational knowledge comes from external resources. Tacit knowledge plays the more important role at the current stage of the organization. Three elements of knowledge are not well synergized to create organizational knowledge. The process has not clear defined. People are motivated to share the knowledge but are not empowered with appropriate methods. Most importantly technology is not fully leveraged to provide enough support.

7 Suggestions

7.1 Empower the role of technology

From the analysis and literature review, the author concludes that technology should be the first kick-off practice to start the knowledge management initiative in the case company. The company should develop its own tailored technology solution to fit in its specific working situation. To be specific, the technology solution first should come with organizational need analysis, then it should be integrated into business operation and most importantly empowered with company sharing culture.

First, the company should prepare a careful need analysis for knowledge management. The company should have its own definition of knowledge management that comes along with their business objectives. Knowledge management only brings its best potential when it meets both individual and organizational needs. Since the employees are not so familiar with the concept of knowledge management, this top-down level approach is highly recommended.

Secondly, knowledge management initiative should not be carried separately but integrated into daily business operation. The company should try not to reinvent the wheel but utilize their current resources. It is not necessary for the organization to create new knowledge internally at the current stage. However, they should focus more on transferring current tacit knowledge into explicit knowledge and acquiring more knowledge from external sources. Furthermore, the company has already invested in technology system for knowledge management such as enterprise content management or enterprise social network. These systems have out-of-the-box solutions for knowledge management such as electronic database storage or intranet. Furthermore, employees are also familiar with using these systems on their daily job. Thus, it is a cost-saving solution for the company to utilize these systems.

Thirdly, technology solutions cannot be succeeded without human interaction. Therefore, it is crucial that technology solutions are built on the foundation of company sharing culture. Such elements as trust, commitment and co-operation are important to

the success of knowledge management. Besides, knowledge management should be embraced from the informal way. The management team should show some commits and supports towards technology solutions. The employee should be motivated to contribute to the company sharing culture. Therefore, some rewards or incentives could be some considerable options.

To sum up, technology is the necessary practice towards knowledge management in the context of the case company. It is crucial for the company to start developing and implementing technology solutions for its knowledge management.

7.2 Implement Enterprise Wiki

7.2.1 Need analysis

From the case company current perspective, knowledge management is first to make knowledge available to everyone in the organization. One of the manager emphasized the need of knowledge sharing in the company.

"We need to have every scrum of information available that they need for their work, if it's not restricted or confidential. I believe that I'd like to see this company directed into the path of learning from others and sharing the knowledge. Not only passive sharing but also active sharing. We need to break the habit of keeping knowledge for oneself."

Indeed, the company currently needs a "place" for knowledge sharing throughout the organization. Furthermore, organizational tacit knowledge need to be transferred into explicit knowledge; meanwhile explicit knowledge need to be organized centrally. Most importantly, it is crucial to establish a culture of knowledge sharing in the organization.

7.2.2 Wiki as a technology solution

An enterprise Wiki, thus, is selected as a knowledge sharing option for the case company. Enterprise Wiki is built on the company cloud-based enterprise content management platform, SharePoint Online.

Wiki is a very common collaboration tool in this current world. Wiki is developed by Ward Cunningham in 1995. Cunningham defines Wiki as “a collaborative space”. It consists of multiple interlinked webpages to store information, where each page can easily be edited, modified and deleted by users. The most well-known example of Wiki is Wikipedia. (Leuf, 2001)

SharePoint Online is a cloud-based collaboration platform. It is a part of Office 365, which is the Microsoft Office suite in the cloud. SharePoint Online is used to support enterprise digital information and document management. It enables organization to collaborate across multiple stakeholders such as employees, customers, suppliers and partners. SharePoint Online is in the cloud, which means it is remotely accessible from everywhere. (Microsoft, 2017)

Wiki is selected in this case because it suits the need of the company. First of all, it is indeed a cost-saving solution. It does not take much time and resource to design the solution. The company just develop the solution from its current system with some customizations. The employees do not need to put much effort to learn the Wiki since almost everyone is familiar with the concept of Wikipedia. The company, thus, can save much training cost. Second, the Wiki can act as a centralized electronic knowledge storage. It gathered the flow of organizational knowledge from different geographical locations into one point. Despite of the distance barrier, everyone now can access, share and collaborate with organizational knowledge in the Enterprise Wiki. Last but not least, the Enterprise Wiki can help promote the knowledge sharing culture in the organization. Since this is an informal approach to knowledge management, everyone is encouraged to contribute and benefit from shared knowledge. Thus, it creates trust and commitment in the organization.

In order to get the most out of the technology solution, Wiki tool needs to be integrated in the daily operation work. Even though, there comes a lot of flexibility with the Wiki, the security of the platform need to be managed properly. The company should develop some plan to govern the Wiki. The integrity of the Wiki content should be strictly protected. Furthermore, Wiki content need to be categorized and organized in a proper way. The content should be managed and monitored regularly by a committed administrator. It is very important to keep the Wiki information fresh and up-to-date.

To sum up, the Enterprise Wiki is a potential solution to the company knowledge management. In order to gain the most benefit from the tool, the company should integrate and align the Enterprise Wiki with the high consideration into its daily operation and culture.

8 Conclusion

In conclusion, knowledge management in SMEs need the appropriate approach because of its own distinct characteristics. One of the best practice for knowledge management in the SME like the case company is technology solution. It is necessary for the case company to start knowledge management to overcome its challenges such as the lack of resources, high threat of employee turnover and strong demand from growth. Knowledge management initiative should meet the need of the company and align with the company culture. In the scope of this work, the author recommend that the company should start with developing and implementing technology solution from their own resources such as Enterprise Wiki.

9 Research limitations

The research has its own limitations and needs further investigation into the field of knowledge management in SMEs. First, the topic of the research still experience the lack of empirical study. It is an obvious gap in the current literature of this study field. The role of technology in knowledge management in SMEs is not well-researched. There are still a lot of debate about the issue. Second, the single case study brings up the problem of generalisation. The findings from the case company might not apply to another company. The author also has limited industry knowledge about the company. Last but not least, the research has pretty strict timeline. Therefore, it is indeed a challenge to conduct a comprehensive study about the subject. Moreover, the language barrier and geographical location bring difficult and time-consuming to the data collection process.

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Semi-structure Interview Questionnaire

Introduction:

Kiitos osallistumisestasi tähän tutkimukseen. Tutkimuksen tarkoitus on kerätä tietoa sisäinen tiedonkäsittely; tiedon jakaminen työntekijöiden keskeen.

Haastattelu sisältää kuusi osaa ja kestää suuren piirteen tunnin.

Vastaukset käsitellään luottamuksellisesti ja anonyymisti eikä vastauksia tarkastella yksittäin tai yhdistetä vastaajan nimeen tai yhteystietoihin ilman hänen etukäteistä suostumustaan. Osallistuminen on vapaaehtoista ja siitä voi irtisanoutua milloin tahansa.

Vastaaja voi myös jättää väliin yksittäisiä kysymyksiä. Haastattelun aikana voit milloin vaan kysyä lisä selvitystä, jos jotain jäi epäselväksi

Haastattelu nauhoitetaan tietojen käsityksen helpottamisen vuokseen.

Thank you for your participation in this research. The purpose of this interview is to gather information on knowledge sharing perceptions/behaviors among employees at case company.

The interview has six parts. The interview will take approximate an hour.

The responses will be processed confidentially and anonymously. The interviewee takes part in the interview voluntarily. Therefore, the interviewee has the right to refuse any question that he/she finds unsuitable. The interviewee may also end the interview any time he/she wishes. During the interview, should you find any question unclear, please do not hesitate to ask or speak up.

The interview is going to be audio recorded for convenience purpose. Hope that we will have a successful interview.

Type of question	Questions	Respondent group	Justification
Background information	<ul style="list-style-type: none"> <i>Voisitko esitellä itsesi lyhyesti?</i> <p><i>(Could you please introduce yourself?)</i></p>	<ul style="list-style-type: none"> All 	<ul style="list-style-type: none"> To obtain general background information about the interviewees

	<ul style="list-style-type: none"> • <i>(Kauan olet ollut tällä palveluksella?</i> <i>(How long have you been employed here?)</i> • <i>Mitkä ovat päätehtäväsi ja vastualueesi?</i> <i>(What are your responsibilities/area of work?)</i> • <i>Onko KM/KS sinulle tuttu?</i> <i>(What do you think of KM/KS (Have you heard about it?))</i> 		<ul style="list-style-type: none"> • To understand how they perceive/understand and about knowledge management
Corporate knowledge	<ul style="list-style-type: none"> • <i>Pyydätkö työkavereilta apua ja neuvontaa? Millaista?</i> <i>(What kind of information/advice do you ask from your co-worker?)</i> • <i>Pyydetäänkö sinulta apua ja neuvontaa? Millaista?</i> <i>(What kind of information/advice do your co-workers ask you?)</i> 	<ul style="list-style-type: none"> • All 	<ul style="list-style-type: none"> • To examine organizational knowledge
KS mindset/strategy	<ul style="list-style-type: none"> • <i>Miten ymmärrät aineettoman omaisuus?</i> <i>(How do you perceive intellectual assets?)</i> • <i>Osaatko suojata aineettoman</i> 	<ul style="list-style-type: none"> • C-level only 	<ul style="list-style-type: none"> • Understand knowledge management from the perspective of strategy

	<p><i>omaisuutesi/omaisuutene?</i></p> <p><i>(Is there any initiative to protect intellectual assets?)</i></p> <ul style="list-style-type: none"> <i>Oletko sitä mieltä, että tieto on tärkeä osa jokaisen organisaation strategiaa?</i> <p><i>(Do you consider knowledge as an important part of business strategy?)</i></p> <ul style="list-style-type: none"> <i>Mitä sinulle tulee mieleen oppivasta organisaatiosta?</i> <p><i>(What are your thoughts on the idea of learning organization?)</i></p> <ul style="list-style-type: none"> <i>Onko aikomus kehittää ja ottaa käyttöön KM:ä?</i> <p><i>(Is there any vision for any KM initiatives/practices into the business?)</i></p>		
KS status quo	<ul style="list-style-type: none"> <i>Onko sinulla käyttömahdollisuudet yrityksen osaamiseen? Ja mistä kanavista/mistä saat näitä tietoja/tuntemuksia?</i> 	<ul style="list-style-type: none"> All 	<ul style="list-style-type: none"> To examine the status of knowledge management

	<p><i>(Through which channels do you access corporate knowledge?)</i></p> <ul style="list-style-type: none"> • <i>Kuinka kauan olennaisien tietojen/dokumenttien kaivamiseen menee aikaa?</i> <p><i>(How much time does it take for you to get the relevant knowledge information/document?)</i></p> <ul style="list-style-type: none"> • <i>Millä tavalla jaat tuntemuksesi?</i> <p><i>(How do you share your knowledge?)</i></p> <ul style="list-style-type: none"> • <i>Do you document your work/task/lesson learn?</i> 		
Motivation to share	<ul style="list-style-type: none"> • <i>Missä tapauksissa pyytäisit apua?</i> <p><i>(When do you ask for knowledge/information?)</i></p> <ul style="list-style-type: none"> • <i>Missä tapauksissa olet valmis jakamaan tuntemuksesi?</i> <p><i>(When do you share your knowledge?)</i></p> <ul style="list-style-type: none"> • <i>Oletko sama mieltä, että epäonnistumisen on mahdollisuus oppimaan</i> 	<ul style="list-style-type: none"> • All 	<ul style="list-style-type: none"> • Examine the company culture's view on knowledge management

	<p><i>(Do you perceive failure as an opportunity to learn?)</i></p> <ul style="list-style-type: none"> <i>Oletko sitä mieltä, että muutos on tänä päivänä tärkeä osa työelämästä?</i> <p><i>(Do you perceive change as part of working life?)</i></p>		
Information System	<ul style="list-style-type: none"> <i>Kuinka usein käytät IT apuvälineet löytääkseesi (O365/SP) tietoja?</i> <p><i>How often do you use IT system (O365/SP) to find knowledge?</i></p> <ul style="list-style-type: none"> <i>Kuinka usein käytät IT apuvälineet (O365/SP) tietojen jakamiseen varten?</i> <p><i>(How often do you use IT system (O365/SP) to share knowledge?)</i></p>	<ul style="list-style-type: none"> All 	<ul style="list-style-type: none"> To examine whether IT system support knowledge management
General	<ul style="list-style-type: none"> <i>Onko ajatuksia/ehdotuksia miten voidaan kehittää tietojen/dokumenttien jakamisen kollegoiden keskeen?</i> <p><i>(What can be done to help you share your knowledge/document with your co-worker?)</i></p>	<ul style="list-style-type: none"> All 	

	<ul style="list-style-type: none">• <i>Haluatko lisätä jotain?</i> <p><i>Yleiskommentit?</i></p> <p><i>Before we end, is there anything else you would like to add or comment?</i></p>		
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