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Knowledge sharing: How ICT and organizational culture increase sharing of knowledge within firms

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Abstract

As companies of the 21st century are getting more and more globalized it is important for companies to stay ahead of their known and unknown competitors. Knowledge is a key factor for many companies. Knowledge cannot always be transmitted effectively between employees in companies. Large sized enterprises have adopted various information and communication technologies (ICT) in order to transmit knowledge fast and efficiently. Small and medium sized enterprises (SMEs) have according to previous research, not been able to apply ICT to their business as well as large sized firms

The purpose of this dissertation is to explore the gap, which exists between the usage of ICT and knowledge sharing in Swedish SMEs. In this dissertation, a deductive approach will be used as the theories are existent but are lacking empirical data.

The research was performed through qualitative studies, and the method that was used was case studies. The case studies were performed in four companies, which belong to the production/service industry, all the companies fall into the category of SME.

A model was constructed from existing theories made by Hendriks (2001) this model was analyzed and tested thoroughly. In the analysis of this dissertation, the model was developed as new factors were discovered to have an influence on what is affecting managerial perception of ICT and how it is being used for knowledge sharing. Our findings suggest that ICT use is affected by an influence, which exists in an external layer. This influence consists of legal requirements. Legal requirements seem to have a large impact on how ICT is being used in some companies, which are operating in a knowledge-based industry.

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Introduction

1.1 Background

The development of technology has made it possible to transfer information, data, knowledge and communicate at a very high speed which is time reducing for companies. According to Ng and Li (2003) technology provides companies with the ability to process and distribute greater amounts of data and information than before; at the same time the amount of data remains meaningless if this information cannot be translated. A knowledge sharing system should strengthen the organizations sustainability and future objectives; however, many organizations have problems implementing and fully utilizing such a system (Hendriks, 1999). Hendriks (1999) claims that in order to fully use such a system, organizations need to be aware of what exactly knowledge sharing is and how to accomplish sharing of that knowledge. Hendriks (1999) also states that knowledge sharing within a firm is dependent on a combination of different variables such as culture, motivation and the use of Information and Communication Technology (ICT). According to (Hendriks, 2001) organizational culture is a key factor, which moderates sharing of knowledge.

ICT is a technological resource, which consists of information that is available in an organization and the ability to communicate this information within the organization. ICT is a wide concept referring to all technological tools that facilitate the flow of information and communication. ICT systems exist in different forms and shapes for example as intranets, home pages and so on and are very common in organizations today. These systems are used as tools developed to provide and help organizations reach a certain outcome; these outcomes vary depending on the type of organization (Maguire et al., 2007).

The problem that firms face today is not access to the right equipment; instead the problem is access to the right information and the ability to share such information and knowledge within the firm. In today's society, knowledge is power so why share it? This is a common problem in organizations in general; employees will choose not to contribute with their knowledge to the databases since it can be seen as a threat to their careers. Employees might also feel threatened when sharing all their knowledge, as a feeling of expendability could occur (Hendriks, 1999).

The importance of ICT systems and their influence on knowledge management has become highly important in the competitive and globalized business environment of today. ICT systems are today seen as a necessity in companies and are used as a tool to manage knowledge in

organizations. The purpose of using these systems in organizations is to spread the knowledge and make it more accessible for the members of the organization (Ng and Li, 2003).

Hendriks (1999) states that, the full use of the ICT system and knowledge sharing within a company depends on whether the perceptions of the importance of ICT use in the organization are good or not. Hendriks (1999) claims that the way that the ICT systems are used decides whether knowledge sharing is stimulated or not. According to Ng and Li (2003), the way that knowledge sharing is encouraged depends much on the organizational culture. Organizational culture describes the shared behavior within an organization; this includes for example systems of working and habits (Jacobsen and Thorsvik, 2008).

Hendriks (1999) describes that there are different views on the usage of ICT systems in different types of organizations. For example organizations with knowledge sharing cultures are focused on codification and those who instead focus on personalized knowledge sharing do not focus on codification. Furthermore, organizations with a culture focused on personalization do not need to invest heavily in ICT systems. An organization, which is concentrated on personalization focuses on bringing people together in order to share knowledge between the members of the organization (Ng and Li, 2003). ICT is more appropriate to use in organizations which store information for the purpose of reusing the knowledge for future projects (Hansen et al., 1999). The problem that many organizations which are using ICT are facing is that the knowledge that has been stored for future use is not used due to various factors such as lack of time as a result of rigid deadlines (Newell et al., 2006). According to Newell et al. (2006) this results in an increased risk of "reinventing the wheel" when new projects are started.

What this paper will focus on is whether ICT influences knowledge sharing or not depending on the organizational culture of the firm. Another focus of this paper is that the research is conducted in small and medium sized enterprises (SMEs) in Sweden. This will give the opportunity for a unique study, which has not previously been carried out. The reason why the study will be unique is that most of the research done on both organizational cultures and ICT has been conducted in large companies.

1.2 Problem formulation

Research has shown that there are mixed effects of the use of ICT in various organizations. Newell et al., (2006) argue that ICT is more appropriate for organizations, which deal with explicit knowledge rather than tacit knowledge. Tacit knowledge cannot be translated by technological systems; it requires human interaction and analyzing in order to be understood.

Research has been done on the connection between the employee perception of the importance of knowledge management (KM) and efficiency, effectiveness of knowledge sharing (Hendriks, 1999). However, the studies in the field are rather mixed in the view on the link between manager perception and knowledge sharing within a firm. A number of authors argue that in order to understand the linkage, other factors must be taken into account (Hendriks, 1999; Li and Ng, 2003; Newell et al., 2006). To better comprehend the link between manager perception and knowledge sharing; some researchers have argued that perception does not influence knowledge sharing directly, but is being mediated by the use of ICT. For example Hendriks (1999) has claimed that perception can explain ICT use, because ICT can enhance knowledge sharing by lowering barriers between knowledge workers, and improve access to information about knowledge (Hendriks, 1999). Other researchers have discussed the linkage between perception and ICT (Newell et al., 2006), or the link between ICT and knowledge sharing (Li and Ng, 2003). Li and Ng (2003) have claimed that to understand this relation, one need to consider the moderating influences organizational culture has on ICT use and in turn how this affects knowledge sharing in organizations. In a way, research considers different linkages between different variables, which either mediate or moderate the relationship between knowledge management perception and knowledge sharing; without developing a more comprehensive framework, which takes into consideration all the linkages. Thus, this dissertation will address this void by exploring how perception of knowledge management influences knowledge sharing which is mediated by ICT use and moderated by organizational culture.

The current research in this area is dominated by a focus on large firms, therefore, this paper will focus on SMEs in Sweden.

1.3 Research question

-How does the managerial perception of ICT influence knowledge sharing in SMEs depending on organizational cultures?

1.4 Research purpose

This study aims to explore the relationship between the managerial perception of ICT systems and knowledge sharing within the firm with culture as a moderating factor.

2. Literature review

This section describes Managerial perception of ICT, ICT use, organizational culture and knowledge sharing. Various issues related to the previously mentioned subjects are also mentioned in this part. Finally theories are presented which, are created from analyzing previous research and two propositions are presented.

2.1 Introduction

This chapter aims to explain in detail different factors, which affect the knowledge sharing in organizations. ICT has above been presented as a tool that helps firms with communication and information, examples of specifically what ICT is have also been given. In this chapter, the managerial perception will be presented as a major factor of how ICT is being used in an organization. Organizational culture, knowledge as a resource and knowledge sharing are also factors, which will be explained in detail further on in the chapter. There will be two parts describing the linkages between the factors and in the end of these parts, there will be propositions, these aims to provide a better understanding of the gap in the chosen area.

2.2 Managerial perception of ICT

Perception is a psychological term, which is connected to human sense, possession of knowledge and experiences. It is a process by which individuals translate different impressions into a view of the environment. Perception differs from person to person; one individual can have a positive perception while another has a negative perception of the same thing; it is based on incomplete and unverified information (Blake and Sekuler, 1993). Perception is also something that guides human behavior in general. Rantapuska and Ihananien (2008) claim that the owner-manager in small firms is the main actor of the investment process, therefore, managerial perception of ICT systems is an important topic. This section will describe how managers in companies perceive the importance of ICT. Factors explaining why ICT can be perceived differently depending on the organization will also be described.

ICT systems are very helpful and can affect the daily work. The purpose of using ICT in companies is to create better workplace efficiency (Matthews, 2007). According to Bayo-Moriones et al., (2011) it usually takes time and a lot of effort to perceive clear benefits from ICT. Usually managers in SMEs do not see ICT as a beneficial tool for the organization since the large focus is on short-term results. SMEs are generally financially sensitive, therefore, managers tend to make investments which affect the short-term financial results (Arendt, 2008). However, ICT systems are long term investments while SMEs put their effort on short-

term objectives which will generate fast financial income; and improve various factors in an organization. The problem is that ICT does not fit with the strategy of the company (Arendt, 2008).

Another issue is that complex ICT tends to be very high, therefore; there is a lack of comprehension of the entire systems. This affects the perception of the effectiveness of the systems as they cannot be easily updated with up to date information (Mildeova and Brixi, 2012; Apulu et al., 2011).

Previous research done in Slovenia shows that only larger ICT investments are analyzed and evaluated. Large investments (over one hundred eighty-seven thousand euro) represent only one-fifth of the total investments among SMEs (Vehovar and Lesjak, 2007). According to Broadbent and Weill (1993) there is a clear relationship between the managerial perception of ICT and investments in this area. Managers with earlier positive experiences with ICT choose to make larger investments and more costly investments in this area, while managers with negative experiences tend to think that investments of this nature are unnecessary. Broadbent and Weill (1993) also showed that the smallest ICT investments, which are represented by investments below three thousand euro were not perceived as beneficial for the organization. The negative response on small ICT investments could be explained by a lack of corresponding supporting measures, education and communication within the firm (Vehovar and Lesjak, 2007). However, other authors state that there is a clear positive perception of all ICT systems. The authors state that there however are perceived benefits which the managers notice. These perceived benefits are in communication (Bayo-moriones et al., 2011). Hendriks (1999) argues that when it comes to communication managers most likely have a positive perception of ICT. Lin (2007) however, argues that when it comes to using ICT as a knowledge repository, it is often not well perceived in organizations. Knowledge tends to be used as a tool for personal gain; this is why ICT is not perceived well in all cases (Maguire et al., 2007).

2.3 Use of ICT systems

The development and implementation of ICT systems has become a topic, which organizations tend to pay a lot attention to (Añon Higon, 2011). Since the World Wide Web (WWW) was invented in the 1990's communication has become simplified. Even though communicating has become more efficient, it has not been perfected. The amount of available data tends to be high in firms, the ability to translate the data with an appropriate system, however, depends on an organization's ability to make use of it. Hendriks (2001) states that simply distributing

knowledge with the aid of a system only becomes relevant if it leads to enhanced creativity which in turn lead to operations which are beneficial for the organization.

ICT systems are crucial for modern companies, as they have to be able to make fast decisions and be competitive on the market (Parker and Castelman, 2007). Technological equipment was considered to be an advantage for organizations before the 90's, which was an era where the hardware was still at the stage of development. Today the hardware is taken for granted which has switched the focus from hardware to software development. The software could be described as different technological programs that are developed to fit the needs of specific companies; these programs represent ICT in different shapes (Lindvall, 2011). ICT is developed and used in different ways for example as a marketing tool, accounting tool, cost reduction tool, knowledge sharing tool, spreadsheet tool etc (Maguire et al, 2007). Development of ICT systems requires according to Mildeova and Brix (2012) high complexity of the systems and therefore it is of importance that it is fully understood within the firm; otherwise it will not be an efficiency tool for the organization. When ICT is being used efficiently, it is seen as a time and cost-reducing package and at the same time as an important tool to reach the desired outcome for the organization (Maguire et al., 2007). It is seen as a cost and time reducing package since it is possible to store large volumes of information, and the person who comes next can easily access this information, which minimizes the time and thereby the costs.

The implementations of ICT systems have made a massive impact during the last decade for organizations, especially for those who are globalized. By having access to information worldwide has resulted in that it is no longer a barrier to be on another part of the world (Maguire et al., 2007). When companies choose to globalize they need to be able to handle a stressful and competitive environment where working 24 hours is a fact; therefore, they are dependent on that the information and communication flows within and outside the company (Parker and Castelman, 2007).

People within the organization daily need to make different decisions that are affecting the company, which explains why communication and information systems are a big issue. Lack in one area leads to larger problems in the next step and in the end a lesser final-product. As larger firms tend to spend more time and effort on evaluating ICT systems and its usage they often find new ways of using these in areas that the systems were not originally designed for (Martin and Matlay, 2003). The use of ICT in SMEs tends to differ from the use in large firms. Large firms are able to use ICT in many different areas, which makes the use broader. SMEs however

tend to use ICT more narrowly and usually for one specific purpose. In SMEs ICT is used for example as a tool to create a website or as an accounting tool. As mentioned above this means that ICT is used for one specific purpose and therefore might not be used in its full potential (Martin and Matlay, 2003).

If ICT is perceived well larger investments are most likely done and thus different uses of ICT will develop in the long term. ICT systems in firms are very much connected to the perception of them, if the systems are perceived well, larger investments are made and thus the choice of ICT will be different (Bayo-moriones et al., 2011). Perception is also very much connected to the width of the ICT, in other words the perception affects whether ICT will be used narrowly for solely one purpose such as accounting or widely for many purposes.

The choice of ICT systems in SMEs is usually inexpensive systems, which do not bring much benefit to the company. This is mostly due to managers who are focused on short-term results and benefits for the firms. Thus, it is important to understand how ICT is viewed in SMEs, therefore, the following section will describe ICT in SMEs (Maguire et al., 2007).

2.3.1 Use of ICT in SMEs

ICT is generally being used in one way instead of being used in multiple ways in SMEs as the willingness to analyze the systems and invest heavily in them is not present. This is a contributing factor to why other uses of the systems are not discovered, in other words multiple use of ICT (Maguire et al., 2007).

The developments of ICT systems that are available and developed on the market are commercial packages, which are targeted for large companies; therefore, these systems do not always fit for SMEs. Some SMEs choose to develop their own in-house systems, which are more adjusted for their core business (Maguire et al., 2007; from Gormley, 1998).

ICT systems exist in different forms and are today used commonly by all kinds of organizations. Empirical studies done in the UK show that the most popular packages used by SMEs are spreadsheets, accounts, databases, e-mails and internet packages (Maguire et al., 2007). According to Maguire et al. (2007) the main role and outcome of using these packages was to achieve cost reduction and improvements of products and services inside each specific organization. Maguire et al. (2007) also claimed that SMEs use their ICT systems for basic accounting and word processing and that they are using the computers as a tool rather than a communication and media channel.

The main problem of why ICT is not fully utilized by SMEs lies within the willingness to invest and focus on short term results. The negative aspect of this is that other uses of the systems are not discovered if the investments are not over a long term (Maguire et al., 2007). The key to discovering other uses of the systems is to analyze and evaluate over a longer period of time. According to previous research, long time focus on ICT seems to be present in large firms while there is a lack in this area in SMEs. This means that many SMEs do not make full use of the ICT (Maguire et al., 2007). We will analyze Swedish SMEs in order to see if the results differ and whether it depends on a managerial perception and a cultural effect.

2.4 Conclusion and connection of perception and ICT use

According to Maguire et al. (2007) the true benefits of using ICT is to use it at its full potential. What the authors mean is that, an ICT system can be used in a broader way than it was originally designed for. A broad use of an ICT system would mean that it is used for more than one purpose, for example as an accounting tool. A broad use of ICT as an accounting tool would enable the organization to give the employees previous results and motivate them to improve the results. This would give the tool a broader use as it would both be used as an accounting tool as well as a motivational tool (Greve, 2009).

An organizational factor that affects the use of ICT is managerial perception of the system (Lin, 2007). What previous research describes is that there is a connection between managerial perception and how ICT is being used (Lin, 2007). Bayo-Moriones et al. (2011) explain that the managers' perception of ICT depends on when it was implemented and whether the managers have had previous experience with ICT. The perception of ICT systems is a very important factor, which decides whether ICT systems will be used, and what amount of ICT will be used (Lin, 2007). If a manager of a company had a positive experience with ICT, he or she will most likely make larger investments and have a focus on a broader use of the system (Bayo-moriones et al., 2011). There is a clear connection between the managerial perception and ICT use in a company, therefore, our model shows a connection between perception of ICT and the choice of ICT systems. This has led to the forthcoming proposition:

P1. A positive managerial perception of ICT in Swedish SMEs will reflect in a broader use of ICT in the organizations.

Managerial perception of ICT is, however, not the only factor affecting the use. Another factor, which affects knowledge sharing is the organizational culture, which moderates the use of ICT and the sharing of knowledge within a firm. According to Chatman and Spataro (2005), the organizational culture is an important factor of how well knowledge is being shared within an

organization; therefore, organizational culture as a factor will be discussed and described in the following section of this thesis.

2.5 Organizational culture

This part defines organizational culture and how it affects motivational factors within a firm. Organizational culture has shown to be an effective tool for firms and managers to be able to provide their employees with a framework where they can internalize, expectations, roles, behavior, values and norms. The different factors within the framework moderate how well performed processes, objectives and results are in the firm (Dwyer, Orlando, & Chadwick, 2003). The culture also moderates the employees' willingness to cooperate and share knowledge among each other. It is a tool that serves the organization in a manner to possess control and accomplish consensus within the organization (Desphandé & Webster, 1989). According to Williams and O'Reilly (1998) organizational culture is also seen as a tool to help the firm encourage solidarity among their employees. Organizational culture refers to an organization's expectations, experiences, values and view on how organizations behave as a whole (Jacobsen and Thorsvik, 2008).

Phatak et al. (2009) state that different motivation systems are a part of an organization's culture. The motivational systems have an important role in cultures of firms since it helps managers to encourage their employees to contribute to the knowledge sharing process (Lin, 2007). In 1959, Frederic Herzberg developed the Two-factor theory, which he presented in his book called *Motivation to work*. Herzberg (1968) states that employees have two sets of needs, firstly there are lower level of needs which are basic human needs that are crucial for a human being to survive. Secondly, Herzberg (1968) states that there are higher-level needs which promote psychological growth of an individual. Herzberg (1968) implies that different workplace factors affect the different needs of employees. The author calls the basic needs hygiene factors; these factors are crucial to prevent dissatisfaction in the workplace, however, these factors do not create any form of satisfaction (Herzberg, 1968). Motivators represent the second group of factors and are direct factors, which affect the motivation and satisfaction within an organization. Hendriks (1999) refers to the Herzberg's two-factor theory, which claims that there are two types of motivational systems; indirect and direct. Indirect factors represent what Herzberg refers to as Hygiene factors while the direct factors is what he refers to as motivational factors. The direct factors represent basic factors as salary, status, company policy, and interpersonal relations and so on, while the indirect factors are represented by achievement, responsibility, recognition, promotional opportunities and finally work

challenges. The point of this discussion is that the motivational factors depend much on the location where the firm operates. In other words, the society and culture of the country affects both the organizational culture and choice of motivational systems. This means that in order to stimulate knowledge sharing correct motivational tools must be taken into account; otherwise employees might develop a tendency to keep knowledge to themselves for personal gain (Hendriks, 1999; Lin, 2007).

According to Merchant and Van der Stede (2007) motivational tools or systems are seen from a different perspective depending on who it is meant to motivate. Employees and individuals are different and it is the manager's responsibility to find a way to motivate them. An organizational culture is meant to make the firm coherent and thereby hopefully the workers will appreciate the same form of motivational systems. In a collectivistic organizational culture the motivational system will encourage progress from the group as a whole. This means that employees will be rewarded for what they have accomplished together, which can be related to that; if I succeed you will and vice versa (Hofstede, 2005). In an individualistic organizational culture the motivational system will be focusing on the individual progresses and by that make all individuals perform their best in all situations (Hofstede, 2005).

2.5.1 Individualistic organizational culture

Individualistic behavior is defined as a term, which describes an individual that is independent of others. An organization that is individualistic encourages a more competitive working environment within the firm. At the same time, there are different forms of individualism, which show how the organization is structured. The organization can be structured either horizontally or vertically depending on the form of individualism (Triandis, 1995). According to Triandis (1995) all individuals in individualistic horizontal organizations are equal, however, each individual is unique. In vertically individualistic organizations, individuals want to differ from each other and strive towards being better than others.

Individuals tend to categorize other individuals as either out-groups (those who differs) or in-groups (similar people), this categorization is highly connected to the willingness of cooperation within an organization (Brewer, 1979). Other aspects like sex, age, race and religion, which are connected to culture, are aspects that influence teamwork and organizational goals and objectives (Tsui et al., 1992). People's ability to recognize similarities or even more likely recognize differentials among other individuals, certainty in a specific group, as for example a working team makes the cultural area interesting for managers. Managers need to pay attention to the cultural aspects within their firm to make the daily workflow. Culture also

influences the atmosphere and it is of importance for a firm to have and create a clear organizational culture, which will bring solidarity among the coworkers (Chatman and Spataro (Early, 1994; Wagner and Moch , 1986). According to Early (1994) the extent of independence or interdependence within a firm's culture are often highly prioritized and followed by the employees. Those organizations who pay attention to independence or individualism are rewarding their employees for maximizing individual goals and achievements (Hofstede et al., 1990; Wagner and Moch, 1986).

Chatman and Spataro (2005) and Dweyne, Orlando and Chadwick (2003) state that in general people who differs from each other and are working in an individualistic environment were less likely to cooperate comparing to people who were similar. At the same time if demographic differences are salient in an organization, employees tend to focus more on individualistic goals instead of collectivistic ones Chatman et al., 1998).

Hofstede's five dimensions are mentioned and studied all over the world, it is a description of culture which explains the human behavior both outside and within organizations. Individualism is one of the dimensions described by Hofstede and is mostly common in the U.S. and north Europe (Hofstede, 2005). According to Hofstede (2005) an organization that has an individualistic culture is focusing on knowledge, the priority is to find the best person for the position. Employees are being hired to analyze problems and be able to think outside the "box". Even if knowledge is of huge importance in this type of organizational culture, it will not entail that employees are willing to share their knowledge among other employees within the firm.

Chatman and Spataro (2005) claim that organizations where the employees differs from each other are more likely to share information among others if they are focusing on common goals and objectives. This means that such organizations should focus on a collectivistic organizational culture.

2.5.2 Collectivistic organizational culture

Collectivistic behavior is defined as dependence between people, families' tribes or nations. When it comes to organizations, there are also two forms which are either horizontally or vertically collectivistic structures. The horizontal organizations emphasize a culture, which is focusing on equality and solely on group oriented goals and objectives (Triandis, 1995). Triandis (1995) states that hierarchies are accepted in vertical organizations thus creating different ranks among the individuals within the organization. Chatman and Spataro (2005) state that there is a difference in cooperative behavior which depends on whether the employees are different or similar. If the level of collectivism is low in an organization, the cooperative

behavior is high. This is however not the case if the level of collectivism is high, as this has the opposite effect on the cooperation. If the employees in a firm are different from each other, there is a causality between cooperative behavior and collectivism. In other words; cooperative behavior increases when the level of collectivism increases when the employees within the firm are different. (Chatman and Sparato, 2005).

According to Triandis (1995) an individual's view on collectivism reflects on how far this person will sacrifice his personal benefits for the organization's interests. Hendriks (1999) stated that there however often is a view on personal needs in an organization, in other words employees might keep important things such as knowledge to themselves in order to gain benefits.

According to Hofstede (2005) Swedish companies do not have a collectivistic view as individuals are expected to take care of themselves. What Hofstede (2005) also describes is that there is a mutual advantage between the employee and the employer in individualistic cultures, this does however not mean that group work is not done in Swedish organizations. The management is however very much focused on individuals instead of groups. Managing groups would instead mean that the organization is following a collectivistic structure. It is important to note that both collectivistic and individualistic cultures are two extremes, which are most likely never seen in the real world. Hofstede (2005) states that certain elements of the two extremes however are present in all organizations. This dissertation analyzes how the different extremes affect how knowledge sharing is perceived. The amounts of the elements in collectivistic and individualistic cultures affect how knowledge sharing is perceived in organizations.

Knowledge is today seen as an important tool that provides the firm with an ability to diversify from other organizations and thereby be a leading company in their branch (Bollinger & Smith, 2001). It is important that knowledge is viewed as a resource in an organization as it can be crucial for the success of a company which is functioning in a competitive market. The next section of this paper will describe how knowledge can be seen as a resource for a company.

2.6 Knowledge as a resource

The definition of knowledge is: Familiarity with someone or something which includes for example skills, information and facts which have been gained through either formal or informal education (Oxforddictionaries, 2013). It is important to distinguish knowledge from information. Information consists of data which is available to people. Knowledge is however the human ability to process the information and make use of it. In an organization, knowledge

is defined as what the members know about different units and processes in an organization (Grayson and O'Dell, 1998).

Knowledge is considered an asset, which is seen as a key to sustainable competitive advantage (Bontis, 2001). According to Bollinger and Smith (2001) some practitioners question whether managing knowledge is yet another tool for management which will lose its importance in the future. Bollinger and Smith (2001) claim that whether knowledge is used as a resource depends on the type of organization. If the organization possesses a culture where knowledge is shared among the employees, it is certainly seen as a resource for the firm. If individuals in an organization possess high expertise and knowledge but are not willing to share it, this will not be seen as a resource for the company since the firm will not be able to access the knowledge in order to accomplish their objectives.

For knowledge to be considered as a resource for a company it has to consist of the four following characteristics. Firstly, the knowledge must be *valuable* which means that it has to lead to various improvements. Secondly, the knowledge must be seen as *rare*, it should consist of organization specific analyses done by employees in the company. This will provide the firm with specific information, which is solely suitable for that particular organization. Thirdly, the knowledge should be *inimitable* which means that it should be based on previous experiences and analyzing organization specific processes. Lastly knowledge needs to be *non-substitutable* which is affected individuals whom are contributing with their own unique views and experiences, together they form the best solution which is unique and cannot be copied (Bollinger & Smith, 2001).

2.6.1 Knowledge sharing

In this part, knowledge and communication are defined. The importance and effect that communication has on knowledge sharing and barriers for knowledge sharing are also explained and discussed.

According to Hendriks (1999) organizations firstly need to understand the meaning of knowledge and what it specifically is. Knowledge can easily be misinterpreted with communication. These two areas are related to each other, however, they should not be (Vriens, 1998) mistaken as the same thing.

Communication within a firm is sharing of information. It takes at least two individuals to achieve knowledge sharing (Hendriks 1999). One of the individuals has to possess the knowledge and be willing to share that knowledge with the other part. The other part has to be

willing to receive the knowledge. According to Gumus (2007) knowledge represents a strategically important resource for organizations and differs depending on the type of organization. To acquire knowledge in an organization requires more than an ICT system. Lin (2007) claims that investing in ICT alone would not make knowledge sharing efficient. Knowledge sharing also requires social and human interaction. As mentioned above, knowledge sharing involves at least two parties. It is of great importance according to Hendriks (1999) that the party who receives the knowledge is able to understand it and support the interests of the organization. Knowledge can be created in many unique ways; in example by imitating acts, by listening, reading and by doing. However, communication plays an important role when it comes to knowledge sharing since the knowledge has to be mediated (Hendriks, 1999).

It is important to note that several barriers for sharing knowledge in organizations exist. These barriers consist of space of time, social distance, culture and language, or differences in thinking (Vriens, 1998; from Hendriks, 1999). Many of these barriers can be addressed by using ICT, for instance it reduces the amount of time for sharing knowledge. It also eliminates social distance by the use of communication tools etc. (Lin, 2007). Lin (2007) states that the largest issue when it comes to knowledge sharing are that employees tend to use knowledge as a source of power in order to gain a personal advantage within the organization. Therefore, knowledge is often a personal asset instead of being an organizational resource. This means that the knowledge within the organization cannot be effectively used for creating better innovation and efficient achievement of goals and objectives among the members in the firm.

This paper will evaluate knowledge sharing as an outcome, which will be affected by different factors, including: organizational culture, ICT and managerial perception of ICT. The knowledge sharing will be the outcome; the quality of the outcome very much depends on how firms choose to use the other depending factors. This means that these factors are closely related to each other and as Contini and Lanzara (2009) claim, local changes in factors in a firm may be inconspicuous but over time, the overall outcome is not.

2.7 Combining of ICT use, culture factors and knowledge sharing

How well the use of ICT in an organization leads to higher performance in knowledge sharing within the organization *firstly* depends on managers perception on ICT systems as mentioned above and *secondly* the chosen type of organizational culture (Mildeova and Brixi, 2012; Apulu et al., 2011; Vehovar and Lesjak, 2007; Chatman and Sparato, 2005; Dwyer, Orlando and Chadwick, 2003).

ICT can be used in different ways to facilitate knowledge sharing, by using for example e-mails, internet, homepage, internal communication programs, accounting tool and so on (Maguire et al, 2007). Only focusing on investing heavily in ICT systems will itself not help the organization to share knowledge among employees. ICT is a technological tool that helps a firm to reach results and objectives faster; at the same time, this tool is dependent on how well workers are able to use and benefit from it. In order to make the best use of an ICT system depends on how well educated the employees are in this area (Mildeova and Brixi 2012). Knowledge sharing is also dependent on the employees' willingness to share knowledge with others within the firm, and this willingness depends on the type of organizational culture a firm has according to Lin (2007) and Vriens (1998).

Chatman and Spataro (2005) state that organizations which are dominated by heterogeneity where more likely to accomplish knowledge sharing among their employees within a collectivistic organizational culture. It was also shown that collectivistic organizational culture promotes teamwork, an in-group feeling among employees and an environment within the firm where all kinds of skills and education were seen as highly important (Dwyer, Orlando, & Chadwick, 2003). At the same time, an individualistic organizational culture focuses more on external factors such as competition and interaction with the environment in form of always wanting to perform and be the best. In an individualistic organizational culture, it is also more likely that people are willing to share information to those who are similar to themselves since otherwise it might result in that someone else would perform better (Triandis, 1995).

As organizations tend to work in projects and teams according to Ng and Li (2003) and Newell et al (2006) it is important that knowledge is being shared among the employees in order to make better analyses and detect the best solution. Organizations also tend to search for employees who possess different types of skills and personality, thus organizations will be provided with workers who see the organization from different angles. Depending on the fields studied above, how well ICT use can help an organization to achieve and increase knowledge sharing dependent on the organizational culture following proposition is will be investigated:

P2: A broader use of ICT in SMEs will lead to a more positive effect of knowledge sharing in a collectivistic compared to an individualistic organizational culture.

2.8 Summary

The different factors discussed and described above are all affecting the linkages of reaching high amount of knowledge sharing within an organization (See figure 2.1). By investigating manager's perception of ICT in order to achieve an efficiency knowledge sharing is also

affected by the employees in the company. Managers can provide their employees with the right tools to make the information and knowledge flow easily within the organization. However, they also need to motivate and create an atmosphere where the workers want to share knowledge, which is dependent on the type of culture an organization possesses. This thesis will have a strong focus on perception and behavior in an organizational culture; therefore, we take into account that perception not always has to be either positive or negative, at the same time an organization can be mixed in cultures.

Organizational culture has a moderating effect when it comes to how ICT is being perceived and used. If the managerial perception indicates that ICT is being used in a broad way, it will increase knowledge sharing within the organization. However, a collectivistic organizational culture will result in a higher form of knowledge sharing compared to the individualistic organizational culture, according to the literature review. At the same time both organizational cultures will have a positive effect on knowledge sharing if ICT is being used broadly, but a collectivistic organizational culture will have higher positive effect on the outcome.

If an organization has a collectivistic culture it is more likely that the ICT will be used to share knowledge throughout the organization to benefit the whole group. In a collectivistic workplace, there is a higher likelihood that the use of ICT as a knowledge sharing tool will be broader and thus more beneficial for the whole company. On the other hand, if the organization is individualistic ICT will most likely help individual members of the organization. An individualistic view on ICT will most likely make the use of the tool narrow. In this way, organizational culture moderates the choice of ICT and how it is used (Ng and Li 2003; Chatman and Spataro, 2005).

2.9 Figure 2.1 Factors affecting knowledge sharing

The analysis and research done in the literature review has led to the development of this model. This model is originally based on the Hendriks model (1999), which aims to explain how different motivational tools increase knowledge sharing in organizations. In our model more factors have been added in order to get a better grip of the area that is being discussed. The model is developed to be analyzed in SMEs. The factors according to the literature review that are crucial for SMEs have been taken into account. This model aims to explain how managerial perception, ICT use and organizational culture (which also include motivational tools) affect the knowledge sharing in Swedish SMEs. The model is not only meant to describe which factors are affecting the knowledge sharing but also the linkages between these factors. In our model, knowledge sharing is the outcome. Whether knowledge sharing occurs in an organization with the help of ICT firstly depends on whether ICT is being used narrowly or broadly and secondly on the effect that organizational culture has on an organization's knowledge sharing. The use of ICT alone can be seen as sharing of information, however, information needs to be filtered in order to separate knowledge from communication (Hendriks, 1999). In accordance with Hendriks (1999) statement, simply using ICT in an organization does not promote knowledge sharing as there are other factors which affect the final outcome, which is knowledge sharing. As mentioned before, The factors which have an effect on whether knowledge sharing occurs are the width of ICT use and how the organizational culture supports knowledge sharing. Whether an organization is using ICT broadly or narrowly is related to the managerial perception of ICT. A more positive perception of ICT will result in a broader use of it, according to Hendriks (1999). The organizational culture, includes values, norms, behavior and so on, which affect employee's willingness of communicating and sharing information, which later on can be translated into knowledge (Hendriks, 1999).

In conclusion, our model considers factors, which are affecting knowledge sharing. All these factors play an important role for how well knowledge is being shared or whether knowledge is being shared at all within SMEs. All these factors are of a significant importance on knowledge sharing as previous research has proven their effect to be significant (Ng and Li, 2003; Hendriks, 1999). As our model considers all the factors, it has enabled us to analyze the combined effect of the factors on one specific outcome, which is knowledge sharing.

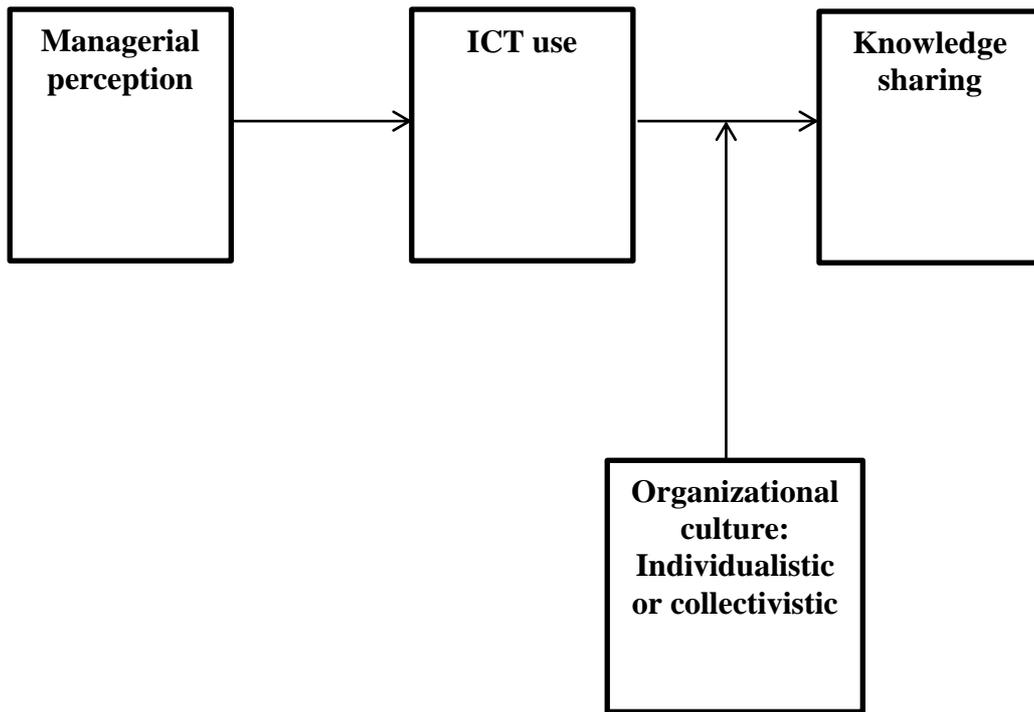


Figure 2.1 Factors affecting knowledge sharing

3. Method

The third chapter of the dissertation presents the chosen methods for the study field. It includes choice of theory, choice of methodology and how the sample of data has been gathered.

3.1 Research approach

There are two different ways of approaching research. One approach is *Deductive* and the other is *Inductive*.

A deductive approach consists of developing a new theory and hypotheses, which are based on existing theories and literature. Using a deductive approach demands the collection of data through observations after the theory and hypotheses are developed. An inductive approach is, however, the opposite of a deductive approach. This means that the researchers start with data collection and build a theory and concept based on the observations (Saunders et al., 2009).

In this dissertation, a deductive approach will be used as the theories are existent but are lacking empirical data. According to Ng and Li (2003) the chosen field for this dissertation lacks empirical data and the field has only been analyzed using the Hendriks model (2001). The Hendriks model (2001) has been the inspiration for our model, but at the same time several scientific articles have been taken into account for the development of our model. The development of a model, which includes previous research, however, with a different approach, and thereafter collecting the data makes the research approach deductive.

3.2 Choice of theory

Theories, which have been used for the thesis in the area are, the Hendriks model which describes the motivational factors as a part of the organizational culture for increased knowledge sharing (Hendriks, 1999). Another main theory that is used and referred to is Hofstede's investigations (2005) of collectivistic and individualistic organizational culture. These two theories are the foundation of the model, which has been developed for this thesis; the model was analyzed and investigated on an empirical level.

3.4 Research design and strategy

There are three common methods in research design, explanatory, exploratory and descriptive. Explanatory studies focus on relationships between different variables and describe the relationships with the help of quantitative data. Exploratory studies focus on going into a deeper level of understanding of a problem. This is done by interviewing and analyzing

literature. The last method, the descriptive method, works as a complementary tool for the other two methods. Descriptive studies illustrate a specific profile of people, events or situations (Saunders et al., 2009).

In this dissertation, an exploratory method will be used. The reason for this approach depends on the design of our model. The model aims to explore how three different factors affect one outcome, therefore, an exploratory method gives us more information about the current gap which exists in the connection between ICT use, knowledge sharing and organization. The chosen research design was also suitable because the research question is aimed towards exploring how the influence of managerial perception relates to the final outcome which is knowledge sharing. With an exploratory method, we were able to gather detailed data from each and every respondent. As our model consists of several factors, which in turn affect an outcome, a quantitative research was not able to explore the researched area in detail. Therefore, a qualitative method has been chosen which has enabled us to analyze both direct and indirect data.

3.3 Choice of methodology

Our model is based on secondary research, which means that the area has already been investigated, but this time it will be with a different approach. Exploratory research is conducted for a problem, which is not clearly defined. Therefore, according to our model and the literature review, the exploratory theory suits the dissertation. Exploratory research is a form of qualitative research and could include for example, interviews, focus groups, case studies and so on. For our research, interviews have been conducted, these interviews are a part of case studies. This choice of methodology enabled us to get in-depth data, which helped us to qualitatively investigate how managers perceive ICT systems and what their views on knowledge sharing are. These in-depth investigations enabled us to gain deeper understanding of the area (Saunders et al., 2009).

Exploratory research allows for propositions and hypotheses. This type of research encourages different ways of analyzing the answers. In other words, this type of methodology allows the researcher to be open-minded and interpret the results in different ways. The researcher's responsibility during the interviews was to carefully observe and interpret the information that was given. This is crucial as the analysis must be done in the best possible way and strengthen the quality of the dissertation (Saunders et al., 2009).

3.4.1 Case studies

Case studies are a preferred method when it comes to answering how or why questions and when multiple sources of information are investigated. Case studies have some advantages over other research methods. This method allows an in-depth exploration of complex issues. Case studies also allow researchers to apply theory into practice by applying knowledge and skills to an area. However, some negative aspects of case studies exist. If scarce information is provided the results can be lacking. Another negative aspect of this of research method is the observer effect that occurs. In order to minimize the effect of the negative aspects certain precautions have been taken during the collection of data. During the interviews, one person had the role of an observer; this was done in order to take note of any non-verbal messages, which might have been sent out unconsciously. The interview guide was structured so that the interviewee felt at ease with the questions. This was done by not including any sensitive questions. In addition, some questions were asked twice, but in different manner.

We have chosen case studies in order to obtain empirical data. However, the case studies have not only been done in order to gather data. This method has enabled us to investigate an existing occurrence in its real-life context (Yin, 2009). Another reason to why case studies were chosen is that the field does not have enough empirical data, thus making a case study an optimal research method for this dissertation. In other words, this method is used in order to be able to go more in depth to test our model empirically. Yin (2009) states that case studies cope with situations where many variables are present which is the case in our research. The research relies on multiple sources within each company that was interviewed. In this way a broader view and a more accurate analysis is possible.

3.5 Time horizon

There are two different types of time horizons when performing a research study, longitudinal and cross-sectional. A longitudinal time horizon is used when studies are performed over time; this enables the researcher to witness change, which might be visible over time. A cross-sectional time horizon is, however, focused on one specific moment (Saunders et al., 2009). In this dissertation, a cross-sectional time horizon was used due to the time limit. Saunders et al. (2009) states that a cross-sectional study is more suitable when conducting interviews over a short period of time. When identifying the relationship between the different factors in our model this time horizon will be used. These variables are crucial to analyze in order to make our model work. Our model is based on causal links between different factors and thus we will look at patterns in the relationship between the factors.

3.6 data collection

In order to get a better understanding and deeper knowledge about the area, which, is being analyzed, primary in different forms has been used. Primary data consists of unprocessed data that has not been used before (Christensen et al., 2010). There are two types primary of data collection in this study, the primary collection of data consists of interviews, which are conducted at SMEs, also information from webpages has been used. This represents the second type of primary data. The interviews enable qualitative data collection to be gathered. Interviews are a good way of gathering data because they enable the interviewer to observe factors such as, hidden verbal messages and emotions. The gathered information from the webpages helped us to get to understand the companies better and to conduct the interviews better.

Secondary data consists of information that already has been collected and compiled from earlier studies or events (Christensen et al., 2010). For this dissertation, secondary data has not been used as no previous research has been done in this area.

However, knowledge from scientific articles has also been collected in order to eliminate misunderstandings and to be more familiar with the chosen subject. The articles, which, are used for this research, have used a similar approach in order to collect their data. According to Añon Higon (2011) this has been proven to be an effective way of gathering information when secondary data is unavailable.

3.6.1 Data collection in SMEs

When choosing a method of data collection one should carefully examine the research question in order to see which type of method is suitable. There are not many managerial positions in SMEs, therefore, it is easier and less time consuming to gather qualitative data. This enables for an in depth case study approach. In larger companies there are more managerial positions and the managers are usually operating in different parts of the country or abroad. Due to this, quantitative studies are more appropriate in large sized firms since the researchers do not have to be present when collecting data. In our dissertation, nine managers in four different companies were interviewed. The range of employees in these companies was 22-146 workers. This places the four companies in the SME category. According to the guidelines of the European Union (EU), small companies have ten to fifty employees while medium sized companies have from fifty to two hundred and fifty employees. As the research is conducted in Sweden, which is a member of the EU, these guidelines have been taken into account (Svensktnäringsliv, 2013).

3.7 Conceptualization

In this section, the conceptualization is presented. Conceptualization is defined as the ability to invent or formulate an idea or concept. By conceptualization you should be able to explain and strengthen a concept (Saunders et al., 2009). This dissertation aims to explain and strengthen the model and the prepositions, which have been developed in the literature review. These are based on research of different scientific articles (See figure 2.1). In order to ask relevant questions, it is important that these questions can be linked to the model. To be able to make a valuable data collection it is also of importance that the questions are formed and asked correctly.

The interview guide is based on and connected to the different boxes in the model. This outline should make it simple for both the reader and us to analyze and connect the different factors in the model. There is an average of five questions in each box, in order to get a good perception of all the factors and be able to analyze those factors from different angles. To get a better understanding of why the questions in each box have been asked, the following part consists of a description for the questions in the interview guide.

3.7.1 Warm up questions

The first section in the interview guide consists of warm up questions; these should make the respondent comfortable and create a relationship with the interviewer. They are also asked in order to get to know the respondent in a better way. For example, how long the person has been hired in the company might have an influence on the person's perception of the business. A short employment period might result in lesser knowledge about the business compared to someone who has been employed for a longer period. At the same time, a new employee might have a new vision of the company.

1. How long have you been working in the company?
2. How long have you had your current position in the company?
3. Have you had another position within the company? If yes, which?
4. Do you have previous working experience in another company? If yes, what position and where?
5. How many divisions does the company have?

3.7.3 Managerial perception

The questions related to the managerial perception are asked in order to get an insight in how managers perceive the organization's ICT systems or programs. These questions are also asked to get a view of why the perception is good or bad, and how they see the future in this area.

These interview questions would hopefully give us understanding about how willing the firm is to invest in ICT and in what way they are positive or negative to IT tools in general.

6. Can you explain how the communication process works between you and your colleagues/ employees?
7. What do you think of the communication process in the company? Do you see any negative/positive aspects or any problems?
8. Which types of IT-tools are being used in the company? For example; E-mail, meetings, databases, etc.
9. Do the IT tools make your work easier? ,why/why not?
10. Have the developments and investments of ICT for communication increased during your time as an employee in the company?
11. How do you view the communication within the company? It is an important part of your daily work?
12. What is the most common way of communication in your company?

3.7.2 ICT use

The questions that follow the warm up questions are related to each box and one of the boxes is represented by the ICT use. To be able to understand which kinds of ICT systems or programs the companies are using the questions related to this box were of importance. The reason why the questions related to the ICT use are asked before the questions related to managerial perception depends on that it might be easier for the respondent to explain their perception of the systems if they are aware of the subject in detail. It is only these two boxes ICT use and the managerial perception, which do not follow the sequence of the model.

13. Do you have any specific IT programs or systems where information is stored, for example: databases, E-mail, accounting software, intranets, etc?
14. Have the programs in any way changed during your time in the company? If yes then how have they changed?
15. Do you have any previous experience with any other IT programs than the ones that you are using today? If yes then how do these differ from the ones that you are using today?

3.7.4 ICT use in SMEs

To minimize any external effects we have only chosen to ask the general questions about ICT before the questions about the managerial perception. The detailed questions about the company's specific ICT use are asked after the questions about managerial perception, in order

to get a better view of managerial perception. For example do the respondents think that their ICT systems or programs are beneficial for their activities and, at the same time does the company maximize the use of it.

16. Who use ICT in the company? Do you have any software, which only certain employees can access?
17. Do you have any specific IT tool that you use daily? Can you give examples?
18. Do any of your current programs have more than one area of usage? For example an accounting tool which registers financial events that could be used to motivate the employees to improve the results.
19. Do you think that the IT tools that you are using are easy to comprehend and easy to use? Are some tools easier to understand and use than others?
20. Do you believe that the company has enough IT tools to make the workflow smooth, or do you think that the company needs to make more investments in this area?

3.7.5 Organizational culture

These questions aim to get a grip of what kind of individualistic or collectivistic organizational culture dominates the firm. To be able to get an aspect of what work that is performed, and how they motivates their employees within the firm. If the employees work mostly in teams or individualistically, this is to later on be able to draw conclusion about the second proposition in the literature review, regarding if a broader use of ICT in SMEs will lead to a more positive effect of knowledge sharing in a collectivistic compared to an individualistic organizational culture.

21. How would you generally explain the working environment in the company?
22. How are decision taken in the company?
23. What does the relationship between boss and employee look like in the company, is it easy to talk and share opinions with each other? Why/why not?
24. What is your view on knowledge sharing in the company, are the employees willing to share experiences and knowledge with others?
25. Is it important for employees to work individually?
26. Do you work in projects/groups?
27. Do you see this as an efficient way of working? Why/why not?
28. Is cooperation an important part of the company? How is this noticable?

29. Is most effort put on the group or the individual's performance?

30. How do you motivate your employees? Do you for example have incentive systems, milestones, feedback, bonuses, etc?
31. Do you perceive the atmosphere at the company as competitive between the employees?

3.7.6 Knowledge sharing and knowledge as a resource

The questions related to this box wants to describe how important knowledge is in their firm and what kind of actions they do to both spread the knowledge and keep their employees updated. We want to evaluate by the questions that are linked to this box how important this area is for the different companies. By doing this it will be easier for us to draw conclusions and value how well our model match the reality day-to-day business in Swedish SMEs.

32. Does the company offer the employees different kinds of training sessions or further educations?
33. Do you motivate your employees to take part of previous experiences and knowledge that is available within the company?
34. Which company resources do you value the most and believe are hard to replace?

3.7.7 Questions about the linkages

By asking vague questions about those linkages that is argument in the literature review provides us with information about how this area can be analyzed in the reality by a person who is a part of this environment. The respondents' view of it might also give us a more detailed perspective when trying to combine the linkages between the factors. By see and hear something from different angles often makes the analyzing part more deep and detailed.

35. How do you perceive IT tools, which enable information and knowledge sharing?
36. Do you think that your previous view on IT systems and programs is affecting your perception of these today?
37. Do you believe that the employees within the firm have a positive view on sharing information with help of the present tools in the firm?
38. Do you think that too much ICT would confuse and delay the employees work tasks?
39. Do you view the IT tools as a form of control or as a tool for development?
40. Do you think that the employees are opened minded for new solutions and are able to adapt to new ways of working?

The outline of the interview guide is structured differently in the dissertation to make the reader understand which area of the model is targeted with the questions. However, the interview questions that were sent out to the companies were structured differently in order to minimize any external effects on the answers.

3.8 Sample selection

This dissertation is based on case studies, which, were done in Swedish SMEs. This was done in order to get a deeper understanding of the managerial perspective on the subject.

It is possible to collect data from all the members of an organization. Saunders et al. (2009) calls this approach Census, the author also claims that this is very time consuming. Focusing on specific individuals such as managers often gives a better result due to the elimination of unnecessary data. The reason for the better result is that less time can be spent on the data collection itself and more time can be put on the analysis. The way of approach is however, heavily dependent on the subject that is analyzed.

According to Bryman and Bell (2007) data sampling can be done in several ways. The sampling could be either done by using probability or non-probability samples. Probability sampling is defined as a random selection of data, which is going to be analyzed. Non-probability sampling is done systematically for example purposive, self-selection sampling etc.

In this dissertation, two sampling methods were used. The first one was purposive sampling and the second one was a convenience sampling. These represent a non-probability sampling technique. The choice of the companies was dependent on the size and type of industry. These were chosen in order to be able to compare the results and see similarities and differences between similar companies. Another reason for why the companies were chosen was that we had contacts available and they were willing to host us for the interviews. For the interviews initial contact was often made with the CEO in each company, from there we gained access to other managers in the organization with the help of the CEO. This is seen as a mix between purposive and convenience sampling methods. Purposive method is described as a method for gaining better understanding of a certain behavior. Thus, a specific part of the whole organization is being investigated in order to get a better understanding of the subject. Convenience sampling takes into account the availability and ease of access to respondents.

3.9 Credibility

Credibility in qualitative research explains whether the results from the study are believable and trustworthy. It aims to explain whether the researcher has chosen the most knowledgeable respondents for the analysis. It is important to ensure the reader that the studies and analysis which, is being measured, tests what is actually intended. It is important that the researcher who is going to analyze the field has been studying the subject in order to make better comparison to earlier results. Triangulation describes that if something is being measured in several ways it is becoming more believable and useful for the aimed study.

Credibility represents four criteria for judging the quality of qualitative research. These four are transferability, dependability, confirmability and authenticity (Shenton, 2004). Bryman and Bell (2007) claim qualitative research should be transferrable, this means that the researcher should get as deep information and knowledge as possible rather than shallow information from the respondents. The deep description will provide others with a database, which, they can refer to and translate into other environments. A qualitative research should also include confirmability; this means that the researcher not has put her or his own values into the research when conducting it. It could be compared to that the researcher has acted in good faith. Dependability describes that the researcher should perform complete records of the whole analyze which is being made. This has, however, not been an appreciated technique for qualitative studies since, they generates extremely large volumes of data. The last criteria which Bryman and Bell (2007) explain is authenticity, this represents that the respondents should be a mix of what is aimed to be analyzed, in other words the researcher should look and analyze the subject from different angles in order to make the data more trustworthy.

The interviews for this dissertation try to take all of these aspects into account. The interview guide has been evaluated by four people before it has been handed out for the respondents; this was done in order to ask neutral questions without any values taken into account. During all the interviews both of us have been present, one to ask questions and the other one to observe the respondents expressions and body languages. The managers that were interviewed belonged to different sections within the company, which provided us with different views and forms of data. The interviewed companies belonged to the service or service/production sector, this was done in order to be able to better compare the results.

There are however negative aspects of interviews. Rosenthal (1998) states that the way a question is asked during an interview can affect the answer to the question. In other words, if the interviewer unintentionally changes his voice or body language he or she might change the

outcome. Another negative aspect is the observer effect, which relates to interviews. The observer effect describes how an individual changes his or her behavior when being observed. An interview is not directly considered an observation as interaction with another individual exists. The observer effect does however apply when conducting interviews (Rosenthal, 1998).

3.10 Generalizability

According to Bryman and Bell (2007) the definition of generalizability is to be able to apply a result of a study to an entire population. This is often applicable to larger studies. To be able to generalize requires a large amount of data; therefore, it is very time consuming specifically when it comes to qualitative studies (Saunders et al., 2009).

Our research would be very difficult to generalize to the whole field due to the present factors, which are unique for this study. The factors consist of location as the studies are done in Sweden in the county of Skåne. Another factor, which is present, is the chosen industry, which limits the ability to draw conclusions for all SMEs. However, we have chosen to conduct the research as there is no present empirical research done in this area and in this part of the world. The fact that more than one manager was interviewed in each company makes the results comparable to each other also makes it possible to draw conclusions about similarities in companies that are operating in the same industry. We believe that future research in this field will be able to draw similar conclusions in both Sweden and other parts of the world.

3.11 Ethical considerations

In order to respect the privacy of the companies included in this dissertation both company names and the names of respondents have been excluded. Companies tend to have private information that not should be shared with others except those within the organization. SMEs also tend to be more sensitive for financial changes and therefore, we have chosen to make the results anonymous. The interview guide was formed in a way where company names, name of the respondents and sensitive data were not necessary for the analysis.

4. Results

In this section of the dissertation, the collected data from the interviews are being presented. The data collection exists of nine interviews conducted in four different companies and the results are structured in accordance with our model.

We have chosen to respect the privacy of the respondents and the companies that were interviewed. Therefore, we have categorized the companies in the following way: in company A the interviews were conducted with managers AA and AB; the company is represented as the first letter and the manager is represented as the second letter. The other companies and managers are following the same structure.

Table 4.1 General results from the warm up questions

| Manager | AA | AB | BA | CA | CB | DA | DB | DC | DD |
|---|-------------------------|------------------------|--------------------|----------------------------------|--------------------|----------------------|--------------------|-------------------|-------------------|
| Years of working in the firm | 14 | 10 | 2 | 0,83 | 0,67 | 15 | 14 | 49 | 18 |
| Current position | CEO | Administration Manager | HR Manager | CEO | Production Manager | Marketing Manager | Transport Manager | CEO | Financial Manager |
| Earlier working position in the firm | HR Manager | Treatment Pedagogue | No | No | No | Transport Manager | No | Transport Manager | No |
| Earlier working experience | At municipal and county | Securitas | University of Lund | CEO in several smaller companies | Private sector | Engineering industry | Driving instructor | No | Ernst and Young |

(The years of working for manager CA and CB were calculated in the following way: $1/12 \times$ number of months in the firm)

Table 4.1 aims to show the results of the warm up questions, collected from each manager. The warm up questions exists in order to make the respondent more comfortable and to get a general idea about their background. The questions consist of general questions; these are included in the results section as they may have an impact on the findings. Since the answers to the questions were brief, the optimal way of presenting them is with a table

4.1 Managerial perception

The managers at the SMEs where the interviews were conducted were generally positive to the use of ICT. Some of the companies made use of more advanced ICT than others and the following section will explain the managerial perception of each company in detail.

4.2 Company A

4.2.1 Manager AA

Manager AA explained that the company uses different ways of communicating where ICT also was included. The company has a management team, staff group and a forum. The manager explained that that it is important that all decisions are made with the involvement of the staff, therefore, the information must flow vertically in both directions. Manager AA mentioned that it would be easier and less time consuming to make top-down decisions. At the same time AA said that it is necessary to involve the staff in various decisions as this creates a better atmosphere in the company. It was also mentioned that the forum site was an important system to make the information flow in both directions. The forum enables all employees to share ideas, information, complaints and so on. As it is a solution, which stores the information; the employees can look at older information and be able to see the history and future plans and decisions.

In the early years of the company, ICT was not perceived well. This was due to a problematic factor, which was related to the nature of the field. The reason for this was that many patients who lived there had a computer related addiction. Today the company has a more positive view on ICT as it simplifies the work.

The daily operations of the company make communication and sharing of information the most important part within the firm. This depends on that the company works with people who require different treatments.

4.2.3 Manager AB

Manager AB gave us similar information as manager AA, however, there were some differences.

Manager AB pointed out that much of the communication occurs with the help of the firm's website where the employees are able to send internal messages to each other. The website also

provides them with general information. The flow of information in the company is perceived positively by AB, however, a problem that can appear is that it sometimes happens that employees do not take part of the stored information. A reason for the positive perception on ICT is that there is less bureaucracy, and less paperwork. The most common way of communicating within the firm is according to AB, verbally, through E-mail, and through the journal software.

4.2.4 Summary of company A

In general, both of the managers in company A had very positive perceptions when it comes to ICT. As mentioned above, ICT was used in several ways. One of the managers did not have a positive perception of IT tools in her earlier working days, however, this has changed today as the manager perceived the tools as helpful. Both managers believe that their earlier experiences with ICT are affecting their view on it today.

4.3 Company B.

Company B. is operating in the service/manufacturing industry. Company B used to be a large company, however, due to the economic recession the company had to lay employees.

4.3.1 Manager BA

In the second company, only one manager was available for an in-depth interview due to their lack of time.

Manager BA made it clear that ICT plays a large role in the daily work for the managers of the company. AB stated that the company is using different ICT tools such as intranets, E-mail and software for booking meetings. The previous ICT tools which, were available to the company were lacking support and constantly crashing which has changed the managerial perception for more complicated systems, thus the company is using much simpler solutions today. Above these systems, the employees can share new information or post messages on so-called pin-boards, which are available throughout the entire premises. The pin-board is where the most important information is posted as employees on the production floor need to have the most recent and important information available to them. Some of the employees are not used to technological solutions in their work life therefore company B makes use of solutions such as physical pin-boards. What the company is trying to do is to make their employees more used to using different IT tools such as E-mails and taking part of information, which is displayed on screens throughout the company. The sharing of experiences and follow up of the production periods is done by weekly meetings with the production level managers. AB stressed that the communication of information is relatively easy and efficient on the managerial level; however,

there is an issue on the production level as it is not possible to step away from the machinery at all times in order to take part of the most recent information which has been issued from the managers. AB stated that they rely more on the pin-boards, which creates a problem of having the most recent information available to them.

There were certain similarities to company A as manager BA stated that in order to keep up with the organization the employees had to make some effort to find all the information and that there were sometimes problems with un-informed employees in the company as they chose not to search for information on their own.

Generally, ICT is perceived well by the managers in company B as it saves them a lot of time for example when they need to have conferences with divisions of the company that are placed in different countries. Another use of the ICT systems is that education in different areas can be done over the internet that enable the employees to complete work education at home, thus keeping the costs down and making the whole process more time efficient. Manager BA Stated, that the use of ICT tools has simplified the work of the managers and made it more efficient as continuous reports have to be sent to the foreign owners. The reports consist of annual, quarterly and monthly reports that have to be sent abroad by each division of the firm. The ICT tools have, therefore, limited the amount of paper work, which has to be filled out and made the whole process much faster than it was without these systems.

4.3.2 Summary of company B

Manager BA had a very positive view on ICT systems as she has been working with ICT and IT throughout her whole career. The manager in company B believes that her previous experiences are affecting her views on the tools that she is using today. The manager stated that there are many benefits of using ICT, the main benefit is that less paperwork is required and that the whole process is much more time efficient when the right tools are used.

4.4 Company C

Company C is a manufacturing company that specializes in production of various mechanical engine components.

4.4.1 Manager CA

In company C two managers were interviewed with in-depth questions once again the managers seemed to have quite a positive perception of ICT as it played a large role in their daily work.

Manager CA. stated that most of the communication of information within the company and the communication in the company are working well. Some of the most important things, which need to be in written, are communicated through E-mails as information that is written is more credible. Manager CA. was quite new to the company, therefore, the manager did not notice any increases in investments for ICT. It was however, mentioned that there was no plan on degrading the current ICT tools in the company, which gave an indication that ICT is perceived well in the company. As CA. only has been working at company C for a couple of months we believe that he could not answer our questions in the same way as the other managers. We have however, chosen to include CA. in our results.

4.4.2 Manager CB.

Manager CB had slightly longer working experience and answered most of the questions in a similar fashion, there were, however, some differences, which are described in this section.

CB has the role of a production manager in company C. and is therefore closer to the production and the daily operations. CB stated that a large part of the communication consists of E-mails which are sent daily. Manager CB had a positive perception of ICT tools that are used daily. CB stated that past experiences with different tools have made a great impact on how the tools are used today. The managers both answered that they do not see a need for more tools in the company at this time, however, it should be noted that both managers were quite new to the company and might not have discovered problematic areas in the firm where more CIT tools could be used.

4.4.3 Summary of company C

The Perception of the managers in this company was quite neutral. Their opinion and view on ICT was that the tools are necessary to be able to run the business, the managers of company C saw no real benefits of using ICT for different purposes. The ICT tool in company C is solely used for running the business and only few people in the company have access to the system. Manager CA stated that earlier experience had an impact on his perception as he stated that if one is able to use one system, one will have no problem adapting to other systems as they are resembling.

4.5 Company D

Company D operates in the service sector, and offers their customers transportation of various goods.

4.5.1 Manager DA

Manager DA in company D stated much like the others that the organization is very decentralized. Company D makes use of many different ICT tools, which are crucial in all sections of the company. For example, the company is using hand held devices to communicate with the trucks that are out on delivery missions to be able to communicate real life information. This system enables the truck drivers to both receive and send information such as statistics about fuel usage and delivery documentation. In order to spread information and keep the employees up to date the organization makes use of an intranet. The intranet makes it possible for the employees to see information such as news, new shareholders, if one of the employees is sick and his or her position needs to be filled in and so on. The lower level employees also have a website where they can log on to, in order to see the newest information about the company, which is of relevance to them. Some of the information is, however, not put on this website as it is of no importance to the lower level of the organization.

Manager DA stated that the sharing of knowledge and information has become very efficient in the company due to ICT, therefore, all managers in the company perceive the tools and systems positively. The investments on ICT systems are continuously growing as the perception of ICT is good. Manager DA Had past experiences with similar systems, however DA. Felt that the systems are getting more optimized for SMEs and thus DA had a good perception of the systems in SMEs.

4.5.2 Manager DB

Manager DB said that the systems help with the communication in the company. The manager had a very positive view of the communication in the company specifically, as the ICT systems which are present in the company are very much focused on communication with the exception of a few tools. DB stated that E-mails, telephones and the delivery system are the most important tools for his work. An interesting thing that the manager said was that the investments have been very costly for the company, however, the company would probably not be as efficient without the tools that they have today. Manager DB said that the tools are making the whole work less time consuming and more structured and eliminates any uncertainties. When the question of which the most usual way of communicating in the company is, was brought up the manager answered that due to the size of the company the most common way of communicating is not through any tools, the most common way is still verbal communication.

4.5.3 Manager DC

Manager DC Answered most of the questions identically, his perception of the systems was however slightly different as the systems were complicated to understand. DC Stated that without the necessary knowledge and education the systems could not be used to their full potential. The manager however agreed that the systems make the work much easier and knowledge could be stored easily for future education or sharing of past experiences. DC Did not have any past experiences with other systems as since DC has been working at the company for the past forty years. DC stated that the work in the company has become much more efficient meaning it is easier to keep track of information and more time efficient since the early days of the company. Overall the perception of manager DC was quite positive and the manager was open for more technological solutions for the company.

4.5.4 Manager DD

Manager DD stated that the communication in the organization is quite informal and information is usually handed out during morning meetings. The organization is rather decentralized in the company.

The perception of ICT for this manager was also very positive as there is a lot of information that is available to the organization which enables the managers to think in different ways and come up with new things that can improve the daily work. Communication has been improved significantly with the use of E-mail, however, older tools such as telephones are a large part of the daily communication as most of the clients choose to contact the company by telephone.

4.5.5 Summary of Company D

The perception of ICT was very good in company D as the daily work required all of the employees to use some form of ICT. Some of the managers in this company had previous experiences with IT and ICT which they thought was affecting their perception today. All the managers in the company agreed that ICT has made wonders for the way that work can be carried out today. One of the managers had been working in the company since the beginning of his career and compared how things were done when he started to work at the company and how things are done today. The manager stated that everything has become much simpler and the communication and knowledge sharing in the company are very efficient. Two of the managers in the company did not believe that their earlier experiences with ICT were affecting how they view the tools today as they did not have any real experiences with similar tools from other companies.

Table 4.2 Managerial Perception

| Managers | AA | AB | BA | CA | CB | DA | DB | DC | DD |
|------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Managerial Perception | ++ | +++ | +++ + | - + | - + | ++ | ++ | +++ | +++ |

Table 4.2 aims to summarize the perception of the interviewed managers. The purpose of the table is to clarify and illustrate how the managers answered during the interviews. The columns two to ten (from left to right) represent the interviewed managers from each and every company. The bottom columns represent the managers' perception of ICT according to a scale. The scale consists of nine different rankings, these rankings range from four minuses (represents the most negative perception) to four pluses (represents most positive perception). The middle of the scale is represented by an indifferent perception and is viewed as neutral (this is presented as minus and plus in the table).

4.6 ICT use

All of the firms where the interviews were conducted had some sort of ICT system where the firm stored different kinds of information, some of the firms also had several systems.

4.7 Company A

4.7.1 Manager AA

Manager AA explained that the firm has two different types of systems where employees are able to store information and others outside the firm are able to get information about the company. This company has two kinds of ICT systems, which consist of intranet and webpages (one external and one internal). The reason for why the organization has two different ICT systems depends on that the first one was an in-house system, which only could be used at the workplace. The idea for the future is that the company only should be using the second one but it takes time to transfer all the data, therefore, at this moment they are using two systems. Another reason for why the firm is changing to another system is that it is easier to compare

with others in the same industry and it is possible to access the program from different places. AA explained that they implemented ICT systems early and other types of IT tools. The development of these tools has gone backwards during the last years due to confidential reasons for their industry. Earlier experience of ICT systems has been from the same industry and the perceived difference is in form of improvements during the years are that the systems are better tailored for the operation.

All employees in the firm have access to both ICT systems but only the CEO has access to the payroll and finance systems. The most used IT tool for the firm is still their first type of ICT system and this system is used daily by all employees. According to manager AA, the systems that are tailored for the healthcare industry need to be more simplified for the employees so that they are able to perform better documentation. AA also thinks that the firm has made thorough investments when it comes to IT but there are always parts where more effort could be put. Manager AA thinks that investing in different IT tools in the future will simplify the work within the company in form of using different applications for iPhone and iPad, education systems and this will eventually create a paperless society for companies.

Manager AA stated that the development of the systems has gone backwards. What manager AA was referring to is that confidentiality is a very important issue. The ICT in the company has become more closed in order to keep the information secure inside the company. Much of this confidentiality is decided by certain laws that the company has to follow.

4.7.2 Manager AB

Manager AB answered that the first ICT system was constructed to help the firm communicate internally while the second system was constructed to store high prior and secret information in form of medical and journal documentation. According to AB both systems are tailored for the company and have a good telephone support which always is available. All employees within the firm did not have access to the whole second ICT system, access to changing of passwords adding a new person to the system were tasks which only the administration within the company could do. What the systems and the company's other IT tools lack in is a common calendar that all employees have access to. This will simplify the daily work of the firm, since, it eliminates time when it comes to booking of a meeting for example.

4.7.3 Summary of company A

Both the managers said that the company has two different ICT systems and that they were working well for the company. Manager AB had a more positive perception of ICT use compared to manager AA and both of them had earlier experience with other ICT tools or

systems. They agreed on that several different ICT systems in the same company would probably make the employees within the firm confused and manager AA thought that the systems could be more simplified for the future.

4.8 Company B

4.8.1 Manager BA

This company used several ICT systems, for example, SAP, Flex-net, Agda, Intranet and Outlook. None of the systems were used by all employees, instead the systems were divided and used by different sectors within the company; SAP and Flex-net were used by the production sector while Agda, Intranet and Outlook were used as a human resource system. Changing of the systems during manager BAs period in the company is that the system Agda has been more developed and is involved in the overall daily basis. BA has worked in several different ICT systems before, but according to manager BA, the difference between these systems is small. The systems are according to BA easy to use and BA claims that it is not more difficult for a smaller company to find a suitable ICT system for their operation comparing to larger company. If one of the systems lack in an area it is easy to announce the support about the issue and they are able to find solution for the company. By doing this, the company develops their ICT systems and also make them fit for more than one purpose. The IT tool that manager BA uses mostly is Agda; this is a necessary program BAs daily work tasks. More investment in ICT systems seems not to be necessary for the company according to BA, however, renewal of computers is constantly done. Company B had many different regulations and policies about confidentiality. Therefore, not everyone in the organization had access to certain ICT tools. Much of the use of ICT in company B is regulated by rules and policies which exist in the company.

4.8.2 Summary of company B

Company B is using several ICT systems/tools to simplify the business. Manager BA found the systems both suitable for the firm and easy to use. At the moment manager BA does not think that further investment in ICT is necessary as the company is constantly updating when employees find the systems deficient.

4.9 Company C

4.9.1 Manager CA

The company uses an ICT system called Pyramid, which helps the firm to store information related to production and invoices. Manager CA has earlier experience of other types of ICT

systems developed for similar businesses but also experience from systems, which are used in larger firms. CA claimed that there are both positive and negative aspects of their system Pyramid but in general the system is as good as all the others developed in the field. Many of the employees are recently hired by the company and, therefore, they are still learning the program. CA stated that ICT systems developed for SMEs gives the user a better view of the company compared to a system that, is developed for a larger firm. In a small company one person is able to control and have an insight of the company as a whole with help of an ICT system, in a large firm the amount of stored information is huge, and therefore, one person is not able to have insight in everything. According to CA, the company has an interest in investing further in new forms of IT tools, which can help the company to make the daily work more effective.

4.9.2 Manager CB

Manager CB also explained that the company is using an ICT system called Pyramid, the system is not used for other purposes than the expected ones. At the same time, CB claimed that the employees within the firm are trying to use and take better advantage of the system now compared to before. Many people are still trying to learn the system and, therefore, it will probably be more effective in the upcoming period. The system is only used by the production manager, finance section and the logistics section. The program is not used by those employees who are working in the workshop. According to CB, the company could make use of further investments of IT tools, for example, tools related to feedback and e-mail invoices, which are performed automatically.

4.9.3 Summary of company C

Company C is using one type of ICT system called Pyramid. Both managers said that the system is not used for other purposes than the expected ones, but, the employees are trying to learn the system better. The managers do not think that this system is better than other types of ICT systems but at the same time they says that it is fitting the company's needs. Both managers state that the company could make use of further investments due to ICT in the future but at the moment it is not something that is highly prioritized.

4.10 Company D

4.10.1 Manager DA

The company is provided with an ICT system that covers all their business units, in example, transport management, finance, marketing management etc. Manager DA said that the system that is controlling the cars and trucks has been renewed during the latest years to fit the

organization better. Not everyone in the firm has access to all the systems even though the systems are connected and put together to one large system. Only those who work with administration have access to the finance system, those employees who work at the office have access to the transport system, the drivers do not have access to these systems at all. DA i the transport system on a daily basis and thinks that the system is easy to understand and work with since it is windows-based. The organization's ICT system is used for several outcomes since it is composed by different parts. Manager DA explains that the system works good for their industry and DA do not think that the company need to invest more in ICT or IT tools for the moment. At the same time DA says that such systems develops continuously, this means that they may have to invest more in ICT in the future.

4.10.2 Manager DB

DB also said that the company has one ICT system, which, everything is based on. Manager DB further explained that the webpage and intranet is also connected to their ICT system. During DBs period in the company, the finance program has changed and has become more modern and is today windows-based. DB also said that after the changes within this program, all employees were educated in how to use new system. There is one web-based program, which their largest customers have developed in order to easier explain the orders for the company. This system does only three or four employees have access to. Manager DB told us that the company's ICT system is used for several outcomes depending on all the connected parts and among those parts all employees have access to the compilation of the audit. This access is made so it should be easy for all within the company to follow the results of the firm.

4.10.3 Manager DC

Manager DC described that the company's ICT system fits their type of industry and at the same time it is easy to use and understand. DC said that they have agreed on that the amount of money spent on IT tools and ICT is enough, however, they think that they can achieve more value for their money in this area. The system is windows-based which is good, since, it does not require hard effort put on education to learn the system and at the same time the system is time reducing. According to DC there are not many options to choose between when it comes to ICT system that are windows-based which is one of the reasons why DC thinks that the company might be overpaying for the system.

4.10.4 Manager DD

DD explained that the company has an accounting system called Iscala, which receives information from the Transport system. DD described that the company has other systems that,

are not connected to the whole ICT system; these systems are the inventory system and the payroll system. Only DD has access to the inventory system and just two of the employees have access to the payroll system. The company pays different staff licenses to be able to access these programs; therefore, only some of the employees are able to use these. There have not been a general change in these systems during DDs period in the company, however, the company has tried three different accounting systems but they were all quite similar. According to DD mostly of the different finance systems are similar and consist of the same principles, however, DD does not have a personal experience of earlier systems in the same area.

FRX is an IT tool, which DD is using every month for analysis, and as a daily tool the e-mail. DD thought that the systems are well formed for the company and fitting for their industry; at the same time, everyone needs knowledge and education about the programs to be able to use them. The systems fit SMEs well and are easy to use if you possess some knowledge about them. DD did not think that the company has to invest more in ICT or IT tools at the moment.

4.10.5 Summary of company D

According to all managers company D has one large main ICT system where several functions are linked together. Only some of the financial functions are not linked to the company's main system. Not all the employees within the firm have access to all functions, this is due to that the employees have different working areas and do not need access to all these functions in the system. In general, the managers think that the system/systems are easy to use and fit their type of industry. The managers do not think that the company needs to spend more money on ICT at the moment but they think that the company is able to gain more value for the money in this area.

Table 4.3 ICT use

| Managers | AA | AB | BA | CA | CB | DA | DB | DC | DD |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| ICT use | ++ | + | +++ | + | + | +++ | +++ | +++ + | +++ |

Table 4.3 aims to summarize the ICT use in the companies according to each manager that has been interviewed. The purpose of the table is to clarify and illustrate how the managers answered during the interviews. The columns two to ten (from left to right) represent the interviewed managers from each and every company. The bottom columns represent the how much ICT is used within the companies according to the managers. The scale consists of four different rankings, these rankings range from one plus (represents the least use of ICT) to four pluses (represents the most use of ICT).

4.11 Link between managerial perception and ICT use.

In general, all the managers have a positive perception of ICT systems and IT tools. The managers in the companies think that ICT is good as it makes their work easier, however, the tools need to be easy to use for everyone, in other words they cannot be too complicated. Other comments were: “I do not understand how they managed to control and share information before the time of these systems” and “ I can gain access to information both easily and much faster”.

All the managers except one agree that their previous experiences of ICT have affected their perception. The manager that did not agree with this had no previous experience due to the fact that she has been working in the same company for most of her career. Some of the managers had personal interests of IT and thought that this could be a reason for why they appreciate ICT. Many of the managers believe that their previous experiences with ICT have made it easier for them to learn to use new ICT solutions.

4.12 Organizational culture

As the answers for this section were very similar between the companies and the managers we have chosen to present the section by companies and as whole.

The companies that were interviewed were large enough to have an organizational culture present. The cultures were more visible in some companies compared to others. The focus was put on whether the organizations are individualistic or collectivistic.

All the managers described the working environment as very good in the companies, the goals for the companies are to have good working environments as all the employees play an important role. In most of the companies, the CEO is taking the large decisions, which involve financial decisions and setting up different frames for the employees that decide how they work. The meetings in the companies are conducted in groups in order to inform all the employees.

In the companies that were interviewed it is important that the whole group knows about the different laws and rules, which are set up for the industry. There is very little presence of individualism in company A, B and D as the managers stated that it is crucial to work together in order to achieve the goals, instead of working on your own. Company A said that it is of importance that everyone in the organization needs to be aware and be able to influence the decisions that are being made within the firm. Company D explained that they had a bonus system, which is distributed to all employees if the results for the firm are good enough. Company D described that teamwork is something that is highly valued in the firm, since it sometimes is the only way of performing the working tasks.

However, in company C there were certain points that made the organization more individualistic. One key aspect of individualism could be seen in the production as the employees had work tasks that only involved one person operating machinery on the production floor. In company C very little work is done in groups. The manager in company C said that it is good if there is some competition between the workers as long as they work for the company's interest and not for their own interests.

In accordance with Hofstede (2005) the organization is slightly feminine which means, that the older employees take care of each other and offer their experiences and knowledge to new employees.

Companies A, B and C have no forms of bonuses for their employees, which are set individually. However, Company A and B had other motivational tools as feedback, staff

meetings etc. Company C answers this question by saying that the company does not have these kinds of tools at the moment. Company D, however, has a bonus system which is set by the company performance, the bonuses are however not equal between all of the employees in the company.

Table 4.4 Organizational culture

| | | | | |
|----------------|----------|----------|----------|----------|
| Company | A | B | C | D |
| Culture | C | IC+ | +IC | IC+ |

The table 4.2 summarizes how the culture is perceived within the firms according to the answers during the interviews. The columns two to ten (from left to right) represent the interviewed managers from each company. The bottom columns represent whether the companies are individualistic, collectivistic or a mix of them both. The scale consists of three different categories; these categories are organized as I, +IC, C and IC+. I represents an individualistic culture, +IC represents a combination of both individualistic and collectivistic organizational cultures where the individualism is more visible than collectivism, C represent a collectivistic organizational culture and finally IC+ represents a combination between individualism and collectivism in the organizational culture where collectivism is more visible.

4.13 Knowledge sharing

The interviews were conducted in a way that enabled us to draw conclusions about how knowledge is shared and how the companies keep the organizational knowledge updated.

4.14 Company A

4.14.1 Manager AA

Further education and trainee is highly valued and prioritized in the company. An existing plan for competence development for the employees forms the daily work. The education and trainee program is scheduled for a period of five years and includes both internal and external education programs. Manager AA stated that it is a basic prerequisite that all employees share

knowledge among each other to make the company continue growing and be beneficial. AA stated that employees with different background are very suitable to work together as they complement each other's work by contributing with unique skills.

The company has also implemented two days per year where those who are hourly employed in the company get education and training. According to manager AA the most important resources in firm is the employees and their cooperation with each other.

4.14.2 Manager AB

Manager AB said that the company offers different types of education and trainee programs for their employees. AB also said that it is of huge importance that everyone within the firm is willing to share information and knowledge to their colleagues, which, they do continuously. This gives the company access to grow and sustain beneficial, since, the knowledge and information can be used and seen from several angles. BA explained that the most important resource for the company would be their computers and ICT system since the company handles huge amounts of stored confidential information.

4.14.3 Summary of company A

Knowledge sharing is an important thing in company A as the work requires that all the employees of the company are provided with up to date information. The company has databases and encourages the employees to take part of previous experiences from the databases. Above this, the employees share knowledge between each other in order to be able to cooperate better and to work more efficiently. In general, knowledge sharing is an important part of the organization and thus affects the daily work and the use of ICT tools.

4.15 Company B

4.15.1 Manager BA

Manager BA explained that the company has requirements of knowledge sharing due to the education and trainee within the firm. These education and trainee programs differ depending on what position the employees have. BA said that newly hired employees are being introduced to other employees in the firm in order to be able to ask questions and get guidelines in their work. The company has a policy that encourages employees to learn and listen from each other, thus, gain new knowledge and information. BA described that everyone should be replaceable, otherwise, the whole organization could be dependent on one person, which, gives that person a too powerful position. At the same time the daily work will flow better if the employees are able perform different types of work tasks.

4.15.2 Summary of company B

In company B sharing information is very important in order to keep the employees informed of different events and important information regarding the production. Much focus is put on handing out information with the help of ICT while knowledge is shared from person to person through education, training or meetings. Company B has some form of information sharing systems, which enable the employees to reach information from home. However, some employees chose not to use this system, which sometimes creates confusion.

4.16 Company C

4.16.1 Manager CA

The company has earlier had education and trainee programs for the employees. At the moment an inventory and follow up is being conducted due to this area in order to see what and on where to put the effort. The work is mostly conducted on an individual level and, therefore, employees do not ask each other about different things that concern them but the possibility of asking do exist. Manager CA said that during the last period many high-educated employees had left the company. This resulted in the knowledge about that all employees within a firm possess some unique skills and are hard to replace in the short-term, but in the long-term is everyone replaceable.

4.16.2 Manager CB

Manager CB claimed that the company aims to educate their employees in a way so that they are able to perform several working tasks and none of the employees should be the only one possessing a certain kind of knowledge. If this should be achieved, it would be easier for the company to replace employees if or when it is necessary. The resources that the company values the most according to manager CB is their ICT system, without this system it would not be possible to run the business. The resources, which are most replaceable, are the machines.

4.16.3 Summary of company C

The company has earlier had further education and trainee programs for their employees, but, this is now being evaluated and therefore, it is not a part of the business for the moment. The work is mostly done on an individual level and the managers want their employees to be able to perform several working tasks within the firm. This in order to that the daily work should flow, the firm should be independent and able to replace redundancies.

4.17 Company D

4.17.1 Manager DA

The company offers their employees further education several times during each year. Manager DA explained that the working process within the company builds on that everyone are able to ask each other questions and, thus, be able gain and easy access information and knowledge. The most important resource or asset for the company according to manager DA is the phone. Nearly all of the company's customers are contacting them by phone, therefore, DA is seeing this tool as a very important resource.

4.17.2 Manager DB

Manager DB also explained that the company provides their employees with further education within the company. DB also said that the company Sveriges Energi Företag is arranging several different educations for their company's employees. DB claimed that the sharing of information among the employees is a key element for their company. As a recently hired employee, it is necessary that this person is asking questions and is willing to receive information and knowledge from others in order to make a good job in the future. DB described the firm's most important tool as the phone and the company's ICT system. The reason was due to that the costumers are contacting them by phone and the ICT system has stored huge volumes of information, and without this system it would be nearly impossible to run the business.

4.17.3 Manager DC

DC explained that the company is sending employees on education and trainee every year and the most common educations are courses in transport management, selling, marketing, etc. Manager DC also talked about that it is of importance that everyone within the firm is willing to share information, knowledge and experiences with each other. This is of importance in order to make sure that new hired staff faster would feel comfortable with their working tasks and to make the daily work flow within the organization. DC also claimed that the most valuable resource for the firm is the phone.

4.17.4 Manager DD

The company is trying to offer their employees further education in different areas. At the same time, the company has a limited budget for this area. Recently three of the transport managers have been on education and trainee programs and the employee who is responsible for the IT is going on several training sessions each year. The employees within the company are good at sharing information and want to share knowledge among each other. This is also necessary and

sometimes the only way of learning the work. According to manager DD the employees are the most valuable resources within the firm, but at the same time the company is working in a way where no one should be irreplaceable.

4.17.5 Summary of company D

The company has an existing budget for further education and training programs for the employees. The most common way to communicate inside the firm is verbally and by e-mail. With customers the most common communication is done by phone and this could also be seen as an ICT tool. The working environment encourage employees to asking questions and share knowledge and information among each other since this sometimes is the only possible method of learning in the company.

Table 4.5 Knowledge sharing

| Managers | AA | AB | BA | CA | CB | DA | DB | DC | DD |
|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Knowledge sharing | +++ + | +++ | +++ | + | + | +++ | +++ | +++ | +++ |

This table 4.5 aims to summarize the knowledge sharing in the companies according to each manager that has been interviewed. The purpose of the table is to clarify and illustrate how the managers answered during the interviews. The columns two to ten (from left to right) represent the interviewed managers from each company. The bottom columns represent the how well knowledge is shared within the companies according to the managers. The scale consists of four different rankings, these rankings range from one plus (represents the least sharing of knowledge) to four pluses (represents the highest sharing of knowledge).

4.18 Link between ICT and knowledge sharing with organizational culture as a moderating factor

All of the companies that were analyzed had some type of ICT present. Some of the SMEs had more than one system. Generally, all of the ICT tools were used for more than one purpose.

Many of the systems were designed in a way that enables the user to apply one system into different areas. Many of the managers said that the current ICT has unknown functions which they are not utilizing yet as there is no need for those functions at the moment. All the managers agreed on that too much ICT would most likely complicate their current work; this could be a reason for why some functions are not used at the moment.

The managers seem to be positive when it comes to new solutions that make their job more easy and efficient. When the question of whether they see ICT as a form of control or an opportunity for development was asked none of the managers said that they perceive ICT as a form of control, instead they see ICT as a helpful tool that enables the employees in the company to work more effectively.

5. Analysis

This chapter will present the empirical findings and an analysis of the results. The model is discussed and developed in this section in accordance with the results.

5.1 Analysis of the managerial perception of ICT

This part will analyze how the interviewed managers perceive ICT in their company and, thus, how their perception is connected to the use of ICT. The analysis aims to explain if the findings of this study correspond to the existing literature.

According to Broadbent and Weill (1993) there is a clear relationship between managerial perception and investments in ICT. According to existing literature, managers in large firms do not generally see ICT as a necessity for the company, since it is a tool, which has an effect on long-term results while managers in SMEs tend to focus on short-term results (Arendt, 2008). Our findings suggest that the managerial perception of ICT seems to be dependent on the previous experiences with ICT. Managers with a negative experience of ICT tend to need more time to adapt to the systems. Our results disagree with the previous statement of Arendt (2008) which suggests that managers in SMEs do not see ICT as a necessity for their company. Our results show that SMEs are generally heavily dependent on ICT tools in order to make the organization work. All the companies included in our study had a rather positive view on ICT systems. However, there was one company, which had a less positive view. According to the managers in company C the systems were necessary to run the daily business, but at the same time, the managers' views were not particularly positive. For example, manager CA stated “*I do not view ICT as a tool for control or development, I simply see it as necessity for the business.*”

Managers in other companies had a more positive view of ICT as they saw it as a tool, which helps with the development of the company, and as a tool, which provides them with good possibilities for communication.

If the results from table 4.1 are taken into consideration, there seems to be a pattern between the previous working experience and the managerial perception of ICT. Our findings propose that managerial perception of ICT might have a connection with the size of the previous company where a manager has worked. The reason for this connection is that larger companies tend to put their focus on long-term results, thus as stated by Bayo-Moriones (2013) and Arendt (2008) the ICT tools are seen as a long-term investment for the company's well-being. Managers with previous experience from larger firms seem to understand the link between ICT and results better compared to managers who do not possess this experience.

In conclusion, managers with a background from larger firms tend to understand and make use of ICT in different shapes and forms in a way that is beneficial for the firm. Managers with previous experience, which mostly comes from SMEs, tend to perceive ICT as less important for the company. However, none of the managers had a negative view on ICT, although there were notable differences in their overall positive perception.

We argue, that the managers who come from large sized organization have a positive perception of ICT while managers who have solely worked in SMEs have a less positive perception of ICT. This argument is supported by the findings from table 4.1, which shows the managers' earlier working experience and 4.2 that shows the grade of managerial perception of each manager.

What also seems to have an impact on the managers' perception is how long they have been working in the present company. Previous research has focused on the age of the user of ICT (Hill, 2012). We have chosen to analyze this from a different angle, which takes years of working in the present company into account. Our results show that the previous statement could have an impact on how ICT is perceived by the managers. According to table 4.1, the managers in company C have the least working experience in the present company (less than one year); these managers have shown that they have a less positive perception of ICT compared to the other managers who have a longer working experience in their companies. One factor, which may have an impact on the result is that they have not gotten to know the system fully, another factor which could play an important role is that the managers have not gotten to know the company and what type of governance is optimal for the firm. As manager CB stated: "*We are trying to learn the system better in order to make better use of it*".

5.2 analysis of ICT use

According to Arendt (2008), ICT is designed for large firms, which means that ICT cannot be effectively applied to SMEs. The author also states that when ICT is used in SMEs the use is very narrow and is usually used for one specific task. Our research has shown certain contradictions to the previous statements made by Arendt (2008). The case studies on Swedish SMEs suggest that ICT has become more optimized lately. This statement is supported by the managers who were interviewed in the SMEs. The respondents stated that the tools that are present in their companies are very well optimized for SMEs. They also stated that there are very good possibilities to tailor the systems for a specific company. This means that no functions of a specific ICT tool become unused. As many of the functions of ICT are being used it shows that the use of ICT is generally broad in SMEs in Sweden.

According to Martin and Matlay (2003) a reason for why ICT is better used in large sized firms is that much focus is put on analyzing the tools. By analyzing the tools the authors mean that new areas of use can be discovered, thus making ICT more efficient for the organization. Our findings imply that the background and previous experience of a manager can have a significant effect on the use of ICT in SMEs. The managers who had previously worked in larger companies seem to have a better understanding of how important it is to analyze ICT. It seems that managers with previous understanding of how ICT works are able to apply the tools in a better manner than those managers who have not had experience from larger firms. Individuals who previously had a managerial position in a large company understand the connection between a comprehensive research of tools and improved use of them, which in turn leads to a broader use of ICT. In other words, research and development can lead to significant improvements in ICT and, thus, it can be used in other areas of the company for more than one purpose or task.

Another possible reason for why ICT was not used as well in company C as in the other firms could be that the managers of company C had worked in the firm less than one year. Therefore, they might not have had time to get to know the company and its needs; thus, they were not able to fully apply the ICT that is available in the company. Manager CA stated that: "If you know how to use one ICT tool, you will have no problem using another." This shows that he was quite confident about how the ICT tools work; however, he also mentioned that they were at the moment trying to understand the present ICT in the company in order to make better use of it. The inconsistency in manager CA's answers show that some sort of uncertainty is present in the company's use of ICT. This is most likely affected by the short time of working in the company, and could be referred to the answers from both managers.

The conclusion to this finding is that the managers with a background from larger companies did not show any lack of ability to research the tools. However, the managers of company C who did not have this background showed a lower interest in ICT; thus, the use was significantly narrower and was only seen as a necessity for the company to operate. Due to the limitation of time, it was not possible to analyze thoroughly this connection.

5.3 Analysis of the link between managerial perception and ICT use.

Maguire et al., (2007) claim that the managerial perception of ICT in SMEs is affecting how well ICT is used, in other words if it is being used broadly or narrowly. Arendt (2008) states that SMEs have difficulties when it comes to the use of ICT for more than one purpose; therefore, SMEs tend to use their ICT systems for only one purpose. The findings from our interviews show that SMEs in Sweden tend to use their ICT systems broadly. This means that our findings are not consistent with what earlier studies have shown. The reason for why this differs, could be that during the last years the systems have developed and now fit SMEs' daily business in a better way. As both Arendt (2008) and Martin and Matlay (2003) state, ICT systems are often not as well tailored for SMEs as for larger firms. This statement is also something that the respondents from the interviews not are coherent with. All of the interviewed managers said that they think that their ICT system fit their type of industry and that if some problems were found, it was easy to call the support team of the system and they would solve the problem. Why our findings are not in line with earlier studies could depend that that managers now have become more aware of what an ICT system is and what benefits their firm could have from such systems. As manager BA said: *"I do not understand how they managed to control and share information before the time of these systems"*.

ICT could help the firm to lower different types of barriers as for example, time, distance, store of data and so on. (Lin, 2007; Vriens, 1998; Hendriks 1999). According to the managers, this has a huge positive impact on their perception. During the interview One of the managers specified that the company has saved a lot of money by having telephone conferences, Skype meetings and other help from IT in order to be able to share information between employees that are located on different places during a specific moment or period of time.

According to Lin (2007), there is a clear connection between managerial perception and ICT use. The findings from our interviews strengthen this statement. All the managers, except one thought that their earlier experience with ICT affects their use and perception of it today. The managers' earlier experience were in general positive and most of them considered to invest more in ICT in the future, in order to make the daily work flow even better. In addition all the

companies used their ICT system for more than one outcome; this indicates that the companies are using the systems broadly. Examples of several outcomes that the systems were used for are, as an accounting tool, documentation tool, internal information tool, calendar tool etc. Several managers explained that their ICT systems were connected and included different areas, for example, company D described that their ICT system included a transport system, marketing system, documentation system, client system etc. By connecting all these areas simplified the daily work for their business, since, it was easier for the employees to access important information faster. This broad use, which is not coherent with earlier statements from the literature review, could be explained by that SMEs today are more familiar with the systems and its possibilities. Another reason might be that the systems are developed constantly, therefore, SMEs might be able to make better use of the systems now compared to some years ago. As manager DA said: *“Such systems develop continuously, this means that we may have to invest more in ICT in the future”*.

As the use of ICT in the companies is relatively broad, more broad in some compared to others as said earlier, it strengthens the first proposition in this dissertation. The first proposition stated: A positive managerial perception of ICT in Swedish SMEs, will reflect in a broader use of ICT in organizations.

In conclusion, our findings from the interviews strengthen the statement from Lin (2007) and Maguire et al., (2003), which said that there is a connection between managerial perception and how well ICT is being used. All the companies were using some type of ICT system, some more than one, and most of them claimed that they would make future investments in this area. Above this we discovered some new findings, which suggested that perception of ICT and ICT use is strongly related to the managerial background. These findings are as mentioned earlier related to earlier working experiences, years of working within the present firm and that the systems are well tailored for SMEs.

5.4 Analysis of organizational culture as a moderating factor on ICT use

The culture factor was quite similar in the different companies. Three of the companies had a mix between individualistic and collectivistic organizational culture, though one of them was more dominant. According to Triandis (1995) both collectivistic and individualistic organizational cultures are two extreme cultures, and it is often shown to be a mix between cultures in companies.

The two largest firms (B and D) had a mix between the two cultures that were analyzed; both were represented by an organizational culture focusing on collectivism (See table 4.4).

Company A represents a collectivistic culture, while company C represents a mix between the cultures, which is dominated by an individualistic organizational culture. The reason why the companies differ in their organizational cultures could be that the two largest firms are more structured as they use more forms and types of ICT. The two largest firms both claim that the result of the firm is of most importance. At the same time company D has both individual and collectivistic bonus setting and company B evaluates both the group's performance and the individual's performance. Another reason why company B and D have a similar organizational culture might be that the managers had earlier experience in larger firms; company B had even been a large firm before the recession in 2008. Therefore, these companies might have experience that employees many times require different types of motivations (Merchant and Van der Stede 2007). A mix of collectivistic and individualistic organizational culture with a higher focus on collectivism could make the employees within the firm more satisfied.

Company A had a collectivistic organizational culture (See table 4.4). This was noticeable by that the results of the firm were most important; the group's performances were always prioritized, everyone's opinion matters and the employees were always working in groups or projects. The reason why this company possesses another organizational culture compared to the other interviewed companies, might be that the work within the firm is heavily related to working with humans. Working with humans includes more people compared to working with different types of machines, therefore, more opinions needs to be taken into account. This could even explain why everyone should have an ability to affect decisions and get their opinion heard within the firm.

In company C the organizational culture was a mix between both individualistic and collectivistic culture, though the firm was dominated by an individualistic organizational culture (See table 4.4). The reason for this domination was that the managers in the company explained that all the employees are working individually. The working environment was a bit competitive between the employees, and manager CA said that it is of importance for the employees to perform their work individually. This could according to Chatman and Spataro (2005) indicate that the firm possesses an individualistic organizational culture. A reason for why company C is the only company among those that were interviewed that possesses a more individualistic organizational culture might be that the firm is quite small, which makes it easier to see each employee's individual work better. The employees are also working much with machines where it is sometimes only possible to work on their own. At the same time, the company describes that the result of the firm is highly important, therefore, an influence of collectivism could be seen.

In company A, B and D all managers claimed that it was more important for the employees in their firms to work in groups with a common goal or objective, rather than working by themselves to reach their individual goals. This indicates that these firms are focusing on a collectivistic organizational culture (Triandis, 1995).

In conclusion, a majority of the companies that were interviewed had a mix in their organizational culture, which is coherent with what Triandis (1995) stated. The reason for why company A did not possess a mix between the cultures could as mentioned above depend on that the working tasks within the firm demand a higher level of interaction with humans. According to Williams and O'Reilly (1998) organizational culture helps the firm to encourage solidarity and structure among the firm's employees. This is something that all the interviewed companies and managers agree with, and all the managers' states, that they think their firm has a good organizational culture, which fits their type of organization.

5.5 knowledge sharing

According to Lin (2007) one of the largest problems with knowledge workers is that they may keep the knowledge for their own benefit. Keeping knowledge that is of importance for the company can be seen as a source of power (Lin, 2007). Our case studies have shown that none of the managers believed that this is occurring in their company. The problem of knowledge sharing avoidance for one's own benefit is most likely present in knowledge intensive companies (Lin, 2007). Our research was conducted in the production/service industry where it is believed that the results from what previous researchers have stated do not apply. Many of the companies where the case studies were conducted had hazardous working environments. Due to this factor many of the companies did not allow people who were not willing to teach and share knowledge and experience, to work in the companies. Most of the companies, except company C, were very focused on group work, which means that cooperation is a key factor for success for the companies.

Generally, all the managers, except for the managers in company D, stated that it is important to be able to replace someone who possesses knowledge about a certain part of the organization. Therefore, companies A, B and C had clear policies about knowledge sharing. However, the managers of company D did not state anything about having any policies. As company D has many ICT systems and is quite large, we assume that they consider knowledge sharing as an important part of the company. Other clues to this are that the company is much focused on education and training for the employees.

One pattern was found in all the companies, the managers stated that in order to keep the production going under all circumstances, knowledge sharing is a very important factor. Knowledge sharing is very important as more than one employee must know how to perform a certain task. If only one employee holds this knowledge the risk is that the whole business comes to a halt if this particular employee were to leave the company or were not present at a certain time.

To address the issue of irreplaceability many of the SMEs were offering training in different ICT systems. Company B made certain requirements for training and further education, in order to make the employees understand all the systems and be able to replace someone when necessary. In order to address knowledge sharing effectively company A encourages employees to use a program called safe doc in order to acquire knowledge. Safe doc is an electronic database, which is available to all the employees in the company. This ICT tool's main purpose is documentation; however, it is used to share knowledge in form of documented results.

Besides ICT tools company B had a different approach, which involved coaches who helped new employees to get the necessary skills for the work. While company A and B had clear policies about knowledge sharing, company C were still evaluating what approach would be the best for the company. C did also not have an environment that supports employee communication. This means that the employees were not able to express any thoughts as easily as in the other companies. Lastly, company D had a budget for training and education. In company D it is a key element to share knowledge as employees should be able to ask questions and receive knowledge in order to do a good job. In company D it is not believed that anyone keeps knowledge or information for themselves in order to gain any kind of benefits.

In conclusion, three out of four companies had further education and training in different areas. None of the managers thought that any employee in their companies is keeping knowledge to him or herself as the work in all the companies more or less requires that employees work together. A pattern was also found in all of the managers' answers, which indicates that sharing knowledge is important in order to keep the business going. This means that all of the employees must be replaceable and that one employee cannot keep too much knowledge to oneself. Companies B and D had clear policies about giving information and teaching new employees and colleagues. However, managers in companies A and C stated that it is a key factor that employees have knowledge in different areas in order for the work to continue.

5.6 Link between ICT use and knowledge sharing with culture as a moderating factor

Miledova and Brixi (2012) claim that it is not enough for companies to only invest heavily in ICT in order to make good use of it. The employees' skills and training within the area also have a large impact on how well ICT is being used within a firm. The interviewed managers all thought that their ICT systems and IT tools were well developed for their organizations. The managers in company A said that their ICT was quite easy to learn, but at the same time some of the older employees in the firm faced some problems when learning the company's newest systems. This probably has to do with that the older employees do not have the same education when it comes to computers compared to the employees who are younger. This is in line with what Miledova and Brixi (2012) state, that if employees are better trained and have good education in the area they are more likely to use ICT broadly. Managers in company D said that when the company implemented a new type of ICT, all the employees were educated in how to use the new system. This is also in line with earlier statements from scientific articles. A reason for why firms chose to educate their employees in order to use the ICT within the firm better could depend on that the ICT within the interviewed companies were developed specifically for their company. Employees could, therefore, only possess knowledge about a similar program and not the specific program that the company has chosen to implement.

Lin (2007) and Vriens (1998) claim that investing heavily in ICT and educating employees in ICT are not enough to reach knowledge sharing among the employees within the organization. Knowledge sharing is also dependent on employee's willingness to share knowledge, and this is according to Lin (2007) linked to what kind of organizational culture is present within a firm. As three of the companies had an organizational culture focusing on collectivism (A, B and D), the statement from Lin (2007) seems to fit these organizations. For these three companies knowledge sharing seems to be highly important and prioritized, since they are working in teams, sharing each other's opinions, have policies, coaching and so on. At the same time, in company C the employees work individually; there were some signs of competition among the employees and the employees did not share experiences or interact with each other even though ICT systems were present. This supports what Lin (2007) stated about that only the use of ICT will not encourage knowledge sharing. The organizational culture is a moderating factor and decides how ICT is being used. Thus, the organizational culture has moderating effects on how ICT is being perceived and in turn if it is used broadly or narrowly (Ng and Li, 2003). Our empirical findings show that if ICT is used broadly, it has a positive effect on knowledge sharing regardless of the organizational culture. This could be seen as all the companies used their ICT for sharing information among their employees; this information could also be

translated into knowledge. At the same time, those organizations that lean more towards a collectivistic organizational culture seem to reach a higher amount of knowledge sharing compared to the company that are dominated by an individualistic organizational culture (company C). In our findings, we have noticed that collectivistic organizations tend to find a way, which forces employees to contribute to the organization. This exists in forms of policies, coaching, compulsory training, and so on. All the companies, which were dominated by a collectivistic organizational culture, explained that they were seeing knowledge sharing, in different forms, as a key element in order to make the firm successful. Our research has shown that when ICT is present in collectivistic organizations it is more likely that it is being used to both share and give knowledge. However, if ICT is used in individualistic organizations it is more likely that it is being used as a tool for giving rather than receiving knowledge.

According to Chatman and Spataro (2005) and Traindis (1995) employees in collectivistic organizations are more likely to share knowledge if the employees are heterogenic. Employees in an individualistic organizational culture are, however, more likely to share knowledge among each other if the employees are homogenic. The empirical findings from the conducted interviews partly support the previous statement. Manager AA said that it is of importance for the company that the employees possess different personalities, education and background in order to complement each other. The managers in company B and D said that knowledge sharing was either a policy for the company or one of the organization's key elements and that the employees within the firm were glad to share their experiences and knowledge with others in the firm. These two companies did, however, not explain further why their employees were so willing to share knowledge; this might depend on, apart from policies and different practices, that the employees in these firms also have different personalities, education or backgrounds. These factors could help the firm to increase the amount of knowledge sharing.

In conclusion, we have found support for our second proposition: A broader use of ICT in SMEs will lead to a more positive effect of knowledge sharing in a collectivistic compared to an individualistic organizational culture. Our findings suggest that collectivistic organizations tend to find a way to force employees to contribute to the organization. This is most likely due to the importance of working together in a group where every employee should have access to information and knowledge. At the same time in the SME which was more dominated by individualism interaction and exchange of information between employees were less valued.

5.7 Further findings

During our research, we found that another factor is present and should be included in the model. This has led to a further development of the model. During our interviews in company A, manager AA explained that their main ICT system is regulated by different laws. These laws are made to have certain confidentiality in businesses of this nature. The laws are set in order to protect patients and keep their privacy.

According to Johnson et al. (2011) there are different layers of a business environment. These layers are competitors/markets, industry/sector and the macro environment. The finding from our interviews could be linked to the layer of the macro environment. This layer takes into account different external factors, which have an impact on organizations. The findings show that there are various external legal factors present in some of the SMEs, which can have an indirect effect on our model. Our research suggests that legal requirements are affecting the way that ICT is being used.

Companies, which are operating in knowledge-based industries, are better off if they are legitimate and follow external rules and laws rather than being different. In other words, a company, which follows a legitimate behavior can gain better reputation. A reason for why this reputation is important is that other stakeholders on the market will look if a company is legitimate and will more likely conduct business with a firm that follows rules that are generally followed in a specific industry (Johnson et al., 2011). In company A knowledge sharing is one of the key factors and the whole organization is reliant on knowledge sharing. This could be linked to the previous statement from Johnson et al. (2011) and company A could be seen as a company, which is operating in a knowledge-based industry. As company A has adopted their ICT to be compliant with external laws and regulations, their work is affected by an external factor, which could be referred to an institution. According to Barley and Tolbert (1997) institutional theory highlights cultural influences on decision making and formal structures. These cultural influences could in this dissertation be linked to the laws and regulations. Companies should follow their industry's institutions in order to be a good and believable example for their stakeholders (Barley and Tolbert, 1997). This could explain why company A cannot choose any ICT system on the market. An ICT system in company A must meet certain requirements.

However, company B had many regulations, these were set in order to regulate who has access to sensitive information in the company. The manager in the company did not explain these regulations further, but said that they were also set in order to satisfy everyone who has some

connection to the firm. Depending on what the manager in company B said, the company's regulations could include different external layers. One of the external factors, which could be linked to the use of ICT is the legal factor. As company B's largest customer is operating in Germany, the EU might have certain restrictions and regulations on how business should be conducted between the two countries. This could have an effect on how the ICT in the company is designed. Perhaps the ICT is designed in a way to meet requirements from the EU.

In conclusion. Our findings from the interviews show that there could be more factors, which influence how ICT is being used for knowledge sharing. Our findings suggest that laws and regulations could be an external factor, which affects the model as a whole. This was specifically seen in company A, but even in company B there were certain things that support this finding.

5.8 Summary of the analysis

In this section a conclusion of the analysis will be presented. The findings show that the managerial perception of ICT could depend on how many years the manager has been working in the firm, earlier working experience in other firms and previous experience with ICT. Our findings show that all these influences might have an impact on how the systems are being perceived and used. In other words, these influences control whether ICT is being used broadly or narrowly.

Our findings suggest that the second factor in our model, which is ICT use, is affected by an influence which exists in an external layer. This influence consists of legal requirements. We believe that the legal requirements have a large impact on how ICT is being used in companies which are operating in a knowledge based industry. The legal requirements, which were found during the interviews mainly consisted of secrecy laws.

The third factor, which is organizational culture, moderates the ICT use and in turn how this affects knowledge sharing. Organizational culture might be influenced by the nature of the work in the company. As stated earlier, company A works with people, while company C works with machines. Company A has a collectivistic organizational culture, while company C has a more individualistic culture. Working with people involves more interaction with individuals compared to working with machines. This means that working with people requires that more opinions need to be taken into account; therefore, knowledge sharing has a better flow in company A compared to company C. This could indicate that the organizational culture in a firm is explained by the nature of work.

Finally, the last factor in our model is represented by the desired outcome, knowledge sharing. The findings from the interviewed managers show that knowledge sharing within firms is related to more than just the links and influences from the other factors. The influences that were found for this factor are policies and coaching. Two of the companies that were interviewed said that they had specific policies and coaching for making the employees share experiences, information and knowledge among each other. At the same time, one of the companies said that they had specific staff meeting where they discuss how the work is performed and evaluates the best way of conducting the work.

As mentioned earlier and in the summary, this analysis has resulted in new findings, which affect the original model. These new findings influence how strong impact the factors from the original model have on the desired outcome. A new model has been developed (5.1), which considers all the new findings.

5.9 Figure 5.1 Findings that influence the factors' impact on knowledge sharing

The empirical findings from the interviews have resulted in development of the original model from our literature review. The influences, which were found for the factors, have an impact on how strong the effect of the factors is on the outcome. These influences have been added in order to add more detail to the model and to make it possible to apply it empirically. As stated earlier this model aims to explain how managerial perception, ICT use and organizational culture affect the knowledge sharing in Swedish SMEs. The model is not only meant to describe which factors affect the knowledge sharing, but also, how both external and internal influences have an effect on knowledge sharing.

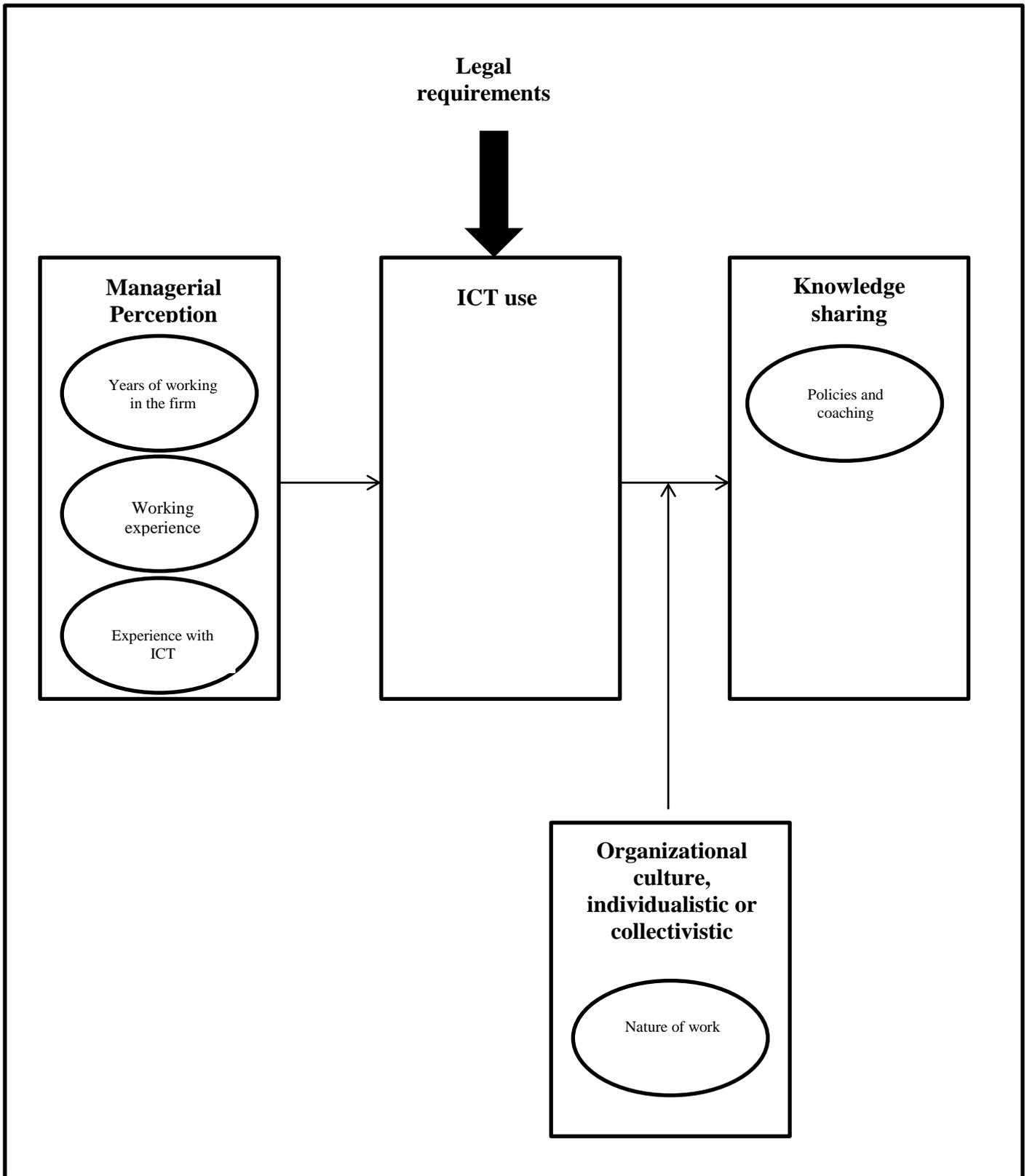


Figure 5.1 Findings that influence the factors' impact on knowledge sharing

6. Conclusion

In this chapter a summary of the dissertation and a conclusion is presented. In addition theoretical contribution, practical implications, future research, ethical implications and critical reflections are also presented.

6.1 Summary of the dissertation

This dissertation aimed to answer the following research question:

How does the managerial perception of ICT influence knowledge sharing in SMEs depend on organizational cultures?

The exploration of this area was based on previous theories by Hendriks (1999) Hendriks (2001) and Ng and Li (2003), these theories were put in a model, which was based on empirical studies. As the previous research did not have any empirical evidence, we contributed to the area with an empirical view on the subject. The model's purpose was to make the connection between managerial perception of ICT, ICT use and knowledge sharing clear. Another factor was that added, which was previously discussed by Hendriks (2001), was the organizational culture. This factor was added as a moderating factor, which moderates how well knowledge is being shared. In order to gather the necessary data for our research, a qualitative approach was used. The method that was used was case studies. Case studies enabled us to gain a deeper understanding of how well the model can be applied into real organizations.

The model was empirically tested in order to see if there are clear connections between the factors. Our results showed that there were connections between the factors, however, these connections were affected by certain influences. These influences were both internal and external to an organization. Our findings showed that the managerial perception is affected by certain managerial influences. Firstly, earlier working experience had an impact on how a manager perceives ICT. Our findings suggest that this was mainly related to the size of the previous company that a manager was working in. Secondly, years of working in the firm was added to the model as an influence as managers need to know the company well in order to know that using some form of ICT is beneficial for the company. Lastly, earlier experience with ICT was added to the model, since this has a large effect on the managerial perception. Earlier use of ICT proved to have an effect on how easily managers can adapt to new systems and make good use of them.

The influences, which were discovered in our research, have a great effect on how ICT is being perceived and thus how knowledge is being shared with the help of ICT.

The findings from the study show that that in order to make the employees share knowledge among each other, the companies had implemented policies and coaching. Therefore, policies and coaching has been added as an influence for the factor knowledge sharing in our new model. The factor organizational culture has shown to be influenced by the nature of work, depending on the amount of interaction with human beings.

Another thing, which is related to the previous statement is that how effective the knowledge sharing is, depends much on the organizational culture. In the analysis, we presented that a more collectivistic organization tends to have a broader use of ICT, thus a more efficient knowledge sharing. This is also connected back to the managerial perception, which has an effect on the ICT use. We have thus answered the research question above. To summarize this answer, managerial perception of ICT has a significant effect on how ICT is used. In turn, our findings suggest that the organizational culture has an effect on how efficient knowledge sharing with the help of ICT is.

In conclusion, we noted that there were specific influences that had an impact on the factors in our model. These influences were both internal and external. If managers in SMEs are aware of what influences the factors in our model, it might help them to get a better overview of their firm and an ability to control the firm towards the desired goal.

6.2 Theoretical contribution

The findings from this dissertation aim to help and guide future managers in SMEs to better understand the connection between their perception, ICT and knowledge sharing. The dissertation has contributed theoretically and empirically. Theoretically, this dissertation has contributed with findings from data gathered and analyzed in Swedish SMEs. As Ng and Li (2003) and Hendriks (1999) state the link between managerial perception and ICT has earlier been studied, and also the link between culture and knowledge sharing has been analyzed. However, the concept as a whole, which considers all the factors has not been analyzed earlier. Earlier research has been done, but these studies were mostly conducted in the U.S or U.K (Newell et al., 2006; Añon Higon 2011). Therefore, this dissertation has contributed theoretically with a new perspective of the subject, which tries to combine a larger concept for what impacts knowledge sharing in Swedish SMEs.

The propositions in the literature review were based on previous research done in the field, and were linked to the different factors in our model. The analyzed data have contributed empirically to both future and previous research. The empirical findings from the interviews strengthen the propositions in the literature review, but at the same time, new findings were

discovered. These empirical findings have contributed to previous studies through the analyzing of the field at a new location and with different types of companies. For future studies, these findings contribute with more detailed information for the field.

6.3 Practical implications

The aim of this thesis was to contribute with empirical findings, which, as stated earlier, takes the concept as a whole into consideration. The aim was also to gather information about Swedish SMEs, and how these organizations perceive and use ICT in order to share knowledge among their employees.

The conducted interviews were made with managers in Swedish SMEs, therefore the practical contribution is for managers who operate in these kinds of organizations. Managers could benefit from these findings in a way where they get a better understanding of how they are affecting the use of ICT, also what type of culture that is suitable to reach an appropriate amount of knowledge sharing in the firm and among the employees. The new findings from this dissertation have given managers more detailed information about what influences their perception, organizational culture and knowledge sharing in organizations. This leads to that managers can make specific analysis on how to run their business more optimally.

6.4 Future research

As this research was conducted on a small scale, it would be interesting to perform a large-scale study. It would also be interesting to conduct case studies in other European countries and compare the results. If a large-scale research would be done, it would be possible to generalize the results. Thus, it would be possible to construct a new theory. Perhaps results from different areas would show other influences and patterns, thus the model could be developed further. It would also be interesting to perform a similar study in a couple of years to see whether the results would differ with time.

6.5 Social implications

There is a risk that our research can have an impact on how ICT and knowledge sharing are perceived. These factors are seen as very important in our research; however, this perception might not be in line with all kinds of companies. All companies operate in different kinds of industries and are unique. Therefore, it is of importance to evaluate each company before applying the theory. There is always a possibility that our research is interpreted in a different way than intended. Consequently, there is a risk of confusing other researchers or contradict their research.

6.6 Critical reflections

The purpose of this dissertation was to analyze if and how managerial perception influences the use of ICT, also how ICT affects knowledge sharing depending on the type of culture an organization has. The results in the dissertation show a clear connection between managerial perception and how ICT is being perceived and used. The analysis also shows that organizational culture has an impact on how knowledge is being shared with the help of ICT in organizations. However, research in this dissertation was not performed statistically, therefore, the results cannot be generalized.

The interviews were conducted in four companies with nine managers in total, and all the companies were operating in the south of Sweden. Because of time limitations, it was not possible to interview companies that operate in other parts of Sweden; therefore, the results cannot be generalized. The research was also conducted in the service or production industry and might not be in line with other industries.

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Appendix 1 Interview guide, questions in Swedish

Warming up:

1. Hur länge har du jobbat inom företaget?
2. Hur länge har du haft din nuvarande position i företaget?
3. Har du haft en annan position inom företaget tidigare? Om Ja, vilken?
4. Har du tidigare arbetserfarenheter inom något annat företag? Om Ja, vad och vilket?
5. Hur många olika sektioner har ni, ex; HR, produktion, ekonomi m.m.?

ICT use:

6. Har ni några specifika IT program eller system där ni lagrar information? Ex; Databaser, intranät, mejl, bokföringsprogram m.m.
7. Har dessa program förändrats generellt under din period i företaget? Om Ja, på vilket sätt?
8. Har du tidigare erfarenheter av andra IT program/system än de som du använder idag? Om Ja, skiljer sig dessa program från de du använder idag?

Managerial Perception:

9. Kan du förklara hur kommunikationsprocessen fungerar mellan dig och dina kolleger/anställda?
10. Vad anser du om kommunikationsprocessen i företaget? (positivt/negativt, problem?)
11. Vilka typer av IT-verktyg använder ni inom företaget? Ex; mejl, möten, databaser m.m.
12. Förenklar IT verktygen i företaget er verksamhet? Varför/varför inte?
13. Har utvecklingen och investeringar av IT hjälpmedel för kommunikation ökat under din period som anställd i företaget?
14. Hur ser ni på kommunikation inom företaget, är det en viktig del av ert dagliga arbete?
15. Vilket sätt är det vanligaste att kommunicera för ert företag?

ICT use in SMEs:

16. Av vilka i företaget används era IT system/program? Ex; har ni något program/system som används av alla anställda och andra som bara en viss del av de anställda har tillgång till?
17. Har du något specifikt teknologiskt verktyg som du använder dagligen? Ge exempel

18. Har något av era nuvarande teknologiska program mer än ett användningsområde? Ex; bokföringsprogram som registrerar affärshändelser i företaget samt motiverar anställda till att hela tiden vilja förbättra resultaten.
19. Tycker du att de IT verktyg som ni använder er av är lätta att förstå och använda? Eller är vissa enkla och andra svårare?
20. Anser du att företaget har tillräckligt med IT verktyg för att underlätta verksamheten, eller kan du tänka att företaget behöver investera mer i detta?

Organizational culture:

21. Hur skulle du generellt förklara arbetsmiljön i företaget?
22. Hur tas beslut i företaget?
23. Hur ser förhållandet mellan chef och underarbetare ut i företaget, är det lätt att prata och föra fram åsikter mellan varandra? Varför/Varför inte?
24. Hur ser du på hur kunskap fördelas i företaget, är anställda positiva och villiga till att dela med sig av de kunskaper samt erfarenheter de besitter?

Collectivistic organizational culture:

25. I vilken utsträckning är det viktigt för anställda i företaget att arbeta på egen hand?
26. Arbetar ni mycket i projekt/grupp?
27. Ser ni det som ett effektivt sätt att arbeta på? Varför/Varför inte?
28. Är samarbete en viktig del i företaget? På vilket sätt märks detta?

Individualistic Organizational culture:

29. Vad läggs det mest vikt på i ert företag, gruppens presterande eller individens presterande?
30. Hur motiverar ni era anställda? Ex; olika former av belöningsystem, milstolpar för företaget, feedback, bonusar m.m.
31. Känner du att atmosfären på företaget är tävlingsinriktad mellan de anställda? Varför/varför inte?

Knowledge sharing and knowledge as a resource:

32. Finns det kompetensutveckling/vidareutveckling för de anställda i företaget? Ex: i form av olika utbildningar.

33. Motiverar ni anställda att ta del av tidigare lärdomar och kunskap som finns tillgänglig i företaget? Ex; i form av om nyanställda har möjlighet att fråga mer erfaren personal.
34. Vilka resurser i företaget värderar ni högst och anser svårast att ersätta?

Vague questions about the linkages:

35. Hur är din syn på IT hjälpmedel som främjar informationsdelning?
36. Tror du att din tidigare erfarenhet av IT system/program påverkar din syn på dessa idag?
37. Tror du att de anställda i företaget har en positiv syn av att dela information med hjälp av de teknologiska program/system som finns i företaget?
38. Tror du att för många IT system i ett och samma företag komplicerar och fördröjer de anställdas arbetsuppgifter?
39. Anser du att de så kallade IT hjälpmedlen är till för att företaget kan utvecklas eller anser du att de fungerar som en sorts kontroll över vad de anställda gör?
40. Tror du att de anställda är öppna för nya lösningar, och kan anpassa sig till nya tillvägagångssätt?

Appendix 2 Interview guide, questions in English

Warming up:

1. How long have you been working in the company?
2. How long have you had your current position in the company?
3. Have you had another position within the company? If yes, which?
4. Do you have previous working experience in another company? If yes, what position and where?
5. How many divisions does the company have?

ICT use:

6. Can you explain how the communication process works between you and your colleagues/ employees?
7. What do you think of the communication process in the company? Do you see any negative/positive aspects or any problems?
8. Which types of IT-tools are being used in the company? For example; E-mail, meetings, databases, etc.

Managerial Perception:

9. Do the IT tools make your work easier? , why/why not?
10. Have the developments and investments of ICT for communication increased during your time as an employee in the company?
11. How do you view the communication within the company? It is an important part of your daily work?
12. What is the most common way of communication in your company?
13. Do you have any specific IT programs or systems where information is stored, for example: databases, E-mail, accounting software, intranets, etc.?
14. Have the programs in any way changed during your time in the company? If yes then how have they changed?
15. Do you have any previous experience with any other IT programs than the ones that you are using today? If yes then how do these differ from the ones that you are using today?

ICT use in SMEs:

16. By whom in the company is ICT used? Do you have any software which only certain employees can access?
17. Do you have any specific IT tool which you use daily? Give examples
18. Do any of your current programs have more than one area of usage? For example an accounting tool which registers financial events which could be used to motivate the employees to improve the results.
19. Do you think that the IT tools that you are using are easy to comprehend and easy to use? Are some tools easier to understand and use than others?
20. Do you believe that the company has enough IT tools to make the workflow smooth, or do you think that the company needs to make more investments in this area?

Organizational culture:

21. How would you generally explain the working environment in the company?
22. How are decision taken in the company?
23. What does the relationship between boss and employee look like in the company, is it easy to talk and share opinions with each other? Why/why not?
24. What is your view on knowledge sharing in the company, are the employees willing to share past experiences and knowledge with others?

Collectivistic organizational culture:

25. Is it important for employees to work individually?
26. Do you work in projects/groups?
27. Do you see this as an efficient way of working? Why/why not?
28. Is cooperation an important part of the company? How is this noticable?

Individualistic Organizational culture:

29. Is most effort put on the group or the individual's performance?
30. How do you motivate your employees? Do you for example have, incentive systems, milestones, feedback, bonuses, etc?
31. Do you perceive the atmosphere at the company as competitive between the employees?

Knowledge sharing and knowledge as a resource:

32. Does the company offer the employees different kinds of training sessions or further educations?
33. Do you motivate your employees to take part of previous experiences and knowledge which is available within the company?
34. Which company resources do you value the most and believe are hard to replace?

Questions about the linkages:

35. How do you perceive IT tools which enable information and knowledge sharing?
36. Do you think that your previous view on IT systems and programs is affecting your perception of these today?
37. Do you believe that the employees within the firm have a positive view on sharing information with help of the present tools in the firm?
38. Do you think that too much ICT would confuse and delay the employees work tasks?
39. Do you view the IT tools as a form of control or as a tool for development?
40. Do you think that the employees are opened minded for new solutions and are able to adapt to new ways of working?