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ON THE INFLUENCE OF NATIONAL CULTURE ON KNOWLEDGE SHARING

TIIVISTELMÄ

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Organisaatioiden välinen kilpailu on koventunut viime vuosikymmeninä globalisoitumisen takia. Myös kansainvälisyys on lisääntynyt. Uusien innovaatioiden avulla voidaan parantaa yritysten kilpailukykyä. Tästä syystä yrityksien ja organisaatioiden tulisi kiinnittää huomioita uusien innovaatioiden luomiseen. Tietämyksen jakamisella ja innovaatiokyvykkyydellä on osoitettu olevan positiivinen yhteys. Tähän perustaen tietämyksen jakamiseen pitäisi kiinnittää enemmän huomiota. Kuitenkin nykyiset tietämyksen jakamisen teoriat ovat joko liian abstrakteja tai jättävät relevantteja osa-alueita teorian ulkopuolelle, jonka syystä ne eivät ole hyödyllisiä akatemian ulkopuolella. Tässä pro gradu –työssä kehitetään pohja uudelle tietämyksen jakamisen teorialle, joka ottaa huomioon kaikki relevantit osa-alueet. Aikaisempiin tutkimuksiin vedoten kulttuuri, yksilö, organisaatio, luottamus, halukkuus jakaa tietoa sekä tekniset työvälineet   valitaan teorian ydinalueiksi. Tämän jälkeen luotua teoriaa verrataan haastattelujen tuloksiin.

Haastattelujen perusteella voidaan todeta, että kulttuuri pitää ottaa huomioon tietämyksen jakamista tutkittaessa. Kulttuuri vaikuttaa yksilön ja organisaation lisäksi myös luottamukseen, halukkuuteen jakaa sekä osittain myös teknisiin työvälineisiin. Jokainen näistä pitää sisällään lisäattribuutteja, joihin kulttuuri vaikuttaa. Yleisesti ottaen tässä työssä esitelty tutkimus on ensiaskel kohti uutta tietämyksen jakamisen teoriaa.

Tulevaisuudessa tutkimusta voidaan laajentaa kvantitatiivisella tutkimuksella.

Asiasanat: tietämyksen jakaminen, kulttuuri, innovaatio

ABSTRACT

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In the global economy, innovations have become more important than ever. Knowledge sharing has been shown to improve both innovation capability and speed. Hence, in order to improve international cooperation among workers and organizations supporting knowledge sharing has become increasingly important. However, the current theories on knowledge sharing have been formed at a too high level of abstraction or leave out essential factors of knowledge sharing to be of any real practical help for practitioners and academics. In order to meet the need for such a theory, this thesis attempted to create a new framework, which encompassed all relevant factors. These are cultural, individual, organizational and technological factors. The framework was created based on a thorough literary review after which the framework was tested against results from semi-structured interviews carried out in both Western organizations and in Japanese organizations.

The results from the interviews were then used to modify the presented framework. Based on the results it can be concluded that cultural influences need to be taken into account when studying knowledge sharing. Moreover, culture has an influence on aspects outside of just individuals and organizations. Culture influences trust and certain aspects of technical tools. These six aspects form the core of the framework. In addition, each contains attributes that are influenced by culture. Overall, it can be stated that the research presented in this master´s thesis is essentially a first stepping-stone towards a new and more encompassing theory on knowledge sharing in international context.

Future research should focus on further validating the presented framework by using quantitative methods.

Keywords: Knowledge sharing, culture, innovation

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1   Introduction

During the last few decades, competition amongst organizations has been increasing greatly. This is due to improvements in information technology and globalization. According to Teece (2000, 49) companies will have to adapt to become "Knowledge-generating, knowledge-integrating, and knowledge-protecting companies". The increase in competition forces organization to come up with new products and services faster than ever before. In order to succeed in producing new products and services companies need to be more innovative. These innovative products and services will in turn have a positive impact on the financial and organizational performance of the company (Wang and Wang, 2012). In order to produce new knowledge, existing knowledge needs to modified and combined. However, as there are variations on culture amongst different groups of people, the ways individuals and organizations interact also vary. In order to be able to take the variations into account and adjust policies accordingly, a deep understanding of how knowledge sharing and culture interact needs to be possessed by key individuals. More research into this subject has been called by for example Wang and Noe (2010) who reviewed existing studies and highlighted possible new approaches for research.

Before delving in any further, the concept of knowledge needs to be defined. However, the definition of knowledge can be relatively complex due to its intricate nature and its relation to information and data. Especially information and knowledge have been used to mean the same concept, which can make discussing knowledge hard to understand. Hence, definition of knowledge is required to clarify the topic.

1.1   Defining Knowledge

The definition of knowledge can be relatively difficult hence the differences and relationships between data, information and knowledge are defined first. Data is observable facts about the world. Refining and combining data will result in formation of information related to the data. Combining and refining

related pieces of information produce knowledge related to the context (Alin, Taylor & Smeds, 2011). In literature the terms *information* and *knowledge* have sometimes been used with the same definition but in this thesis knowledge and information are used to different constructs. Davenport and Prusak (1998, 5) defined knowledge as " a mix of framed experiences, values, contextual information, and expert insights that provides a framework for evaluating and incorporating new experiences and information." It can also be noted that just as data is processed to form information, knowledge is the result of processing information (Bhaga et al. 2002).

There have been numerous attempts to describe knowledge. Gurud and Nayyar (1994) proposed three dimensions for knowledge: simple versus complex, tacit versus explicit and finally independent and systematic. Simple versus complex knowledge define how much related information is needed to fully represent a specific part of knowledge. Complex knowledge requires more related information in order to be understood where as simple knowledge requires only a little extra information to be understood. Independent and systematic knowledge refer to the context of the knowledge i.e. can the knowledge be easily understood by itself or does the knowledge need to be described in the context of its origin. The final classification divides knowledge into two categories based on explicitness of knowledge. Hence, the two categories are: tacit and explicit knowledge. Explicit knowledge is information encoded in documents, procedures or instructions and it is thus easily accessible and easy to share (Nonaka and Takeuchi, 1995). Tacit knowledge is defined as hard to express, experience based and related to the context the knowledge was created (Joia and Lemos, 2010). In relation to tacit knowledge Polanyi (1958) noted that we know more than we can express verbally. It is previously shown that both explicit and tacit knowledge play key parts in innovation (Wang and Wang, 2012).

In this research, the definition of knowledge is based on the definition by Davenport and Prusak (1998). The dimensions of knowledge most relevant to the research are in the explicit – tacit dimension and hence this dimension will be emphasized. The emphasis is on this dimension is due to the fact that most of the shared knowledge are generally divided based on the explicit – tacit dimension. Now that these basic concepts have been defined, the next chapter will discuss the research topic in more detail.

1.2   Defining The Research Question

Providing employees and individuals with the correct knowledge at the correct time will result in an improved innovation speed and quality. However, in order for this to be possible the existing knowledge needs to be managed in a systematic way. Knowledge management can be used to support access to timely knowledge, and to support innovation processes. Supporting knowledge sharing is a key aspect in knowledge management. Policies supporting knowledge sharing will encourage individuals to share knowledge, which has not been previously available to other employees. Once the influence of culture on

knowledge sharing is understood in more detail, better knowledge sharing policies can be created. This in turn will encourage sharing of previously unshared knowledge with in the target audience.

As will be shown in this research, there are previous models on knowledge sharing and on culture. Models that include both culture and knowledge sharing, however, have not been thoroughly studied together in existing research. In addition to this, the existing models only consider a limited selection of the relevant factors or are formed at a too high level of abstraction to be of any real use (Goh, 2002; Bhagat et al., 2002; Möller and Svahn, 2004; Lin, 2007; Boh et al., 2013). Previously literary reviews have concluded that more research is needed in regards to culture and knowledge sharing (Wang and Noe, 2010). Hence, the goal of this research is to create a better model on how culture affects knowledge sharing. The main research question can be defined as follows:

How does culture affect knowledge sharing in innovation processes?

To answer the main research question an additional research question is formed in order to achieve a more thorough understanding of the research field.

What aspects of knowledge sharing are affected by culture and how are they connected?

In order to answer these questions, key relationships and concepts related to the topic need to be discussed in more detail. Firstly, innovation models will be discussed to understand the context of the research. The reason for studying innovation models is to give the reader a deeper understanding of how knowledge sharing is related to organizations. Secondly, cultural models need to be discussed in order to understand what aspects of culture are important to the context of this research, and to understand how culture affects individuals and organizations. Thirdly, the relationship between knowledge sharing and national culture needs to be discussed in order to understand how these two concepts are related. Once these three steps have been taken, a more detailed discussion of the current models of the cultural influences of knowledge sharing is presented. The second and the third step will be carried out in the form of a literary review. In chapter four the research question is discussed in more detail before the research methodology is presented. After this the results of the interviews are presented and analyzed in detail. Finally, conclusions and future research will be discussed in the last chapter of this thesis.

2　Key Concepts

As described in the previous chapter, the relationship between innovation and knowledge management needs for further discussion due to its complex nature. The fundamental reason for a more detailed description is to gain an understanding of how the concepts are related. Discussing knowledge sharing without understanding innovations would be a failed attempt as the two concepts are closely related (Lin, 2007; Wang and Wang, 2012). Hence, in this chapter will have the following structure: first, innovation and innovation models are studied in order to understand why knowledge management and knowledge sharing is important. Second, the fundamental models of knowledge management are presented. Finally the relationship between innovation and knowledge management is discussed.

2.1　Innovation Types and Innovation Models

Understanding innovation processes is important, as they are the principal way of theorizing what innovation is comprised of. However, before discussing innovation processes, there is a need to understand what innovation is, and what it is not. Innovation has been analyzed in great detail within the academia. There are numerous different definitions for innovation starting from Schumpeter (1934) and slowly evolving as more research on the topic has been carried out. However, for the context of this research Trott´s (2005) definition of innovation is most suited. Trott´s (2005, 15) definition of innovation as follows:

> Innovation is the management of all activities involved in the process of idea generation, technology development, manufacturing and marketing of a new (or improved) product or manufacturing process or equipment.

From the definition it is clear that knowledge assets within as well as outside the organization have become more important than ever, and are critically important for the improvement of innovation success.

Innovations can be divided into two categories: **radical** and **incremental** innovations (Pedersen and Dalum, 2004). Radical innovations are innovations that are a revolutionary step forward from the previous state. These types of innovations will make major parts of previous knowledge, technical solutions, production processes unneeded. As radical innovations represent a big leap forward they also create uncertainty within the market as new processes and products will need to be developed. Most radical innovations are based on a long-term a research and development process, which is usually measured in years. Incremental innovations on the other hand represent an innovation, which is build upon previous innovations. These types of innovations are usually based on a shorter process than radical innovations and they can come from cross-functional teams instead of long research and development processes. Incremental innovations do not produce uncertainty as previously used processes can mostly be used without bigger modifications (Popadiuk and Choo, 2006).

Another categorization between different innovation types is based on how and what the innovation aims to achieve. Afuah (1998) divides innovations into three categories: **technological**, **market** and **administrative innovations**. Technological innovations result in a new product, a process or a service, which aims to either meet a market need or to introduce an improvement into an organizations processes. Market innovations can be considered to be related to Kotler & Armstrong´s (1993) marketing-mix, i.e., improvements in product, price, place or promotion. These types of innovations are mostly concerned with how to market a new product. The last category of innovations is according to Afuah (1998) administrative innovations, which he divides into strategy, structure, systems and people. Innovations in this category are concerned with how to improve the organizational structure and administrational processes.

Xu et al. (2010) divides innovation processes into two categories: **linear** and **non-linear types**. Linear types consist of technology push and market pull whereas non-linear types are a collection more complex theories such as chain-linked and Open Innovation models. Technology push consists of first developing the technology and then marketing it to the consumers. The steps in a technology push model are: developing basic science, developing technology, manufacturing, marketing and sales. Market pull type innovation is when market demands are met by developing in demand products and services. The stages of a market pull are: market need, development, manufacturing and sales. It is clear that in both of the presented innovation types the different phases of the innovation process overlap to at least some extent as the knowledge and products of each phase are needed in the next step.

Du Preez and Louw (2008) categorized innovation into six different generations: **technology push**, **market pull**, **coupling model**, **interactive model**, **network model** and **Open Innovation**. The first two generations are what Xu et al. (2010) call linear innovation types and the latter generations are non-linear types. The third and fourth generation models are improvements on the linear models and typically include feedback loops and iterations. When comparing the fifth and sixth generation of innovation models, i.e. the network model and Open Innovation, some similarities can be found. The network model, as seen

in figure 1, emphasizes the accumulation of knowledge, system integration and networking of external sources. While external sources of knowledge are important, the development is done all within a single organization. As internal development is done in relative secrecy, management of knowledge assets becomes an important aspect of the daily routine.
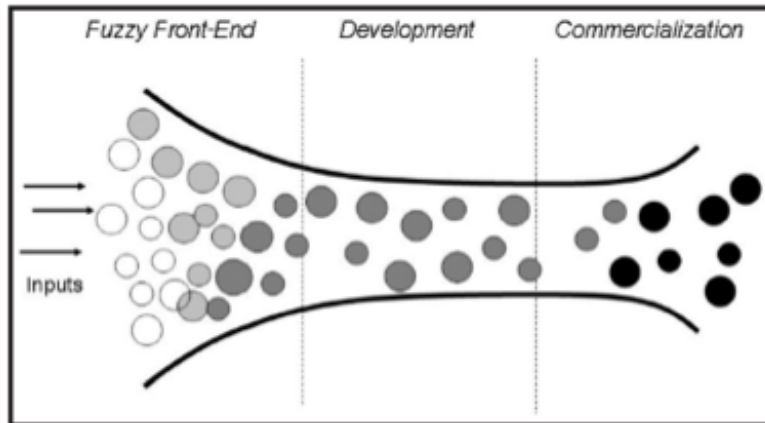
Figure 1 Fifth generation innovation model (du Preez and Louw, 2008)

In the sixth generation model presented by du Preez and Louw (2008) knowledge sources also include external sources. This is the main difference between the two generations. Due to having access to external knowledge sources also, the sixth generation model is often called Open Innovation. Open innovation was first theorized by Chesbrough (2003). He theorized that organizations should use both internal and external knowledge sources in addition to internal and external ways to commercialize the innovations made. Hence, in Open Innovation unused intellectual properties and knowledge can be licensed to other organizations, which can then use it to further their own business agenda and research needs. In addition intellectual properties from external sources can be licensed in order to be developed more internally. Figure 2 shows the sixth generation innovation model.
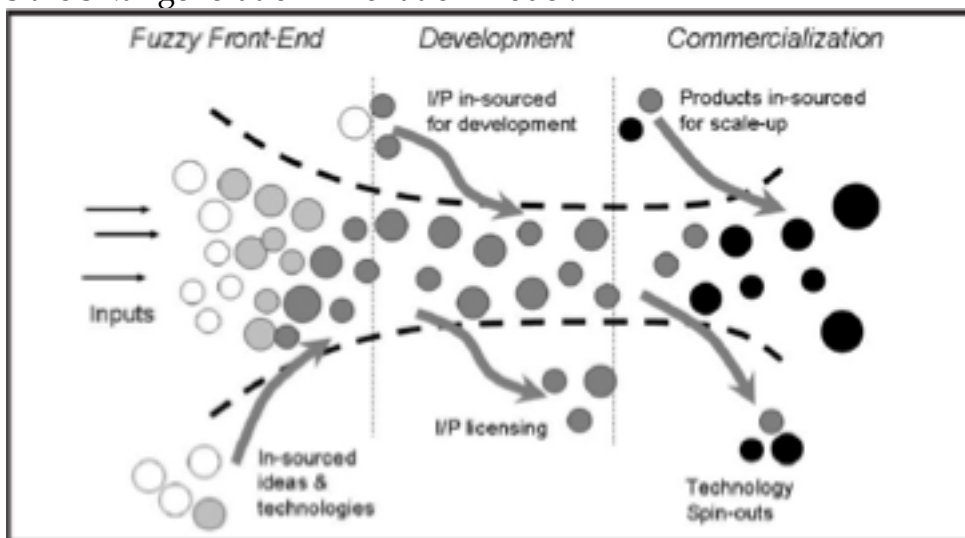
Figure 2 Sixth generation innovation model (du Preez and Louw, 2008)

According to Gassman and Enkel (2004), Open Innovation consists of three core processes: the outside-in process, the inside-out process and the coupled process. The outside-in process is defined as importing knowledge sources from customers, suppliers, and other external knowledge sources to improve the organization´s innovativeness. Inside-out process is defined as the process of licensing intellectual property created within the company to outside organizations and markets. Finally, the coupled process means working in collaboration with another organization while engaging in both inside-out and outside-in knowledge transfer between the organizations. Organizations using Open Innovation can choose the correct process based on the situation. Cross industry commercialization, where innovations in one industry are commercialized in another industry, is a viable strategy with Open Innovation. In addition, Open Innovation processes can be classified based on two dimensions: participate-invitational dimension and suggestive-directed dimension (Philips, 2010). In the participate-invite dimension, organizations can decide whether to invite specific individuals to submit new ideas to the organization or to open the "suggestion box" where individuals can submit their new innovations and ideas to be studied in more detail. On the suggestive-directed dimension, topics for new innovations can either be open without any limiting conditions or the organization can state the topic to which the innovations need to be related.

Organization´s strategy for Open Innovation should be decided on the context of the needed innovation. The choice between closed innovation strategies and Open Innovation strategies depend on the type industry and on the organization. High modularity is required for Open Innovation as only the needed parts can be insourced or licensed to the markets. The effects of highly modularized industry can be seen in telecommunications industry where collaboration on future technologies and standards across companies is common. Another key aspect is the industry speed. Open Innovation can help organizations to integrate external knowledge much faster than with closed innovation. Industries where development speed is fast organizations can better keep up with the competition with an Open Innovation strategy. Finally, organizations, which carry out research, can benefit from an Open Innovation strategy as unused intellectual property and innovations can be licensed to other industries and organizations thus providing the innovators another source of revenue. (Gassman and Enkel, 2004)

The innovation generations discussed by du Preez and Louw (2008) and Xu et al. (2010) share some aspects. All of the processes result in creation of new innovations, which are build on previous knowledge. Getting the right knowledge to individuals, who then use it to create new knowledge and new innovations is critically important. In first to fifth generation innovation models members of the same organization develop the innovation within the innovating organization. In the sixth generation model, i.e. Open Innovation, organizations can use the previously described processes to bring new knowledge to the organization and to license unused knowledge to outside organizations. However, in order to make innovation processes more efficient the right knowledge needs to be available to users at the right time regardless of the innovation process type used. In first to fifth generation models access to knowledge can be

arranged within the organization but there is still need to have an up-to-date listings where information can be found. In Open Innovation, managing knowledge becomes even more important as external networks can be used to gain access to new knowledge in addition to spreading knowledge about possible licensing of intellectual property to other organizations.

Overall, all of the presented innovation classification types are concerned with one goal: innovations. The main reason for analytical studies of innovation is to understand better how to support the processes and how to improve innovation speed and capability. In order to improve innovations, access timely knowledge is needed. Organizations can help to improve this availability of knowledge but it still needs to be managed in order to be easily accessible to those who need it. Thus, it can be stated that innovation processes need to have some support for managing knowledge availability and accessibility.

2.2   Knowledge Management, Knowledge Sharing and Barriers

As discussed before all innovation processes require access to timely knowledge and information. Organizations need to manage available information sources and access to knowledge in order to improve innovation speed. Knowledge management has received increasing attention from researchers and practitioners as a possible tool to increase productivity. Knowledge management is defined by du Plessis (2007, 3) as follows:

> "… a planned, structured approach to manage the creation, sharing, harvesting and leveraging of knowledge as an organizational asset, to enhance company´s ability, speed and effectiveness in delivering products or services for benefits of clients, in line with its business strategy."

As the given definition clearly states, the aim of knowledge management is to exploit and create knowledge in such a way that it is beneficial for the organization. One of the key theories in knowledge management is the SECI model created by Nonaka and Takeuchi (1995). The SECI model details how knowledge is created in organizations. The model consists of four stages: socialization, externalization, combination and internationalization. Socialization is the sharing of tacit knowledge to other members of the organization. This is done to increase tacit knowledge about a relevant subject within the organization as well as in collaborating organizations. Ways of socialization are varied and include meetings and brainstorming. Externalization describes converting tacit knowledge to explicit knowledge and it is used to make tacit knowledge codified. Externalization allows the knowledge to be shared much easily with other individuals. At the combination phase of the cycle previously externalized knowledge is combined with other explicit knowledge to produce new explicit knowledge. The final stage in the SECI model is the internalization of the explicit knowledge to expand the member´s tacit knowledge assets. While there has been some critique on the SECI model, see for example Gourlay (2006), and

Glisby and Holden (2003), it still remains one of the key cornerstones in knowledge management. The main critique for the SECI model proposed is based on the claim that the SECI model is based on a clearly Japanese cultural phenomenon and thus is not as valid in other countries (Glisby and Holden, 2003). Nevertheless, most critics still agree that the SECI model serves as a good foundation (Glisby and Holden, 2003; Mclean, 2004).

Knowledge management in organizations is not as simple as the previously presented SECI model might lead the reader to believe. On one hand, explicit knowledge can be shared within the organization with relative ease once technical and organizational support for knowledge sharing has been implemented. On the other hand, distributing tacit knowledge is difficult, as the knowledge has not been made into explicit form. In addition, the externalization process of transforming tacit knowledge into an explicit form can cause problems. As Polanyi (1967, 4) stated:" we know more than we can tell." Turning tacit knowledge into explicitly codified document, which can be easily shared can take a long time before the individual can clearly codify it.

Knowledge sharing means the act of making knowledge, skills, and experiences available to others and it takes place in the individual and organizational level (Lin, 2008). At the organizational level the goal of knowledge sharing is to enable others, both individuals and organizations, to improve their performance and innovativeness based on the knowledge housed within the organization (Riege, 2005). Sharing knowledge is important to both organizations and individuals as sharing enables knowledge to be utilized more effectively (Jackson et al., 2006). It has also been shown that knowledge sharing improves organization´s innovation performance (Calantone et al., 2002).

Difficulties of disseminating knowledge are not just limited to the types of knowledge that is used. Pawlowski and Pirkkalainen (2012) defined barriers to be as "any challenge, risk, difficulty, obstacle, restriction or hindrance that might prevent a single person, a group or an organization to reach an objective and success in a specific context when the challenge is related to acting or working in a collaborative cross border setting." As the definition clearly states, the number of different types of barriers can be enormous. In fact, Pirkkalainen and Pawlowski (2013) found over 119 different types of barriers by carrying out a thorough literary review. Fortunately, these barriers can be grouped to form smaller more abstract groups. Pirkkalainen and Pawlowski (2012) group barriers into five smaller categories: organizational/contextual, social, technical, legal, and cultural. Riege´s (2005) research, while of much smaller scope i.e. not taking legal factors into account, supports these findings on the parts that are applicable to the context.

Barriers represent a challenge for the researchers and practitioners, as the manifesting barriers and its cause is not always clear. In addition, solutions that work in one context might not work in another. Linna and Jaakkola (2010) studied the currently available cultural analysis tools but concluded that while there are numerous tools available there is a lack in comprehensive tools. Pirkkalainen and Pawlowski (2013) for example list different types of social software and common barriers related to them. They also analyze what type of software is suited to certain activities. However, while there exists research on

different types of barriers, according to Riege (2005) there is a lack in practical guidance and benchmarking techniques to study the effectiveness of overcoming knowledge sharing barriers.

2.3 Relationship Between Innovation and Knowledge Management

The relationship between innovation and knowledge management is a complex one. As knowledge is an integral part in managing innovation, knowledge has become a critical component in knowledge intensive industries as well as traditional industries. In previous chapter the definition of innovation was stated to be processes related to new idea creation and exploitation (Trott, 2005). Hence, it is clear that organizations focusing on improving their innovation speed and quality need to concentrate on how to exploit existing knowledge more effectively and how to create new knowledge based on the existing knowledge (Nonaka and Takeuchi, 1995).

du Plessis (2007) identified three main factors influencing the usage of knowledge management in order to support innovation. First, organizations can gain a competitive edge through better utilization of knowledge and collaboration. Cantner et al. (2011) analyzed German corporations and their innovation performance in companies that use knowledge management and compared them with companies who do not use knowledge management. The results from Cantner et al. (2011) derived show that organizations using knowledge management are more successful in product innovation and in market novelties, i.e., introducing completely new products and services to the market. Similar results were also derived by other researchers also (c.f. Vaccaro & et al., 2010; Carneiro, 2000). These results indicate that knowledge management has an affect on innovation capabilities of the organization. Hence, organizations, which exploit available knowledge resources more effectively, can gain an advantage over competitors.

The second reason according to du Plessis (2007) is that knowledge management can reduce the complexity in innovation processes. Once access to knowledge becomes easier the creation of new knowledge less complex. In addition, knowledge management makes finding people and other sources with the needed knowledge much easier. The relationship between improved innovation capabilities and knowledge management is discussed by Lopéz-Nicolás & Merono-Cerdán (2011) who conclude that knowledge management directly impacts innovation.

The third driver du Plessis (2007) identified is that knowledge within and outside of the organization is more accessible and more available to those who need it. Nonaka & Takeuchi (1995) analyzed organizational knowledge creation and concluded that the interaction and conversion between tacit and explicit knowledge creates new knowledge. However, as this process cannot take place solely within one person, knowledge needs to be shared between individuals and organizations. In fact, sharing knowledge is key to new knowledge creation

(Alin et al. 2011). Finding knowledge outside of the organization and sharing knowledge within the organization are both key processes in Open Innovation as presented in a previous chapter. As Open Innovation gains popularity, the importance of knowledge sharing will increase.

The different roles of knowledge management in innovation are discussed by du Plessis (2007). First of five roles described it that knowledge management enables codification and sharing of tacit knowledge. More experienced employees can share their insights into different situations with newer employees and thus help newer employees learn. The second role is that knowledge management helps the codifying tacit knowledge into models, which are usable by other individuals and organizations. The place where this is easiest to observe is in work dealing with process models. The third major role is its enabling role in collaboration. By enabling more collaboration, knowledge management helps to create more new knowledge and increase the diffusion of tacit knowledge within the organization. The fourth role knowledge management has in innovation is to ease management of activities related to the knowledge management lifecycle. This means that needed knowledge is made available to those who need it at the right time in addition to supporting creation, collecting, sharing and using created knowledge artifacts. Knowledge management´s fifth role is to help create a culture of sharing and creating knowledge. All these roles help knowledge management make organizations function more efficiently.

The role of knowledge management in continuous innovation is discussed by Xu et al. (2010). In the process knowledge management is supporting innovation processes. The process consists of idea generation, research development, prototype manufacturing, market sales diffusion and internationalization, which is supported by the knowledge management process. Figure 3 shows the presented process. Knowledge management´s supporting role enables organizations to improve their actions related to innovations. In each phase, knowledge management can support individuals by enabling the distribution of created knowledge to other users. With this process, the knowledge is distributed amongst the individuals who need to use it. As the new knowledge is combined with older knowledge that individuals have more new knowledge is created.
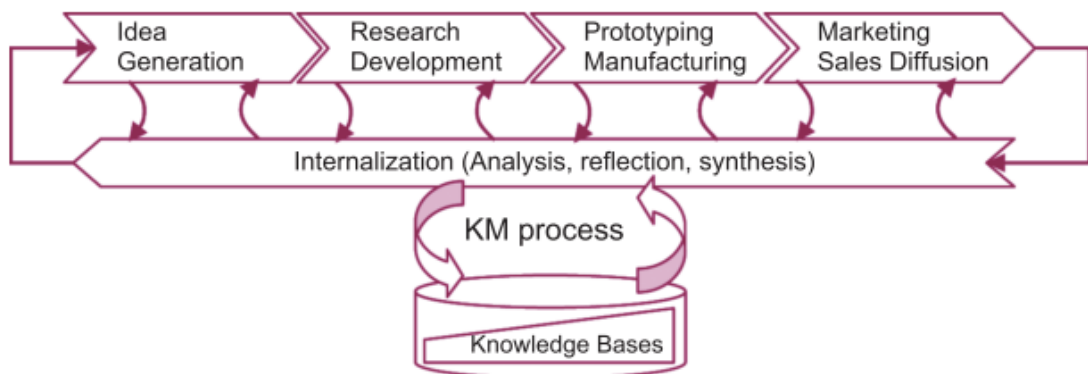
Figure 3 Global Networking Process (Xu et al., 2010)

As explained in this chapter, the relationship between knowledge management and innovation is a supportive one. Knowledge management supports innovation processes regardless of the innovation process type by enabling individuals and organizations to access knowledge when it is needed. The combination of explicit and tacit knowledge is needed in order to produce new knowledge and innovations (Nonaka & Takeuchi, 1995;. Alin et al. 2011) and knowledge management supports the exchange. Based on the driving factors described by du Plesis (2007) and the process model by Xu et al. (2010) motivation for organizations to use knowledge management strategies can be understood by its connection to innovations. In addition to this, another big reason to have a knowledge management policy is because it has been shown that when correctly applied knowledge management has an effect on the corporate performance of the organization (c.f. Wang & Wang, 2012; López-Nicolás & Merono-Cerdán, 2012; Cantner et al., 2011).

3   National Culture and Knowledge Sharing

Multinational organizations are facing ever more challenging collaborative environments that require the actors to understand how to interact with individuals of different backgrounds. In this chapter, the influence of national culture, cultural models and knowledge sharing frameworks are discussed in more detail. The goal for this is to give the reared a better understanding what is national culture, how does it affect knowledge sharing and knowledge management and an overview of the previous research on the culture´s affect on knowledge sharing. Firstly, national culture is discussed in more detail by studying existing cultural models, and how they are used in a research context. In the second part of this chapter, the results of a thorough literary review are presented to show the impact of culture on knowledge sharing. In the later parts of this chapter, literary review results are then used to form a foundation in order to understand the relationship between culture and knowledge sharing in an international context.

3.1   National Culture and Knowledge Sharing

National culture has numerous effects on knowledge sharing, which will be discussed in more detail in chapter. While there are numerous different types of cultural modes but for the purpose of this study only models, which can be used to help analyze knowledge management, and especially knowledge transfer, are studied more closely. In the field of knowledge management culture can refer to either national culture or to organizational culture (Ford & Chan, 2003). In this thesis, culture will refer to national culture, which Mabawonku (2003) defined as ""[…] definitive, dynamic purposes and tools (values, ethics, rules, knowledge systems) that are developed to attain group goals" This definition will serve as a starting reference for how national culture is used in this research. It should be mentioned that national culture varies to a certain extent within a single nation and that neighboring countries will share some aspects of

culture (Hofstede, 1980; Williamson, 2002). In Hofstede´s (1980, 65) research he found that not only was there notable variance in the answers from one country but also that there was significant overlap between different countries. Hence, the use of "national culture" to mean the culture of one nation would imply that the special features of the countries would most likely be left out. This is in contrast with Farber (1950, 37) who states that assuming that every individual in a nation shows national characteristics, which a researcher can identify, is problematic. In addition, according to McSweeney (2002) assumptions that local site analysis, such as in the research by Hofstede (1980), show the presupposition of national uniformity. However, recently Fischer and Poortinga (2012) found no evidence to support the claim that individual value dimension and country value dimension should be treated separately from each other. This suggests that cultural values based on so-called "national culture" can be used to analyze also the values of individuals. In addition, the use alternative terms such as geographic culture is infrequent in the research context, therefore national culture will be used in this research.

Various studies have shown that organizational culture has a significant impact on the success of knowledge management (Davenport and Prusak, 1998; Magnier-Watanabe and Senoo, 2010). Hofstede (1980) theorized that organizational culture has its roots in national culture. Ford and Chan (2003) also argued for the mediating role of organizational culture in reference to national culture. Magnier-Watanabe et al. (2011) concluded in their research that multinational organizations need to consider national culture in order to improve knowledge management effectiveness. In fact there are numerous studies (e.g. Ford and Chan, 2003; Voelpel and Han, 2005), which will be discussed in more detail in this chapter, that show some connection between national culture and knowledge sharing. Hence, it can be concluded that researching how national culture effects organizations and individuals in the context of knowledge sharing in multinational organizations will be fruitful as the results will help to mediate the effects of national culture and improve knowledge sharing strategies, and policies. In this chapter first an overview of national culture and culture models are discussed before the effects of national culture on knowledge management are studied in more detail.

3.2 Cultural Models

As previously stated, culture can be studied from numerous perspectives. Before going into further details, it should be noted that the limitations based on the discussion about national culture need to be taken into account. All of the models make assumptions and have some limitations but they can serve as a starting point in order to gain a deeper understanding about the cultural differences between countries. The previously presented definition by Hofstede (1980) showed, national culture can be considered to be analogous to programming, which is imprinted from an early age to the members of the group. The learning of culture starts during childhood when children learn from their parents and

other individuals. Bergen & Luckmann (1966) called this primary Socialization. Secondary socialization occurs once the individual starts learning role specific knowledge and culture. Hence, the learning happens gradually and deeper understanding of culture takes a long time to achieve. Understanding the impact of culture can be hard as the rules and guidelines are not given in an explicit form but are learned via socialization from other individuals. Not understanding cultural differences can lead to difficulties when interacting in a multicultural setting (Moral et al., 2009).

Hence, understanding how cultures differ in other countries can improve interaction with individuals and organizations from other cultures. Comparison of cultures can be done via cultural models. While it can be argued that all cultural models are crude simplifications of real culture (McSweeney, 2002), they still can provide a starting point for individuals to understand what parts of cultures are the most similar and which ones differ the most (Fischer and Poortinga, 2012.) First cultural model discussed is Hofstede's cultural dimension theory (1980), which can be used to compare differences in national culture. Hofstede´s model is widely referenced and used within the academia. The cultural dimension theory consists of five features: power distance, individualism, masculinity and uncertainty avoidance index. In 1991 Hofstede added a fifth dimension to the theory: long-term orientation. Power distance describes how vertical the society is. Individualism describes the culture on an individualistic-collectivistic scale. Masculinity describes how the culture emphasizes certain aspects of masculine or feminine features. Uncertainty avoidance index describes how uncertainty avoiding a society is. Finally, long-term orientation describes among other features how much for example long-term relationships are emphasized in the culture. As these five features can be used to describe a country relatively easily, Hofstede´s model is still being used very widely in the academia. However, as the primary study was conducted within IBM locations it could be argued that the values show more IBM´s organizational culture than the local culture (McSweeney, 2002). However, newer publications by Hofstede (Minkov and Hofstede, 2012) continue to support the model. In addition Hofstede´s model is frequently used within the relevant research context (for example Alawi et al., 2007).

A second cultural model, which has started gaining popularity in the research community, is the seven dimensions of culture as proposed by Trompenaars and Hampden-Turner (1998). The model derived by Trompenaars and Hampden-Turner includes some aspects that do not appear on Hofstede´s research. The values proposed by Trompenaars & Hampden-Turner are: individualism vs. collectivism, universalism vs. particularism, neutral vs. affective, specific vs. diffuse, achievement vs. ascribed status, internal vs. external and time orientation. On one hand, the influences of Hofstede´s work can be clearly seen in some of these values that were chosen to be included. The individualism vs. collectivism dimension corresponds to Hofstede´s Individualism dimension, and the achievement vs. ascribed status dimension is similar to Hofstede´s power distance index. On the other hand, values such as time orientation are clearly missing from Hofstede´s cultural dimension theory. It is clear that the model proposed by Trompenaars & Hampden-Turner offers some nov-

el approaches to cultural models and that by using the proposed model new perspectives can be gotten.

Lewis (2006) approached culture from a completely different perspective and suggested a cultural model radically different from the previously presented ones. He divides cultures into three groups, which are: linear-active, multi-active and reactive cultures. Linear-active cultures are defined as doing one task at a time with an emphasis on plans, scheduling and organizing. Example countries include Germany and Switzerland. Multi-active cultures are defined as culture where multiple actions are carried out at the same time, planning based on priority and not schedule with respect to thrill and importance of each appointment. Example countries include Italy, Latin American countries and Arab countries. The third and the final category is reactive cultures. In these cultures the importance of high courtesy, respectfully listening to other individuals is emphasized, and respectfully reacting to proposals. Example countries include China and Japan. The model Lewis´s proposed is of value and can provide some insight into aspects of culture that are missing in Hofstede´s cultural dimension theory. However, as the Lewis´ model is relatively simple it needs to be used in combination with other models in order to provide fruitful results.

All of the presented cultural models offer some insight into how cultures differ from one another. Hofstede´s (1991) cultural dimension theory has vast support from the research community, including from knowledge management researchers. When comparing Hofstede (1991) and Trompenaars & Hampden-Turner (1998) some of the proposed dimensions clearly overlap. Hence, both of the models can provide suitable insight when properly used in a suitable context. However, when considering the context of knowledge management and knowledge sharing, some dimensions of the Trompenaars & Hampden-Turner model such as time orientation are seen to be less relevant and are rarely used when studying knowledge sharing. Nevertheless, future research could be done with the model created by Trompenaars & Hampden-Turner (1998) as it clearly provides a different perspective than Hofstede´s model. The cultural model proposed by Lewis greatly differs from the previous two models. The insight of the model relates to are tasks processed concurrent or one-at-a-time and how affection relates to individuals. While these are all important aspects, however, they have received less focus from the academia.

It can be concluded that there are no perfect cultural models and some models are more applicable in certain situations than others. For example, all of the presented cultural models do not directly include the concept of "face", which is an important factor when modeling Asian cultures. "Face" is defined as "the respectability and/or deference, which a person can claim for himself from others, by virtue of the relative position he occupies in his social network and the degree to which he is judged to have functioned adequately in the position" (Ho, 1976, 883). When interacting with individuals with East-Asian origins, especially within a business environment, understanding the concept of face is important to successful interaction. As Ueltschy et al. (2009, 973) put it:" To save one´s face means not only saving one´s own face, but also that of a competitor in order to maintain harmony." The models presented do not directly include the concept of face but for example Hofstede´s individualism dimen-

sion can be thought to include it. It is understandable that all models make simplifications and use abstraction in order to have a wider applicability. This is shown in the methods that Hofstede (1980) used. The cost of losing details makes deeper understanding of the subject harder. Nevertheless, finding a balance between the details and the level of abstraction is an optimization problem, which researchers have to solve when creating new cultural models.

3.3 Analysis of Models on The Cultural Influences on Knowledge Sharing

The effects of National culture on knowledge management and knowledge sharing in organizations are numerous and finding ways to decrease the barriers will most likely result in more effective and successful knowledge management strategies, and tools. Understanding how national culture affects organizations and individuals involved in knowledge sharing situations is a key aspect of knowledge management. Proper support to knowledge management strategies and policy development will enable knowledge management initiatives to support innovation processes in the target organization. While there have been other attempts to detail the effects of national culture on knowledge sharing, such as Goh (2002), Ford & Chan (2003), Möller and Svahn (2004), Boh et al. (2013), all of these have concentrated on a subsection of knowledge sharing. These models will be presented and discussed first in this section. However, it will be shown that there exists no comprehensive framework detailing how national culture really affects knowledge sharing and what aspects of different components are affected. This gap will be addressed in more detail in chapter 4.

The results from the literary review can be roughly divided into three categories: conceptual models, factors relating to organizations and results relating to individuals. The division between conceptual models and the other two categories is simple. The models approach the research topic from a more abstract level and do not discuss factors influencing in detail. In the influencing factors part specific results are presented. In the latter two categories results are divided individual factors and organizational factors. The division is made based on how the factors relate to the two constructs. Obviously there are aspects that relate to both organizations and individuals and therefore such results will be discussed in both sections.

3.3.1 General Models Related to Knowledge Sharing

As discussed in the previous chapter there are numerous models on culture, which can be used to analyze culture and how culture differs between countries. In this chapter the relationship between knowledge sharing models and culture is discussed in more detail and some of the most famous models are

presented. It should be noted that in this chapter only the frameworks of the models are discussed. The constructs contained within the models are discussed in more detail in chapter 4. Generally it can be said that knowledge sharing models, which include culture, are a relatively new research topic. In fact, more research on this field was called by Wang & Noe (2010), who in their article reviewed existing knowledge sharing research and possible new directions.
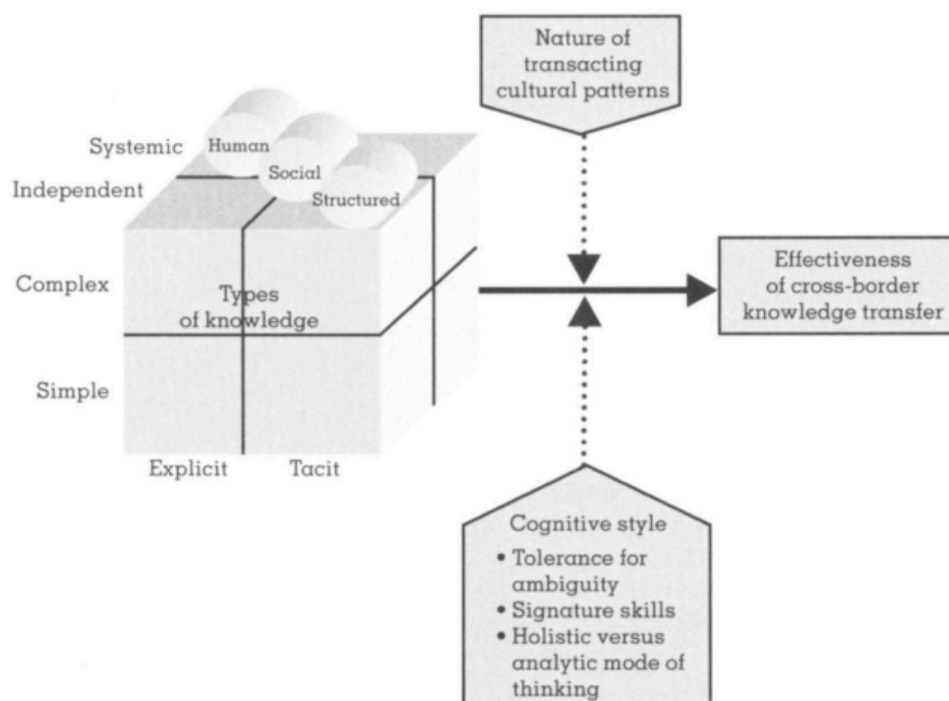
Figure 4 Model of Knowledge Transfer in a Cross-Boarder Context (Bhagat et al. 2002)

Bhagat et al. (2002) created a cultural model (figure 4) detailing knowledge transfer in a cross-border context. According to Google Scholar search it has been cited 531 times, which makes it the most cited knowledge sharing model presented in this research. The model consists of knowledge types, nature of transacting cultural patters, and cognitive styles. The relationship between knowledge types and knowledge sharing is influenced by the other two constructs, nature of transacting cultural patterns and cognitive styles. The nature of transacting cultural patterns consists of two dimensions, which are horizontal-vertical and individualist-collectivist. Bhagat et al. (2002) place emphasis on the individualism-collectivism dimension as it defines how particular knowledge is processed and used. The vertical-horizontal division represents the relationships between people in a society. For example, people who live in vertical society place more emphasis on authority where as horizontal cultures place more emphasis on equality. The individualism-collectivism dimension represents how individuals view their position in a society. This means that individuals in a collectivistic society are more closely linked to collections of people, e.g. work, and are motivated by obligations and duties the collective imposes. Individualistic cultures put more emphasis on individualis-

tic needs, rights and preferences. In this model the US would be characterized as vertical-individualistic, Japan as horizontal-collectivistic and Finland as horizontal-individualistic country. It is theorized that knowledge transfer between vertical-individualist cultures and horizontal-collectivist cultures is the least efficient. The cognitive styles construct is theorized to have a mediating effect on the transfer. If the attributes of the construct are studied in more detail it can be understood that some aspects of the individual, such as tolerance for ambiguity, are key to the efficiency of knowledge transfer. However, Bhagat et al. (2002) noted that, some of these cognitive skills are in fact influenced by culture. For example, individuals from vertical societies are more tolerant to ambiguous knowledge where as individuals from vertical-individualistic culture are more likely to possess signature skills, which have been developed to distinguish one from others.
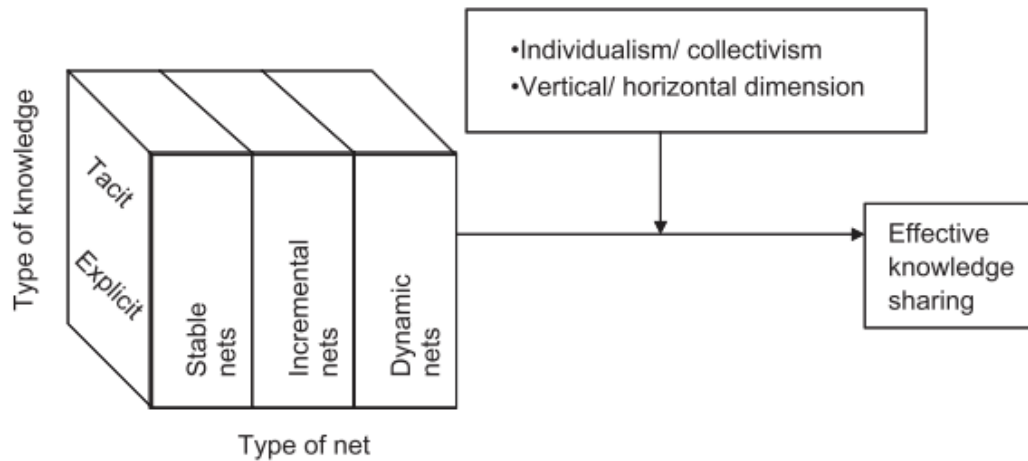
Figure 5 Framework proposed by Möller and Svahn (2004)

Möller and Svahn (2004) used the work of Bhagat et al. (2002) as a foundation for creating a model detailing knowledge sharing in business networks. The influence of the original work can be clearly seen in Möller and Svahn´s work, as the two frameworks clearly resemble each other. Key differences between works of Bhagat et al. (2002) and Möller and Svahn (2004) are that the model proposed by Möller and Svahn (2004) is much simpler as the researchers have excluded cognitive styles and replaced the knowledge types used in the original work with a much simpler division. Nevertheless, the inclusion of networks creates a new perspective on how the relationship between the organizations and individuals in the transfer are affected. The division between stable, incremental, and dynamic networks allows for better understanding of the relational context in which the knowledge is transferred. The original model developed does not consider the relationship between the individuals and organizations hence Möller and Svahn´s (2004) work improves the original work. However, the downside of the updated model is that it leaves out the construct for cognitive styles, which makes the model more abstract and thus harder for the practitioners to use.
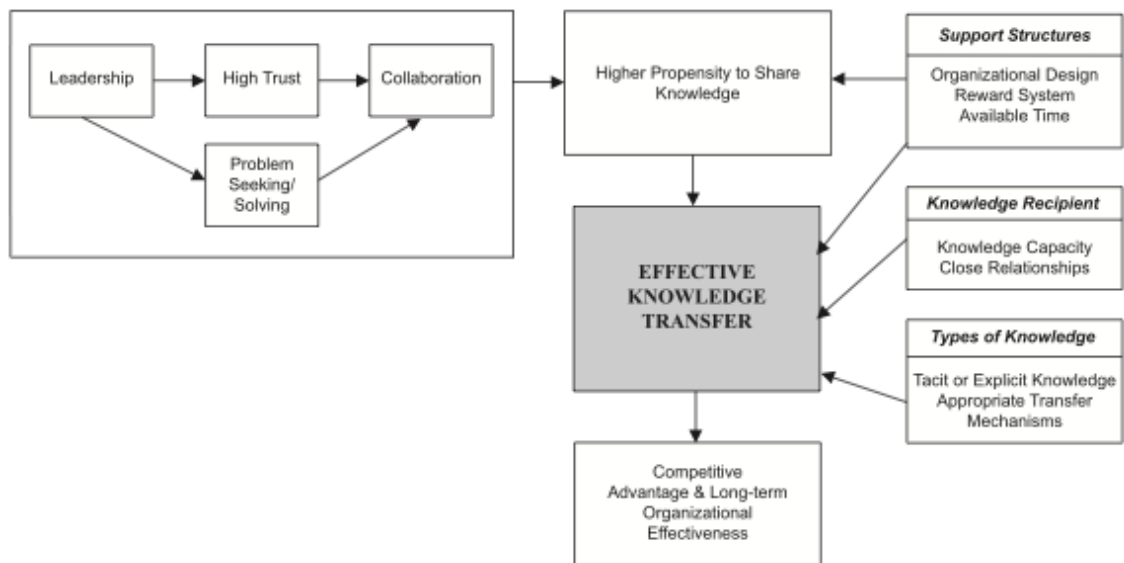
Figure 6 Effective knowledge transfer framework (Goh, 2002)

Goh (2002) created a framework, as shown in figure 6, detailing factors influencing effective knowledge transfer between facilities for technical knowledge. Within the scope of this research, Goh´s (2002) research is among the top cited works. However, the approach taken by Goh (2002) differs from the previously presented ones, as he takes a less abstract level of research. Goh (2002) used a literary review to find factors that have a significant effect on knowledge transfer and then combined into a conceptual framework. The framework proposed by Goh (2002) consists of leadership, support structures, knowledge recipient, knowledge types and high propensity to knowledge sharing components all of which are directly, or indirectly, related to effective knowledge transfer. On one hand, the constructs of the model share some aspects with the previously presented models. For example, both Goh (2002) and Bhagat et al. (2002) have a construct detailing knowledge types. On the other hand, Goh´s (2002) model is more detailed which makes it much easier to apply. However, the framework does not take national culture into account, which was discussed in previous models. In addition, the framework proposed by Goh (2002) leaves out interaction between organizations and individuals out of scope. Finally, as the conceptual framework is based on a literary review it has not been validated by a separate qualitative or a quantitative research.
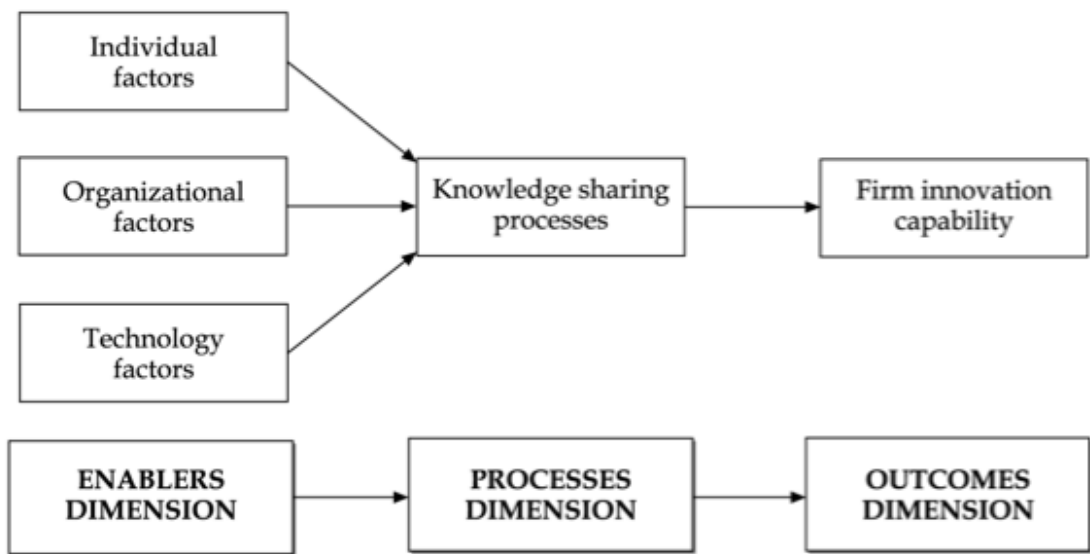
Figure 7 Lin´s Framework (2007)

Another framework theorizing knowledge sharing was proposed by Lin (2007), which is detailed in figure 7. The framework consists of three bigger constructs, which break down to smaller parts. The constructs are: individual factors, organizational factors and technological factors. These three constructs are directly related to knowledge sharing process. The individual factors consist of enjoyment in helping others and knowledge self-efficacy. Organizational factors consist of top management support and organizational rewards. The final construct, technology factors, consists of ICT use. Lin´s knowledge sharing process construct consists of knowledge donating and knowledge collecting factors. The results of the study show that all attributes besides organizational rewards and the link between ICT use´s and Knowledge donating were supported. The rest of the technological, individual and organizational factors increased willingness to either donate or collect knowledge. Lin´s (2007) model considers a new aspect that has not been considered at all in the previous models. This aspect is the technological factors construct. Technological factors should also be studied as most interaction in a cross-boarder knowledge transfer will take place via technical tools. Hence, understanding what technical factors are important for knowledge transfer leads to more efficient utilization of the tools.

While Lin´s (2007) work has been cited less than Goh´s and Bhagat et al.´s research, Lin´s work applied structural equation modeling to form the framework. To the knowledge of the researcher any other of the presented models have not been used in a quantitative study where as the framework proposed by Lin has been created based on a quantitative study. However, once again the effects of national culture have been left out of scope the framework and thus Lin´s model would require an extension, which would take culture´s impact also into consideration. By updating the model it becomes more usable in an international knowledge-sharing context.
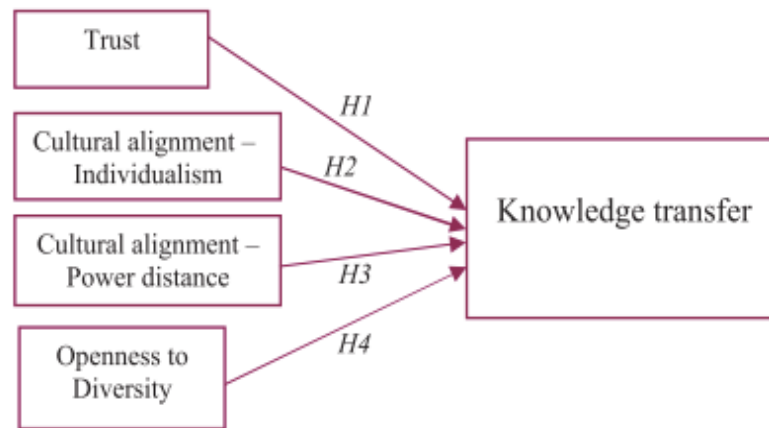
Figure 8 Knowledge transfer across dissimilar cultures (Boh, Nguyen & Xu, 2013)

The most recent attempt to model culture´s impact on knowledge transfer has been done by Boh, Nguyen & Xu (2013) who studied knowledge transfer across dissimilar cultures. The model can be seen in figure 8. Their model consists of four constructs linked to knowledge transfer. The constructs are: trust, cultural alignment - individualism, cultural alignment – power distance and openness to diversity. With closer study it can be seen that the cultural alignment constructs are in fact same as dimensions proposed earlier by Hofstede (1980) and by Bhagat et al. (2002). In addition Boh, Nguyen & Xu (2013) propose a construct for trust, which can be also found in Goh´s framework. The proposed model takes into account that culture also has an effect on knowledge transfer by including individualism and power distance constructs, which were also included in model proposed by Bhagat et al. (2002), and Möller and Svahn (2004). However, Boh, Nguyen & Xu (2013) conclude that cultural factors appear to have little influence in knowledge transfer. This is in contrast to other presented models. In addition, the model assumes that trust is not culturally affected. For example, Möller and Svahn (2004) theorized about the influence of culture on trust, which in in contrast to assumptions made by Boh, Nguyen & Xu (2013). In addition, in the cultural dimension theory proposed by Hofstede (1980) it is shown that trust building takes longer in Asian cultures than in Western cultures. Building a long-term relationship eases with creating trust. In business world long-term commitment can be shown for example by hiring local staff and having managers, who are able to speak the local language. Nevertheless, the addition of cultural factors into the model supports the idea that cultural factors should be included when studying knowledge sharing in a cross-border context.

From the presented models on how culture affects knowledge sharing and cross-border knowledge transfer it is clear that current models are still at a high level of abstraction, which limits the applicability of the different models to separate domains. Nevertheless, from all of the models presented some common features can be derived and used as a foundation in the creation of new models. For example features like trust have been included in numerous models and hence it should be studied in more detail. It should be noted that clearly

there is still more research required as none of the models includes individualistic, organizational, technical and cultural factors. In addition, factors like willingness and trust, which have been included in multiple models should also be studied more closely. If such a framework was to be created factors derived from the previous models should be included in addition to an emphasis on the impact of culture on each construct.

3.3.2 Results Related to Organizations and Management

Knowledge management strategies were also found to be influenced by **culture**. For example, Strach and Everett (2006) stated that Japanese organizations are more likely than western counter parts to not have a formal knowledge management strategy and that employees´ job descriptions less defined than in western organizations. While this might seem as a weakness in the Japanese system the long initial training period use in Japanese organizations can be seen as a way to built trust (Möller and Svahn, 2004) and as a way to transfer tacit knowledge to the trainee (Strach and Everett, 2006, Nonaka, 1991). This type of training results in a generalist training, which is in contrast to the specialist training valued in Western organizations (Glisby and Holden, 2003). Nanoka (1991) stressed the importance of personal commitment to knowledge sharing the importance of employees to identify with the company. Strach & Everett (2006) also supports these findings. Employee identification with the company helps to create a common identity, which in turn helps to lessen the barriers for knowledge sharing. Creating trust between individuals and the organization can help identification with the company. By creating an atmosphere of trust and culture of knowledge sharing, managers can improve knowledge-sharing results (Goh, 2002; Usoro et al. 2007) and thus improve the innovation capability of the organization. However, creating such a culture can be difficult as Smith et al. (2010) noted. Not only do individuals not understand the importance of their knowledge sharing culture (Riege, 2005) also demonstrating the real value of knowledge management to top managers is a challenging task (Smith et al, 2010). In addition knowledge management strategies need to be customized to fit national culture (Magnier-Watanabe et al, 2011; Tong & Mitra, 2009), which in turn require additional effort depending on the local culture. Therefore, these findings imply that knowledge management and knowledge sharing practices are indeed influenced by culture and it needs to be taken into account. In addition employee identification with the company can be influenced by the decisions and actions that managers make and in turn this helps to increase the effectiveness of knowledge sharing.

National culture influences knowledge management and knowledge sharing as evidenced by (Mangier-Watanabe and Senoo, 2011; Ford and Chan, 2003). Many companies fail to reach their knowledge management goals as individuals fail to see how knowledge management goals and organizational goals are connected (Riege, 2005). In order for knowledge management initiatives to succeed there needs to be clear **managerial level support** for it (Zheng, Yang &

McLean, 2010; McNichols, 2010; McBeath and Ball, 2012). By showing the employees that knowledge management and knowledge sharing are key success factors and creating a knowledge sharing culture, employees are more willing to share their knowledge. **Trust** is a key aspect when creating a supportive culture for knowledge sharing (Smith et al. 2010; Boh et al., 2013; Goh, 2002; Al-Alawi et al., 2007; McBeath and Ball, 2012; Usoro et al, 2007; Möller and Svahn, 2004). Without trust individuals are afraid of sharing critical knowledge. Sharing critical information might lead to fears of losing one´s job (Riege, 2005; Noll et al, 2010). National culture shows it´s effects in regards to trust also. Collective cultures need more time for building trust (Möller and Svahn, 2004). Hofstede also theorized this in his long-term orientation dimension of the cultural dimension model. Building trust helps to overcome the fear of losing face (Usoro, et al, 2007) and to encourage employees to share controversial ideas (Martinsons and Davidson, 2007). Trust also improves knowledge transfer between foreign subsidiaries and headquarters (Boh, 2013). Hence, building trust between individuals and organizations is critical success factor for knowledge sharing and building trust should be a top priority for all managers.

For multinational organizations **cultural competences of managers** are a key asset and knowledge transfer between employees of similar status and background were found to improve knowledge transfer (Möller and Svahn, 2004). Understanding that different cultures have different communication styles helps to improve interaction between individuals (Möller and Svahn, 2004). Therefore, it is important for managers to understand the importance of facilitating communication between individuals on all levels of the organization (Alin, Taylor and Smeds, 2011). Supporting communication helps to overcome barriers relating to language and cultural problems. Training programs can also be used to improve knowledge transfer between individuals and organizations, and to overcome technical and cultural barriers (Noll et al., 2010; McNichols, 2008). In addition, the management of organizational knowledge is influenced by national culture (Cordeiro-Nilsson and Hawamdeh, 2011). Hence, the cultural competences of manager and employees play a key role in knowledge management initiatives in multinational organizations. Sufficient attention cultural competencies should be paid when interacting with individuals and organizations from other cultures.

The role of **incentive use** to encourage knowledge sharing is still debated in the scientific community. Researchers have derived results, which indicate that incentives encourage knowledge sharing in organizations (Matsuo and Easterby-Smith, 2008; Kubo, 2002) while other research shows that there is no link between incentives and knowledge sharing (He and Wei, 2009) but no definitive answer has been derived. There has been some research on the connection between national culture and incentives (Voelpel and Han, 2005; Glisby and Holden, 2003). The forms of incentives are also still open to research. Voelpel and Han (2005) noted that non-monetary incentives are less effective for individuals in higher positions than for individuals in lower in the hierarchy. Hence the incentive system would need to take cultural differences into account. In the Japanese context, Nanoka and Takeuchi (1995) noted that tacit knowledge is preferred in Japan where as explicit knowledge is preferred in the

west. This combined with the Japanese group orientation, which eases knowledge sharing, implies that there might be a need for incentive systems to be customized for different nationalities. There is also a need to customize the incentive system based on the contribution as Japanese and Westerners mentalities differ in improvement philosophies (Strach and Everett, 2006; Traviranus, 2010). Japanese individuals prefer incremental improvement where as westerners prefer substantial change (Strach and Everett, 2006). This factor would be evident in for example in the number of new knowledge artifacts created and improvements on already existing artifacts. Overall it can be said that the role and type of incentives used in an organization still requires more research especially in the context of cultural differences.

In addition to managerial support, knowledge management also needs support via access to **technical tools** and software, which support knowledge management and knowledge sharing between individuals and the organization. The main reason why tools are discussed in the organizational results section is because the organization, in which individuals work and interact, is responsible for tool selection and support. Willingness to use the technical tools is a key aspect but it needs support from the organization (Goh, 2002). Management can support technical tool usage by offering training session to employees in order to guarantee that employees are technically skilled enough to overcome any technical barrier that might be present in the organization. Organizations should encourage individuals to customize the tools used as it improves knowledge management and sharing practices (Cabitza, Columbo & Simone, 2013). Customization also increases tacit knowledge on the tools used, which can in turn be used to improve the tools being used in the organization. Supporting interaction, both formal and informal, with the chosen tools is another important factor for knowledge sharing (Alin, Taylor & Smeds, 2011; Taminiau, Smit & de Lange, 2007; Goh 2002). Creating a trusted and open environment where knowledge sharing is essential to improve knowledge sharing culture in the organization. Creating an open knowledge sharing culture will encourage individuals to share ideas, which might not normally be shared. Numerous studies show that insights and lessons learned from previous projects, especially from failed projects, should be housed in the system (Eppler and Sukowski, 2000; MacGrecor, Hsieh and Kruchten, 2005). Nonaka and Takeuchi (1995) noted that currently used tools usually display the influence of western national culture. Hence, taking national culture into account also in the tools used will improve employees´ willingness to participate. In addition, the fear of "losing face" due to language and other cultural problems can be lessened, or even circumvented, by creating subcategories for foreign languages and the translating the most important findings to a more common language (Voelpel and Han, 2005). Organizations can also use cultural analysis tools to analyze cultural factors (Linna and Jaakkola, 2010). The use of such tools helps organizations to understand cultural differences. Using effective tools in the creation and adaption of knowledge sharing strategies for individuals and organizations from different cultures will help make knowledge creation and sharing processes more efficient.

As the results from the literary review show, organizations have numerous factors to consider when implementing and improving knowledge management and knowledge sharing in a multinational organization. From the early results it is clear that organization needs to foster a culture of knowledge sharing, which is clearly supported by the management. Creating a culture of sharing knowledge can be challenging but taking the suggestions presented by Smith et al. (2010) into consideration should lead to more efficient results. Individuals in the organization need to understand the value of tacit and explicit knowledge and their relation to the knowledge management and knowledge sharing goals set by the organization. This can be achieved by having mentoring and training sessions with more experienced individuals and teams. Supporting communication and cultural training can help overcome cultural barriers and thus improve results when interacting in an international environment. National culture clearly has an effect on knowledge sharing strategies and therefore when creating knowledge sharing strategies national culture needs to be considered. However, current models on culture´s impact on knowledge sharing are limited and thus better models are needed in order to fully understand which parts of the organization need to focus more on cultural aspects.

3.3.3 Results Related to Individuals

Individuals are key components in knowledge management and knowledge sharing. However, there are key differences related to national culture, which needs to be taken into account in knowledge sharing initiatives. For example, the national **culture** in Japan places more emphasis on tacit knowledge where as western culture places more emphasis on explicit knowledge (Glisby and Holden, 2003). This would impact how individuals interact in knowledge sharing situations for example the types of documents and meetings used to distribute knowledge would be different. Westerners would place more emphasis on knowledge in explicit format i.e. documents where as Japanese would more likely share knowledge in unofficial meetings. In addition to the difference in types of knowledge shared the person receiving the information would also differ. The low individualism score of on the cultural dimension theory indicates that Japanese organizations and individuals are more likely to share knowledge within already established networks (Magnier-Watanabe and Senoo, 2010; Glisby and Holden, 2003). The effects of the low score can be seen in the interconnectedness of the Japanese society and organizations. Kodama (2009) discussed the details of the networking effect and knowledge sharing in Japanese organizations and emphasized the importance collaboration, co-creation, and teamwork. Hence, knowledge sharing in Japan would more likely take place in unofficial meetings, which are relatively unstructured and allow free interaction among the participants. In contrast to this, western knowledge sharing would more likely take place via explicit documents and formal meetings. In order to bridge this gap between the two styles, individuals involved in such an interaction need to be aware of these differences. Understanding that the difference in culture affect how individuals knowledge sharing patterns will

help to improve knowledge sharing results once strategies have been customized.

However, in western cultures information is seen as possible access to more influence and is not easily shared (Glisby and Holden, 2003). It is easy to understand that individuals, who see knowledge as influence, would most likely not be eager to share their influence and thus decrease and share their power within the organization. **Trust** can help to overcome barriers to knowledge sharing (McBeath and Ball, 2012; Gruenfeld et al. 1996; Al-Alawi et al., 2007; Goh, 2002; Usoro et al., 2007). Creating trust between the individuals and organizations involved in knowledge sharing is essential. However, individuals from collective cultures require more time to build trust (Möller and Svahn, 2004), which needs to be taken into account when building trust to improve knowledge sharing results. Trust can be created by showing long-term commitment in the collaboration, which in turn can be done by establishing a permanent office in the country. As Usoro et al (2007) showed, trust is not a single factor component but actually consists of multiple factors. Competency-based trust in community is linked with increased knowledge sharing. Integrity-based trust predicts knowledge sharing. Benevolence-based trust is linked to online knowledge sharing in communities of practice. Trust building should therefore be combined with the building of culture of sharing. Once a culture of trust, supporting all three types of trust, has been created, the members of the organization are more willing to share their knowledge. This can be achieved by managers encouraging trust building and promote knowledge-sharing environment at organizations.

Willingness to share is a critical component for knowledge sharing. Voelpel and Han (2005) studied knowledge sharing in a foreign multinational corporation China. They discovered that incentives and culture were the two major factors influencing Chinese employees´ willingness to share knowledge. **Incentives** were also found to increase knowledge sharing Matsuo and Easterby-Smith (2008) who studied Japanese companies. In addition, Kubo (2002) discussed the positive relationship between incentives and employee performance. Hence, there are indications that incentives have a relationship to increased knowledge sharing. However, Glisby and Holden (2003) questioned the relationship between incentive use and willingness to share when comparing Western and Japanese employees as in some situations Westerners seemed to need incentives while the Japanese did not need incentives. This is in contradiction of the previously presented results. Riege (2007) questioned the long-term effects of incentive use in knowledge sharing. Thus if the incentive system works once it has been implemented and it has a positive effect on knowledge sharing the question becomes how long does the same incentive system work. Due to the diminishing return of the incentive system the amount of knowledge shared will also diminish with time. Nevertheless, organizations can have an effect on how willing individuals are to share their knowledge by creating a properly customized incentive strategy (Voelpel and Han, 2005). However, how culturally influenced these incentive systems need to be, and how tailored to the each individual they need to be is still under discussion and more research is required.

An interesting aspect in knowledge sharing where national culture is shown is individuals' **perspective on improvement**. Strach and Everett (2006) theorize that Western cultures place more emphasis on substantial change where as for example Japan places emphasis on constant improvement. This idea can be seen in the concept of kaizen in Japan, which emphasizes the idea of continuous improvement (Imai, 1986). The idea of kaizen can also be found in other East-Asian countries. Another related concept is the Wabi-Sabi, which invites to find beauty in imperfection (Treviranus, 2010). Young et al. (2012) discussed a failed knowledge management initiative from Taiwan, which failed due to users unwillingness to share their work. The cause of the unwillingness was theorized to be due to fear of "losing face". However, based on the principles of kaizen and wabi-sabi, sharing of unfinished ideas and works should be made possible if the presence both concepts is invited into a trusted organizational environment. This is due to the fact that trust lessens the effect of face (Usoro et al., 2007). These concepts could also improve the adaption rate of Open Innovation and lessen the barrier of "not-invented-here" –syndrome (Katz and Allen, 1982) thus giving the individuals access to new sources of knowledge.

The early results from this literary review show that trust and willingness play a key role for knowledge sharing in individuals. Based on the literary review it seems that national culture affects how willing to share knowledge individuals are and with whom they want to share with. Trust is also affected by national culture and the effects can be clearly seen on an individualism-collectivism axel. As discussed also in the organizational section, language skills and cultural competencies have a big role also. In addition to the most important factors listed here there are numerous of other factors effecting knowledge sharing from an individual´s perspective. For example, having bad experiences in knowledge sharing most likely increases the barriers for sharing in the future (Luna-Reyes et al., 2004). Another factor is that the individuals need to have technical competencies to use the tools at the organization (Wu and Lee, 1999). Should the individual not have the technical competency required to use the tools in the organization willingness to share knowledge most likely decreases. Organizations can, however, influence willingness to share by creating a trusted environment, where sharing is encouraged and by creating training programs where the biggest barriers for knowledge sharing are discussed and possible solutions for the barriers are discussed. In addition incentives can be used to increase knowledge sharing. However, as previously discussed there is a need for customization for different nationalities.

As discussed in the organizational results chapter, technical tools, which can be modified to the individuals needs, can have a supporting effect in willingness to share. Ease of use (Davis, 1989) decreases time required to use the software, which in this case is sharing of knowledge. With the increase in the This again encourages knowledge sharing behavior and improves innovation speed as access to new and timely knowledge is improved

As has been shown in the last few chapters, there are previous frameworks, which either cover knowledge sharing and culture at least in some parts. However, it can be said that none of the existing models covers all of the rele-

vant aspects in this context. Therefore, a new, more detailed framework is needed. This gap in research will be in the results section of the thesis. The results of the literary review a conclusion the following table summarizes where the impact of culture can be seen in the knowledge-sharing context.

Table 1: National culture´s influences on knowledge sharing

Category	Barriers	Has a connection to
Individual	- **National culture** (Hofstede 1980; Mangier-Watanabe and Senoo, 2010; Ford and Chan, 2003; Riege, 2005) - **Language skills** (Möller and Svahn, 2004; Riege, 2005; Ford and Chan, 2003) - **Technical skills** (Luo, 1999)	- National culture - Organization - Trust - Willingness
Organization	- **Organizational culture** (Mangier-Watanabe and Senoo, 2010; Riege, 2005; Ford and Chan 2003; Al-Alawi et al., 2007) - **Support from management** (Lin, 2007; McNichols, 2010; Goh, 2002; Ford and Chan, 2003; Tseng, 2008) - **Culture of sharing** (Smith, McKeen & Singh, 2010) - **Existence of knowledge sharing policies** (Strach and Everett, 2006)	- Individual - Trust - Willingness - Tools

Trust	- **Cultural patterns** (Hofstede, 1980; (Usoro et al., 2007; - **Types of trust** (Usoro et at., 2007)	- Organization - Individual - Willingness - Tools
Willingness	- **Organizational culture** (Glisby and Holden, 2003; Möller and Svahn, 2004; Echeverri-Caroll, 1999; Al-Alawi et al., 2007 - **National culture** (Glisby and Holden, 2003; Al-Alawi et al., 2007 - **Incentives** (Voelpel and Han, 2005; Kubo, 2002; Riege, 2005; Matsuo and Easterby-Smith, 2003) - **Previous sharing experience** (Riege, 2005; Al-Alawi et al. 2007)	- Individual - Organization - Trust - Tools
Tools	- **Willingness to use tools** (Riege, 2005; Matsuo and Easterby-Smith, 2008) - **Usability of tools** (Riege, 2005; Matsuo and Easterby-Smith, 2008)	- Organization - willingness

4 Research Methodology

In this chapter, research methodology is discussed. As shown in the previous chapter, currently there exists a gap in the knowledge sharing theories. Hence, this research aims to fill the gap by contributing to a new theory. There exists a constant update cycle between theory and the data, which theory is built on. Theories are tested on data and updated based on the results of the data only to be tested against new data sets or data is gathered and then theory is derived from it only to be tested again with new data (Markus et al., 2002). Research methods within information technology can be broadly divided into two categories: qualitative and quantitative methods (Lee and Hubona, 2009; Myers and Avison, 2002). Qualitative methods are based on for example interviews and use descriptive data, e.g. words, as a foundation (Creswell, 2009, 21). Quantitative methods on the other hand use numbers as the foundation (Creswell, 2009, 21). In addition, there is also a third research methodology called mixed methodology, which consists of both qualitative and quantitative research methods (Venkatesh et al., 2013). Typically qualitative research methods are used in building theories and quantitative research methods are used for theory validation (Creswell, 2009, 23). Kuhn (1961) summarized that in order to carry out a fruitful quantitative study, significant effort in qualitative work should be used to prepare the research.

Quantitative research methods are based on measuring specific features, which can be counted based on a predetermined category and scale. The goal of quantitative methods is to test theories based on relationships of the models. These kinds of results are seen for example when studying one social phenomenon in one country with quantitative methods allows the results to be generalized to other countries also. Generally, it can be said that quantitative research methods can be used to gain a broader understanding and generalizability of a phenomena. The downsides of quantitative studies are for example the data amounts needed and the cost of carrying out a large questionnaire. (Creswell, 2009)

Qualitative methods are based on the experiences of individuals and the data at the foundation is, unlike in quantitative methods, based on words (Creswell, 2009, 21). A typical qualitative research method is interviews where par-

ticipants provide descriptions and analysis based on their own understanding of the phenomenon at hand. Based on these interviews then the researcher gathers themes present in the data. This is why quantitative methods are useful when the researcher is starting to gather deeper understanding of the phenomena at hand (Miles & Huberman, 1994). Therefore, quantitative studies can provide more insight into a specific phenomenon within a certain context where as quantitative studies give a broader but less detailed results.

The choice between quantitative and qualitative research methods for carrying out research depends on numerous aspects such as what is the research question (Creswell, 2009). Moreover, the two methods can be used in the same research in mixed method researches (Venkatesh et al., 2013). In the field of knowledge management, and specially knowledge sharing, both qualitative and quantitative research methodologies have been used. The major difference between the two research methods is the scope of the research as quantitative studies use larger dataset to derive results from. Qualitative studies usually limit data to a few dozen interviews from which the results are the derived. For theory building qualitative methods offer an alternative way for preliminary validation where as quantitative methods offer a way to validate previously theorized models and to study the generalizability the results (Creswell, 2009).

Based on the literary review, it can be concluded that applicable frameworks for the research context is limited and the frameworks based on quantitative studies that exist do not fully cover all relevant factors that would explain how national culture affects knowledge sharing. Qualitative studies have tried to explain how knowledge sharing is affected by national culture but these frameworks are limited by the fact that they haven´t been tested in a larger context. While these previously developed models can be used to create a foundation, they need to be expanded to truly fit the context of this research. Hence, in order to understand the intricate relationship between knowledge sharing and national culture new research is needed to scope how and where the effects of national culture can be seen. Hence, in order to contribute to the filling of the gap in the research, a qualitative research needs to be carried out in order to better understand the knowledge needed to fill the research gap. This approach is inline with guidelines provided by Creswell (2009).

As stated before a qualitative approach has been chosen to in order to build new knowledge to fill the existing gaps in knowledge. More particularly, the research is based on design science research. Hevner at al. (2004, 85) stated that the design-science research can start with a simplified version of the real research problem and thus this methodology is suited for the needs of this research as in order to answer the research question certain limitations to the scope of the research need to be placed. As previously stated, none of the previously existing research takes into account cultural, individual, organizational and technical factors but only a subset of these. Thus, design science research is chosen as to be the method used to answer the research questions.

Design science research is a problem solving process, which is aims to solve real life problems by building an artifact and evaluating the built artifact against how well the artifact solves the problem. Building of the artifact is based on existing knowledge and the goal is to solve an existing problem by designing

an artifact, which can be used to overcome the problem. Once an artifact has been designed it must be evaluated to test its effectiveness. as the design process is an iterative and incremental process the evaluation phase will provide crucial information to the design of the artifact. In design science research testing is included in the different phases and the built artifact will be updated based on the results. (Hevner at al, 2004)

Thus, this research is based on design-science research with the goal to design and evaluate an artifact, which aims to answer how and where does culture affect knowledge sharing. As design-science is an iterative and incremental method, the results from the literary review will be compared and modified based on the evaluation data. The data was gathered with a semi-structured interview, which has been build based on the results of the literary review. The interview questions can be found in Appendix 1. The semi-structured interviews, that were conducted, were analyzed in accordance with the guidance of Strauss & Corbin (1990) who have written on grounded theory. The interviews were coded using axial coding as described by Järvinen (2004, 72). During the interviews the interviewees were encouraged to describe influencing factors and attributes in their own words. Then axial coding the interviews was used to gather influence factors, which are then grouped into bigger, more abstract groups. This was done by analyzing the deeper meaning of the interviewees' ´answers. Once theoretical saturation was achieved in categories, smaller attributes were gathered to gain a deeper understanding of the influencing factors. This was done to gain a deeper understanding into what aspects within the bigger influencing factors are important. The results section was then build upon the results of this process. The unsupported concepts from the literary review are also discussed in detail to gain a deeper understanding of how the interview results differ from the literary review.

In this chapter the research methodology has been described. In the following chapter the interviews results are discussed in more detail and preliminary evaluation against the literature review results is carried out. In addition, the interconnections that the results have are analyzed in order to gain a deeper understanding of the how the different influence factors are linked to each other.

5 Influences on knowledge sharing: Results of the Interviews

In this chapter, the interviews that were carried out to answer the research questions are discussed. First, a description of the interviews and selection of participants is described. In the second part the results from the interviews are presented.

5.1 Description of Interviews

As described previously, in order to answer the research questions a qualitative approach was chosen. In order to get a comprehensive understanding of the research topic, a wide range of individuals were chosen for a semi-structured interview. A semi-structured interview is a qualitative research method, where the order of the questions and the specific wording of the questions can be modified by the researchers based on the answers of the interviewee (Robson, 2002). In addition to answering the questions, the interviewees were encouraged to express their own opinion on the topic.

As stated a semi-structured interview was developed based on the results of the literary review presented in the previous chapter. Outline of the interview can be found in Appendix 1. The broad outline of the questions followed the influence factors found during the literary review. Also additional supporting questions were developed to help interviewee´s describe their own impressions on what aspects of each influence factor are important and how do the influence factors relate to each other. The created interview questions were tested in a practice interview with an individual, who is familiar with the research topic. The reasoning for testing the interview with this individual is based on the fact that industry individuals might be unfamiliar with some of the discussed concepts and individuals familiar with the topic can easily point out any remaining flaws and help to make the questions easier to understand. Hence, the choice was made to test the interview with an individual who is familiar with the topic in order to make final adjustments to any questions that might

not be clear to a non-academic. Based on the feedback from this practice interview some questions were modified to make the question more explicit.

In order to recruit individuals to participate to this research, candidate organizations were approached by email. The goal was to recruit both academics and individuals working with knowledge sharing in an international setting. Moreover, the goal was to carry an equal amount of interviews in Finland and in Japan with equal amount of Japanese and Western individuals. The interviews were carried out with individuals from both academia and from the industry. The industry individuals work in organizations ranging from import-export companies to innovation centers. The academics are individuals with experience on topics related to knowledge management and knowledge sharing. The age range of the interviewees ranged from mid 20´s to mid 60´s. In total there were 9 interviews, which were divided into 4 Japanese and 5 Westerners. There were two academics from Finland and one from Japan. Industry interviewees consist of three interviews with Japanese individuals and three interviews with Finnish individuals.
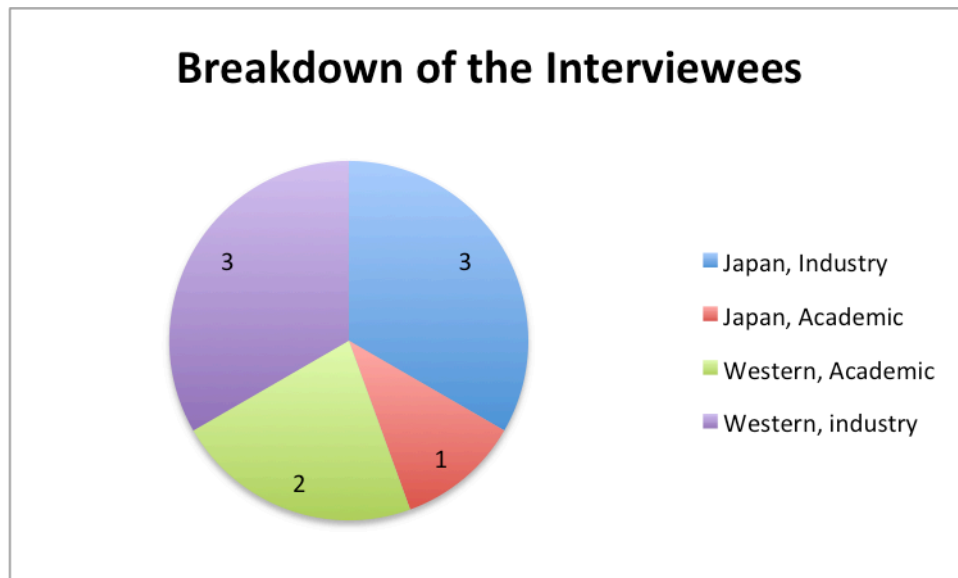
Figure 9 Breakdown of interviews

The interviews were carried out both in Finland and in Japan during late April and early May of 2013. Most of the interviews were taped and the researcher made notes during the discussion. The interviews with Japanese individuals were carried out in English and the interviews with Finnish individuals were carried out in Finnish. The length of the interviews ranged between 21 minutes and 62 minutes with an average length of 38 minutes. However, two of the interviewees requested not to be taped but for those interviews extensive notes were taken and unclear answers were asked to be clarified by further communication via email. The taped interviews were later analyzed closely for further knowledge by gathering all relevant topics from the interviews and by making new notes. Once the collecting of notes and topics was finished they were compared with the original notes from the interviews.

5.2   Results From The interviews

In this chapter first the overall results from the interviews are discussed. Second, results related to each influence factor will be presented. Deeper analysis on the implications of the results presented in this chapter will be done in the next chapter.

The semi-structured interviews' results show that there are multiple influence factors and smaller influence attributes associated with them. The results from individuals from the industry and academia broadly correlated with each other and no real difference was discovered. According to the interviews, both academics and industry individuals concluded that culture has an influence on individuals, organization, willingness and trust. Interconnections between trust, individuals and organizations were also found. Additionally, the interviews showed connections between trust and willingness, individual and willingness, and finally organization and willingness. Also, influence relationship between tools and willingness was found. However, a relationship between organization and tools received mixed results, but were however mostly supportive of the relationship. In the following subchapter the influence attributes for each influence factor are discussed and compared with the attributes found in the literary review.

5.2.1 Cultural Influence Factors

In regards to cultural influence factors, the interviewees´ reported based on their own experiences that cultural influence factors consist of three main factors. These three groups have been derived based on the interviews and have been renamed by the research, as the interviewees did not use exact names for the concepts. The three influence factors can be divided into individualism-collectivism dimension, horizontal-vertical –dimension and long-tern orientation. As the three mentioned influence factors do not always manifest directly but through other aspects analysis of the interviewees' reports was required to understand the relationship between the influence factors. For example numerous individuals reported that **collectivism** and **horizontal structures** was much more emphasized within Japanese organizations. These cultural influences then have an impact on both individual and organization factors. In organization the influence of culture is manifested in a vertical structure between the management and employees, which also manifests itself in the directed knowledge flows. One Western individual working in an information technology organization stated in relation to cultural influence to knowledge sharing in Japan:

> "Correct knowledge comes from management"

This shows the horizontal structure that is manifested in a top down direction of knowledge flow. Other interviews also confirmed this observation. On the other hand, when discussing Finnish culture it was reported that hierarchical difference between management and employees is smaller than when compared to Japan. Another influence factor was **long-term orientation**. The naming of this influence factor is based on the analysis of the answers, as the interviewees did not use phrasing to describe the factor. The influence of long-term orientation can be seen in, for example, how long into the future plans were made and the time it was require to build trust. In regards to this influence factor one Western industry individual quoted a Japanese proverb, which roughly translates as follows:

"Peaches and chestnuts, three years; persimmon, eight years"

This proverb means that different aspects of life take different time before results can be gotten. In regards to knowledge sharing this means that different individuals have different time before they become comfortable in sharing knowledge with other individuals, which is specially true once intercultural factors are introduced.

However, in regards to the **preference of explicit and tacit knowledge**, which was one of the attributes found in the literary review, the interviewees reported no difference and thus no such influence factor was found. One reason for the lack of this influence factor could be that the research method chosen does not study aspect in depth and hence if preference between explicit and tacit knowledge only has a small influence it will not show up in the interviews. If another research methodology is chosen this influence factor might be also discovered.

Overall, it can stated that influence factors derived from the interviews correlate with the cultural results found in the literary review with the exception of the preference between explicit and tacit knowledge -attribute. In addition a new influencing factor was found: long-term orientation. The attributes influencing cultural factors should be updated to reflect the influence factors found in the interviews by adding a long-term orientation attribute and removing preference between explicit and tacit knowledge.

5.2.2 Individual Influence Factors

The results related to individual influence factors consist of two attributes: **cultural distance** and **language fluency**. Out of the two influence factors **language fluency** was concluded to be the more important influence factor of the two. The ability to clearly explain even complex knowledge while taking into account the language skills of the receiver is a key aspect of knowledge sharing. According to the interviews the usage of language was found to be influenced by culture. According to the interviewees individuals coming from Asian culture are not as eager to share if the individual sharing has not reached a certain level of language fluency while westerners would be more eager to share

knowledge even with lesser language fluency. A Japanese industry individual stated:

"Similarity in language skill level makes sharing easier"

The reason for more effective knowledge sharing when the individuals sharing and receiving are on the same fluency level is most like due to the individuals ability to take the receivers language skills into account when transferring knowledge. A few of the individuals interviewed stated that the lack of eagerness to share when the individual sharing hasn´t reached a certain level of fluency was due to fear of making mistakes or embarrassment due to a small vocabulary. However, trust factors would lessen the barrier for sharing even when the individual´s language skills were weaker. Another important influence factor for individuals was **cultural distance** between the collaborating countries. Closeness of culture helps to increase knowledge sharing efficiency as both the sharer and the receiver share some of the same background influences from culture. A Western industry individual summarized the relationship between common background and knowledge sharing:

"Common background makes collaboration easier"

This combination of language skills and a small cultural distance helps to understand what needs to be explained more and what can be left unsaid. In a multicultural environment language skills will help in sharing knowledge but the lack of understanding in cultural distance will hinder the transfer of the knowledge.

Comparing the discovered influence factors with the attributes influencing the individual proposed based on the literary review shows that the two overlap partly. Both of the influencing factor attribute lists share language skills and cultural distance. However, in the influencing attributes of the individual that were discovered during the literary review there is also technical skills attribute. This attribute was not found in the influencing factors based on the interviews. Overall it can be said that the influence factors derived from the interviews partly support the current form of the factors influencing the individual. Based on the results of the interviews, the removal of technical skills from the attributes influencing the individual should be considered.

5.2.3 Organizational Influence Factors

Organizational influence factors consists of five factors: **incentives**, **language skills of the managers**, **management support for knowledge sharing practices**, **existence of formal knowledge sharing strategies** and a **common goal**. Language skills of the managers, management support for knowledge sharing practices, and existence of formal knowledge sharing strategies have been named by the researcher and the rest were named by the interviewees. The discussion on incentives gained the most attention from all interviewees. The opinions on the

need of **incentives** to encourage knowledge sharing were mixed. Individuals from industry presented mixed opinions both for the need of incentives. Most common explanation for not needing any incentives was organizational policy and that because sharing knowledge was expected to be done without any other incentives. On the other hand, some individuals who said that there was a need for incentives to be used reported that the incentives did not necessarily have to be in a monetary form. These mixed results on incentive usage are consistent with the current research. The biggest factor influencing incentive usage in addition to culture appears to be organizational policy. If knowledge sharing was included in policies of the organization then incentives were less likely to be needed. However, the need for incentive usage differed between Western employees and Japanese employees as the latter group reportedly didn´t need or needed smaller incentives for knowledge sharing. This could be based on the fact that organizations are considered to be another family of the worker and it is expected that the employee does his or her best to help. However, in interviews with younger Japanese individuals who worked for Western organizations a need for incentives was reported. The reason for this could be due to the organizational culture of the western organization. The target of the incentives gained some attention during the discussions. A Japanese industry individual stated that:

"All individuals belong to a team and the team competes for incentives"

Thus the target of the incentive usage was not the individual but the group the individual belongs to. A Western industry individual working in Japan also reported this. Another Western industry individual noted that the internal structure of Japanese organizations makes incentive planning more difficult than in Western organizations.

Another big influence factor was working towards a **common goal**. The common goal, which is defined by the organization and management, creates a common incentive for all employees to share more detailed knowledge about how to complete the task at hand. This was mentioned by most of the interviewees regardless of their nationality and it seems to be one of the most important influence factors from an organizational point of view. With the creation of a common goal the organization can increase cooperation amongst employees, which in turn means more shared knowledge. One Japanese academic stated that with the increased interaction amongst the individuals working towards a common goal a more trusting organization is created. The importance of common goal was stated to be more important than any incentive scheme by a Western individual. The creation of such goal is mostly the work of management but the work that needs to be done in order to achieve the goal needs to be done in every level of the organization.

Management support for knowledge sharing practices and **the existence of formal knowledge sharing strategies** were reported to be important influence factors. Both of these signal to the employees that knowledge sharing is a part of the required aspects of their jobs and thus should increase the amount of knowledge shared, which in turn has a positive effect on knowledge sharing.

The biggest difference in regards to culture was found to exist in the existence of formal knowledge sharing strategies. Western organizations were found to more likely have a formal knowledge sharing strategy. However, the knowledge sharing practices differed between Finland and Japan. Finnish organizations were much more likely to use internal wikis and other technical tools for knowledge sharing. In Japanese organizations, job rotation was used to share both explicit and tacit knowledge between departments. Overall, it can be said that both management support for knowledge sharing and the existence of formal knowledge sharing strategies is an important influence factor in the success of any knowledge sharing initiative. As one Finnish interviewee from industry reported:

> Management sets the direction of the boat and employees the engine.

This indicates that the operating guidelines set by management help the adaption of any knowledge sharing initiative started. In addition an example set by management on knowledge sharing was reported to increase the likely hood of sharing.

As with the individual influence factors the **language skills** of managers attribute gained discussion. The ability to clearly coordinate what are the policies, strategies and goals to all employees is essential. Failure only leads to ineffectiveness. Just as in the language fluency in the individual influence factors, language skills of the managers gained mostly the same comments.

Overall it can be said that the organizational influence factors correspond to the results from the literary review. The removal of the language skills of the managers attribute should be considered as most of the same influences can be found in the individual influence factors. The common goal influence factor was not included in the influencing attributes that were found in the literary review and thus the addition of a new attribute should be considered.

5.2.4 Trust Influence Factors

Trust´s influence factors consists of three factors: **integrity-based trust influence factor**, **competency-based trust influence factor** and **benevolence-based trust influence factor**. These factors have been named by the researcher based on the results derived from the interviews. Overall it can be stated that trust is one of the key components influencing knowledge sharing. One Japanese industry individual condensed the role of trust in knowledge sharing into the following words:

> "Without trust there is no knowledge sharing"

This influence of trust was repeated in all interviews. The influence of trust to knowledge sharing is essential. Increase in trust increases willingness to share knowledge, particularly sharing critical information, which is required by the other individuals and organizations. Integrity-based and benevolence-based trust influences gained more attention out of different subtypes of trust. In ad-

dition to subtypes of trust having an influence there were also influences coming from the organizational and individual influence factors. As reported by the interviewees, organization can improve the creation of trust the most by having a knowledge sharing culture, which is helped by the creation of a common goal. As previously described having a common goal increases the interaction between individuals and organizations, which in turn increases trust in others. Both Finnish and Japanese interviewees emphasized the importance of interaction in trust creation. However, what was different between the interview groups is the amount of time required to create trust. The proverb quoted from one Finnish individual working in Japan in the culture section was originally stated in relation to trust. Other interviewees also reported the influence of culture on trust. In short, trust creation Japanese take longer time to develop a trusting relationship when compared to their Western counterparts. Nevertheless, influence of an organization, which has created an organizational culture supporting knowledge sharing, can decrease the time it takes for all individuals to start sharing even previously unshared knowledge.

In regards to **Integrity-based trust** one Finnish industry individual stated that

"Knowledge sharing is bullshit killing"

This point of view shows that integrity-based trust in a community can help to increase the amount of valid information shared. This increase in valid information shared in turn increases integrity-based trust in the community. Benevolence-based trust can be influenced by the organization in which the individuals interact. More frequent the participation in knowledge sharing activities will increase other individuals' willingness to participate in sharing. This once again creates a feedback-loop, which will increase knowledge sharing.

Competency-based trust and **benevolence-based trust** are also important and both are influenced by previous interaction experiences and goals. Based on the interviews the influence of competency-based trust is bigger than that of benevolence. Competency-based trust increases willingness to share as the other individuals who use the shared knowledge are assumed to be competent enough to use it. In addition, competency-based trust is most likely based on self-esteem as then the individual sharing feels that she is skillful enough to teach others on the subject at hand. Benevolence-based trust is based on the fact that the individual trusts that the shared knowledge will be used in a responsible manner. Knowing the individuals who can use the shared knowledge will increase benevolence-based. In the interviews individuals working in Japan stated the importance of corporate outings, where informal interaction is frequent. These outings will build a sense of community among the workers. In Western organizations this community building often happens by having informal coffee breaks. Based on the interviews it is likely that initial trust building in Japanese organizations happens through benevolence-based trust where as in Western organizations initial trust building happens through competency-based trust.

Overall it can be said that the results from the interviews support the results of the literary review in regards to the attributes influencing trust. While benevolence-based and integrity-based gained more attention than competency-based trust, all three attributes gained positive discussion from the interviews. The impact of culture is very clear in relation to trust and this creates a need for all individuals involved to understand how culture influences trust. According to the interviews, the biggest influencing outside factor comes from the organization and its policies and strategies. As mentioned in discussion about the organization influence factors, the creation of one common goal is essential for the success of knowledge sharing. The one common goal will help to demonstrate to the employees why knowledge is shared and that the knowledge shared is useful in the pursuit of the one common goal.

5.2.5 Tools Influence Factors

Tools influence factors were **communication with other employees and organizations** and **ease of use.** These factors were named by the researcher based on analysis of the answers of the interviewees. Out of all of the other influence factors, factors related to tools were the least discussed ones. The most discussed influence factor related to tools was **ease of use**. Being able to share knowledge without having to break from the workflow was an important factor for the interviewees. The easier sharing was the more likely individuals were to share. From conventional sharing tool the use of email was reported to be wide the most spread as was expected. However, the way email is used in organization varies considerably. One Finnish industry individual stated that the email usage in the organization is starting to approach an instant messaging style of usage. This type of usage enables organization members to keep up with the development and email was stated to be used for brainstorming. This is the opposite of what some of the Japanese interviewees reported. In one of the Japanese organizations email was not considered to be suitable for brainstorming. Japanese individual from another organization stated that they did not trust email for idea creation out of fear of information leaking. Another widely used technology was wikis, which allow for the users to easily share knowledge but according to the interviews it is rarely used for idea creation. Both of these technologies **support easy communication** with fellow employees, which are the two influence factors.

The influence factors found in the interviews partly overlap with the attributes derived from literature. Both ease of use and support for communication are important and are shared in both influence factors and in the attributes. However, there are two more attributes that were not found in the influence factors. Customizability gained some attention from the interviewees but in order for the individuals to be able to modify current existing software a high level of technical competency is required. Thus, adding it to the influence factors would require more support from the interviews and therefore at this point the inclusion of customizability into the influence factors is not recommended. The other attribute found based on literature but not based on the interviews is a

preference between substantial and incremental change. This attribute did not come up at the interviews at all.

Comparing the factors influencing tools and the attributes list derived from literature shows that some modifications to the attribute list needs to be made to better reflect the interview results. While customizability most likely has a positive effect on knowledge sharing, the scope of this research limits influence factors without a connection to culture out. Therefore, the modifications that should be made to the attribute list are: removing both customizability and preference between explicit and tacit knowledge.

5.2.6 Willingness Influence Factors

Factors influencing willingness were found to consist of three attributes: **sharing outside of group**, **trust types** and **incentives**. Out of these attributes, sharing outside of group and trust types have been named by the researched based on the analysis of the interview results. Incentives was named by the interviewees. It should be noted that two out of these three attributes are directly related to other influence factors. Namely, different trust types are directly related to willingness and incentives from the organizational influences are directly linked. The influence link between trust and willingness came up more often in the interviews and is thus more likely to have an effect on willingness to share knowledge. Previous research has found that **trust** in integrity affect knowledge sharing the most (usoro et al. 2007). This was also confirmed by the interviews. As one Finnish industry individual put it:

"Trust increases willingness to share even critical information"

Trust in the integrity of the shared knowledge is important in order to increase the frequency and the quality of knowledge shared. In fact, it could be theorized that a positive feedback loop exists between integrity-based trust and knowledge sharing. In regards to competency-based and benevolence-based trust, benevolence-based trust and its relationship to willingness to share came up more slightly more frequently than competency-based trust.

The relationship between **incentives** and willingness was found to be somewhat consistent with previous research i.e. that the results between the link on willingness to share and incentive from the list of organizational influence factors are not clear. Numerous individuals reported that there was no need for incentives in Japanese organizations for sharing knowledge, which would indicate that incentives are not needed to increase willingness to share knowledge. There were few individuals who reported that Finnish individuals needed incentives to share knowledge. This would indicate that there is a difference in the need for incentives that is based on nationality. However, two other interviewees, one Western and one Japanese industry individuals, reported that the need for incentives is related to the organizational culture. Thus, the influence incentives have in increasing willingness to share was not a clear one but there seems to be a link between culture and the need of incentives to in-

crease willingness to share knowledge in addition to the organizational culture´s influence.

The third influence factor found is **sharing outside of group** and it gained some attention from the interviewees. Most of the interviewees reported that sharing outside of one´s group is limited by the organizational policies rules as expected. Western interviewees reported that they have encountered more so-called knowledge silos in Japanese organizations than in Western organizations. These knowledge silos limit what knowledge is shared and to whom it is shared even within a single organization. Few interviewees stated that the existence of silos is due to differences in knowledge flows. In Japanese organizations knowledge flows were stated to be more top-down oriented where as in Western organization the knowledge flows were influenced less by the hierarchical structure of the organization. Japanese organizations use job rotation to help them break down knowledge silos by increasing interaction amongst the employees and departments. According to the interviewees with the increased interaction willingness and trust will increase improving the sharing outcomes.

Overall it can be said that willingness to share is one of the key parts influencing knowledge sharing. If one has no willingness to share then the quality of the shared knowledge is low and is of little use for others. Organizations can affect willingness to share by having incentives and by the creation of a knowledge sharing culture, which in turn can be influenced by the creation of a common goal. As the other two influence factors originate in other factors their removal from the influencing factors of willingness should be considered.

5.3 A New Framework on The Effects of Culture on Knowledge Sharing

In the previous chapters, the influencing factors derived from the interviews have been presented and briefly compared to the attributes found during the literary review. Based on the comparison, a new framework detailing the effects of national culture on knowledge sharing can be created. The reason for the creation of this framework is to show the links between influencing factors and what attributes were found during the interviews. The creation of this new framework represents a new addition to the theoretical knowledge on the influence of national culture on knowledge sharing. The relationship between the new framework and innovation processes is a supportive one and it will be discussed in more detail in the next chapter.

The new framework details the influence factors on knowledge sharing and their relationships to one another. The framework consists of six influencing factors related to knowledge sharing. The factors are: national culture, individual, organization, trust, willingness, tools and knowledge sharing. Figure 12 depicts the new framework. Each of the broader influencing factors also includes smaller, more detailed influencing attributes, which describe in more detail what attributes are influenced by culture.
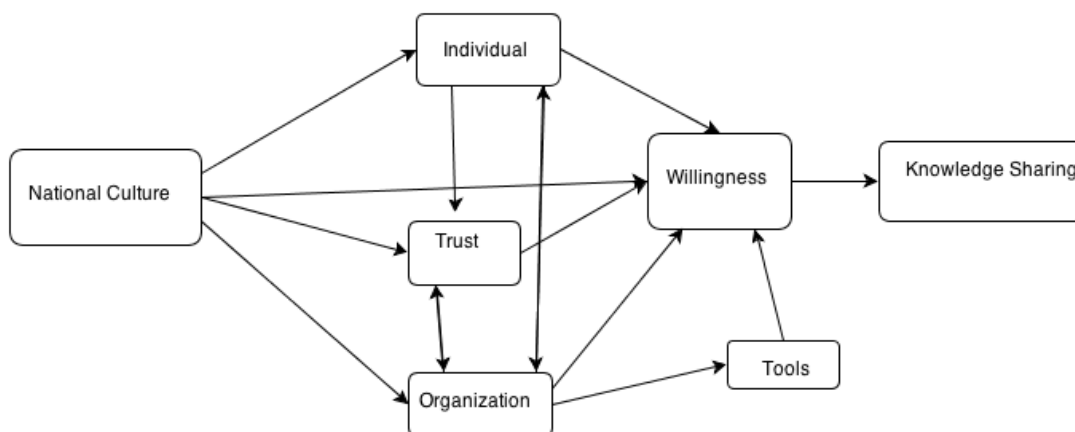
Figure 10 New framework detailing the influence of national culture on knowledge sharing

As discussed in the results section, the influencing attributes and influencing factors found in the interviews mostly correlate with the results of the literary review. However, a new connection between national culture and willingness was discovered and the influencing factors found during the literary review need to be updated based on the influence factor findings of the interviews. In addition to the already discussed influence factors, one more attribute received discussion during the interviews. The **context** of the knowledge sharing. Without understanding the context all models are useless as the applicability of models change once the context changes. Thus, defining how context is related to the update framework is important. The context of shared knowledge and the knowledge itself have an intricate relationship, which binds them together (Fernie at al, 2003). In order to use shared knowledge which has had its context changed a process of "recontextualisation" is needed (Gavigan et al. 1999). Hence, the results derived in the interviews are relevant in the international knowledge-sharing context and if they are applied in another context they need to be adjusted to suit the modified context. As the context of the research is how does culture impact knowledge sharing in international organizations it needs to be understood that all the interviews were carried out in such a way that all interviewees understood the context. Therefore, the framework needs to be understood in its research context. The researcher also considered the addition of a new influence factor for context but as the abstraction level of the context factor would be differ greatly from the other influence factors, this approach was abandoned.

There were, however, differences between the influence factors and the attributes found in the interviews and in the literary review. The table of the updated influence attributes is shown in table 3. New attributes, which were discovered during the interview, have been added. Long-term orientation and common goal have been added to their correct places. In addition, a new link between national culture and willingness has been added. Unsupported attributes have been removed from the table. The new framework and the influencing factors will be analyzed more deeply in the next chapter.

Influencing factor	Influencing attributes	Links to
National Culture	Individualistic - collectivistic Horizontal - vertical Long-term orientation	Individual Organization Trust Willingness
Individual	Cultural distance Language fluency of the individual	Organization Trust Willingness
Organization	Incentives Management support for knowledge sharing practices Existence of formal knowledge manage-ment strategies Common goal	Individual Trust Tools Willingness
Trust	Competency-based Integrity-based Benevolence-based	Willingness Organization Individual
Tools	Support communication with other employees, organizations Ease of use	Willingness
Willingness	Sharing out side of group	Knowledge sharing

Table 2 Updated influencing factors and attributes

In this chapter, the results of the interviews have been reported and a new framework detailing the influence of national culture on knowledge sharing has been created to reflect the findings of the interviews. The new framework rep-resents a completely new step towards a more comprehensive understanding of affect of culture on knowledge sharing as it encompasses not only cultural and organizational factors but also factors related to individual and technical tools. In the next chapter, the results from the interviews and the new framework are discussed in more detail.

6   Analysis of The Results and The New Framework

In this chapter the previously presented results are analyzed more thoroughly in respect to the theoretical background. In addition, the connection between the interview results and innovation processes are described in more detail.

Overall, it can be said that the new framework corresponds to previous literature findings but also adds new knowledge on how do the different influence factors connect to each other. In addition, most of the influencing attributes found in the literature review were also found to be supported by the results from the interviews. Therefore, the proposed framework covers more details than any of the previously presented frameworks (Bhagat et al. 2002; Goh, 2002; Möller and Svahn, 2004; Lin, 2007; Boh, Guyen & Xu 2013). While the constructs in the other models cover some of the influence factors used in this research work, the combination of cultural, individual, organizational and technical factors in one framework has not been achieved before this. More specifically, all of the influence factors and attributes presented in the framework are impacted by culture in different ways. For multinational organizations understanding how and where culture needs to be taken into account is essential in order to support knowledge sharing. Due to the fact that the new framework covers more detail than any of the previous models, the applicability of the proposed framework should be better, which will help both practitioners and academics improve their results.

The influence National culture has been controversial as there have been both theories for and against its influence on knowledge sharing. For example, Boh, Guyen & Xu (2013) concluded that culture has little impact on knowledge transfer, and with the other presented frameworks as they leave culture completely out. This is in contrast to Bhagat et. al (2002) and Möller and Svahn (2004) who have included culture into their frameworks and therefore acknowledge that culture has an affect on knowledge sharing and taking it into account is important. Magnier-Watanabe & Senoo (2011) concluded their work by stating that multinational organizations need to adjust for local culture when creating knowledge management strategies. The results of the interviews also add support for the fact that national culture indeed has an affect on knowledge sharing and it needs to be taken into account by both practitioners and academics. In

addition, the new framework includes technical factors, which have been left out of the frameworks presented by Boh, Guyen & Xu (2013), Bhagat et al. (2002), Goh (2002) and Möller and Svahn (2004). The only model discovered during the literary review that suggested the importance of technical tools was Lin (2007) but the results of his research concluded that technical tools only affect knowledge gathering and not knowledge sharing. However, the results from the interviews suggest otherwise. In addition, Gupta et al. (2009) studied technical tool usage in knowledge sharing in globally distributed teams and the results from the research indicate the importance of tools on knowledge sharing. Similarly, Tian et al. (2009) also noted the importance of technical tools to knowledge sharing. The existing research suggests that the influence of technical tools on knowledge sharing is mixed but based on the interviews the inclusion of technical tools into the framework is needed.

Not including technical influence factors into frameworks takes knowledge sharing out from its natural environment, which limits the applicability of the previously presented frameworks. Especially in international organizations technical tools are most likely the main media over which knowledge is shared. Overall it can be said that frameworks, which don´t consider the context, are going to have limited real life applicability. The proposed framework will help individuals and organizations involved with knowledge sharing in a multicultural environment to make sharing more efficient. To the author's knowledge this research presents the first framework on the impact of culture on knowledge sharing, which attempts to understand knowledge sharing in its natural environment. Hence, the presented framework is much more applicable than those of the other frameworks.

The new framework presents a further addition to the scientific understanding on the affect of culture on knowledge sharing. As the new model most resembles Lin´s (2007) it should be also subjected to the same rigorous testing. Lin´s (2007) framework was validated by a quantitative research. The same should be done to the preliminary framework presented here. A quantitative study on the framework will improve its validity and applicability. The quantitative study can be used to test theories based on the relationships of the model (Creswell, 2009). However, according to Kuhn (1961), before carrying out any quantitative research, significant effort should be used to prepare via qualitative research methodologies. This effort has now been carried out. Hence, quantitative methods like Structural Equation Modeling, SEM, should be used to test the results derived in this thesis. With quantitative research methods a better understanding of the generalizability of the framework can be gotten (Schumacker and Lomax, 2008). This sort of validation in turn will enable practitioners to better use the framework in real life situations.

In regards to innovation, the presented framework will serve as a supporting tool both in open and closed innovation processes due to the nature of the framework, which does not need to take the innovation process types into account. The relationship between knowledge sharing and innovation processes can be described to be a supportive one. As described by (Xu et al., 2010) with knowledge management the required knowledge can be provided for the innovation process and new knowledge developed during the innovation process

can be distributed to those who need it. The interaction between knowledge management processes and innovation processes happens on a higher abstraction level. Therefore the presented framework does not include innovation processes. This was also the reasoning why context was left out of the framework. However, in both open and closed innovation process the framework will help support knowledge sharing within organizations in addition to external parties by detailing how knowledge needs to be shared and what needs to be taken into consideration. International collaborations will gain the most benefit from the framework. As has been shown in previous research (Wang & Wang, 2012; Lin, 2007) knowledge sharing has a positive influence on firm innovative capability and financial performance. The updated framework will most likely have a bigger positive effect on innovation capability and financial performance, as the proposed framework is more comprehensive than any of the previous frameworks. It can be expected that these results are even better in Open Innovation, which is even more demanding on the knowledge sharing processes.

6.1.1 Analysis of The Culture influence factors

The proposed cultural influence factors now consist of three attributes: **individualism-collectivism –dimension**, **horizontal-vertical –dimension** and **long-term orientation**. The first two attributes were originally proposed based on the literary review (Möller and Svahn, 2004; Bhagat et al., 2002; Hofstede, 1980) and based on the interviews they should be included into the final model. The addition of long-term orientation is based on the interviews. This third attribute can also be found in Hofstede´s (1991) as an update to his original cultural dimension theory (1980). **Long-term orientation**´s influences numerous other attributes included in this framework. For example, the creation of trust among organizations and employees varies according to their long-term orientation. Generally, it can be said that individuals from Asian cultures take a longer time to form trust with other individuals and organizations (Minkov & Hofstede, 2012; Möller and Svahn, 2004), which in turn influences what is shared and with whom it is shared with. The results from the interviews correlate previous results as both Western and Japanese interviewees reported this difference. In regards to differences reported in practicalities, the results show that a long-term orientation in an organization can help improve knowledge sharing. This is most likely due to long-term orientation having a positive influence on trust.

The **horizontal-vertical –dimension** and **individualism-collectivism –dimension** are both included in Hofstede´s (1980) theory also. In the field of knowledge management both Bhagat et al. (2002) and Möller and Svahn (2004) have previously used this division. Based on the interviews these two attributes are confirmed to have an impact on the different factors influencing knowledge sharing. The **horizontal-vertical –dimension** can be seen in knowledge flows and decision-making. For example, in Japan early feedback for new ideas are frequently gotten during company outings, which are usually less formal situations than office meetings. According to the interviews knowledge coming from individuals who are on a higher hierarchy is considered to be correct and thus

of more importance. However, in less hierarchical organizations employees would more likely present their new ideas to management sooner without getting as much early validation as in Japan and the difference in knowledge importance is much smaller.

Individualism-collectivism –dimension is another key dimension in how culture influences knowledge sharing. For example, collectivistic cultures are more inclined to share knowledge within their own established circles. This was supported by the results from the interviews. According to Möller & Svahn (2004), this dimension is shown in the communication styles of the individuals from the two different types of cultures. In the interviews, Western interviewees were more likely to report the existence of knowledge silos than Japanese interviewees. The combination of individualism-collectivism –dimension and horizontal-vertical –dimension has been theorized to hinder knowledge sharing between the two most different groups, vertical-individualists and horizontal-collectivist (Bhagat et al. 2002). Results from this mismatch can be seen in the relative lack of success stories of American organization coming to Japan as reported by the interviewees.

During the literary interview another influencing attribute was found. Glisby and Holden (2006) and Nonaka and Takeuschi (1995) theorized about the difference on the preference between explicit and tacit knowledge. The Japanese culture of ambiguity would seem to supports this division between explicit and tacit knowledge. During the interviews, however, there was no support found for this. In fact, during the interviews, the interviewees rarely reported anything relating to this attribute. Based on the interviews it would seem that this difference in preferences knowledge form between Asian and Western countries is only limited to a theoretical level or it has such a small impact on knowledge sharing that it did not show up in the interviews. It should be noted though that during the research, the researcher did not have access to any internal systems of the organizations interviewed. Should such access be available then a thorough analysis on usage patterns of the systems might lead to a more concrete answer on the difference between preferences.

For innovation processes these findings indicate that special attention needs to be paid to the relationship of culture with individuals and organizations. In Open Innovation, the results support the notion that culture has an affect on the type of Open Innovation, which was previously suggested by Maegawa and Miyamoto (2008). Based on the interviews, differences in long-term orientation of individuals and organizations will cause differences in what kind of strategies will be used to acquire new knowledge and innovations. Japanese organization put more emphasis on a long-term relationship, which causes Open Innovation processes to be different from the western processes (Okamoto, 2012). The vertical and horizontal structures, which were found to affect knowledge sharing, will also need to be taken into account in innovation processes. These cultural differences will affect knowledge flows between individuals and organizations (Bhagat et al, 2002; Echeverri-Caroll, 1999; Ford and Chan, 2003). Not understanding this will lead to knowledge blocks and inefficient transfer of knowledge. However, through training the individuals involved these differences can be taken into account (Olson and Kroeger, 2001).

The presented framework details where the cultural differences will be and by taking them into account innovation processes should become more efficient.

Overall it can be said that now the influencing attributes of the framework correspond to three out of five of the Hofstede´s cultural dimension theory. As the attributes are based on the interviews, practitioners can use these attributes to better understand what aspects of culture have an impact on knowledge sharing. Understanding which aspects of culture influence which attributes can provide a basis for better knowledge sharing policies and strategies.

6.1.2 Analysis of The Individual Influence Factors

The attributes from the individual influence factors were frequently discussed by the interviewees and based on the discussions two of the three attributes found in the literary review were supported. The supported attributes were **cultural distance** and **language fluency**. The third attribute, **technical skill**, was not supported by the interviews. It should be noted that technical skills are important for knowledge sharing but the aim of this research is to understand how culture influences knowledge sharing and what aspects are influenced. Based on the interviews technical skills are not influenced by culture. This is contrary to previous results Luo (1999) whose results showed that technical skills within Asian multinational corporations are weaker than those of Western counterparts. A reason for the interview results contradicting Luo´s findings could be due to Asian cultures preference of generalists instead of specialists, who are preferred in Western organizations (Glisby and Holden, 2003). This preference between expert and generalist types was also supported by the discussions with the interviewees. Another reason for the lack for support for technical skills is the fact that most of the practitioners interviewed were from higher management, which would mean that they rarely have an opportunity to observe the hands-on skills of the employees. Hence, more thorough research on technical skills might derive different results than those of this research. Nevertheless, the interviews carried out in this research did not find any cultural influence on technical skills and therefore it has not been included into the framework attributes.

The two supported influence attributes, **language skill**s and **cultural distance**, are inline with previous research results. **Language skills** and specially differences in the fluency of language are important influencing attributes in sharing knowledge. These results are inline with results derived by Ford and Chan (2003) and by Noll et al. (2010). When sharing knowledge the language level of the less fluent person needs to be taken into account as Noll et al. (2010) noted. By taking into account the language fluency of all individuals involved the language used in the shared knowledge can be adjusted to a suitable level in order to insure proper transference. The differences in culture can also hinder communication flows as theorized by Bhagat et al. (2002). The cultural influences that individuals have influence communication in such a way that it was noted in during the interviews by a Western industry individual who stated that it was one of the key factors why organizations from the United States of

America have trouble succeeding in Japanese markets. In practice language skills are probably the most important factor concerning individuals when sharing knowledge as without a common language amongst the people using shared knowledge, there is no use in sharing knowledge that nobody can understand and use.

Cultural distance is another important factor as individuals who share a common background are able to share knowledge much easier (Darr and Kutzberg, 2000). For individuals from the same country it means that they have learned the customs and habits of their native country during what Berger and Luckmann (1966) called the secondary socialization. This idea can also be extended to include social knowledge within industries. Hence, individuals from the same industry but from the different countries are less likely to have a communication barrier than individuals from different cultures and from different industries (Möller and Svahn, 2004; Noll & et al, 2010). Cultural distance can cause problems when individuals' don´t understand the difference between cultures. As noted by Cordeiro-Nilsson & Hawamdeh (2011) Swedish individuals in Singapore have a much more open style of communicating and handling information that what the Singaporeans have gotten used to and this has caused problems. The reason for this is that there is a conflict between what communication style individuals are used to and how the Swedish individuals were communicating. A large cultural distance between the individual's home culture and local culture can hinder adaptive behavior and thus without any training a large cultural distance can hinder knowledge sharing. Training in foreign languages can help overcome cultural distance and this can be done with the help of the individual's organization (Park & Chan, 2003). Hence, the negative influences from both language skills and cultural can be reduced at the same time. In practice, this would mean that individuals who share some common background, which enables the individuals to communicate more effectively, should do inter-organizational sharing.

For innovation processes the key aspects of the individual influence factors are both cultural distance and language skills. Results derived by Hajro & Pudelko (2010) support these findings. By being able to take into account the influence of culture, the individual can provide others with knowledge that has already been modified to suit the receiver´s needs. In another words, the knowledge is modified to suit the context of the receiver. This will meet the need of recontextualization as stated by Gavigan et al. (1999). Individuals gain more understanding of culture through interaction with individuals from other cultures (Crowne, 2013). Through these experiences the interaction with others becomes more natural and knowledge sharing barriers become smaller. As individuals of the target organization improve their cultural competences the interaction of individuals within the innovation process becomes smoother and thus more efficient.

In practice, the lessons from the individual influence factors mean that all organizations involved with international collaborations should pay special attention to training. Special attention should be paid to language competences as these enable the individuals to collaborate and share knowledge much more

effectively. Improvements in the individual influence factors will have an effect on the organization, trust building and willingness to share knowledge.

6.1.3 Analysis of The Organization Influence Factors

During the interviews, organizational factors gained most attention out of all of the topics. In short, the role of the organization is essential in knowledge sharing as organizations can most likely have the most influence in how much knowledge individuals share. The most controversial topic related to organizations was **incentive** usage. While both Western individuals and Japanese individuals presented opinions for both for and against incentive usage, Western individuals were more likely to argue for the need of incentives to be used than Japanese individuals. This result is consistent with previous research done by Kidd (1999). Based on the interviews the organizational culture has decisive role in the need for incentives. This was reported by Japanese individuals working for a Western company. The targets of the incentives were also discussed. Western industry individual stated the difficulty of forming incentive systems in Japanese organizations. Japanese industry individual described the incentive system in the organization to be based on teams while western individuals reported individual incentive usage. This result is in line with the results derived by Hutchings and Michailova (2004). The foundation for this difference is in culture. Möller and Svahn (2004) theorized that individuals from individualistic cultures need individualistic incentives where as individuals from collectivistic cultures needed incentives targeted at the group. Therefore, incentive system creation should take culture into account. Finally, the form of incentives used was also discussed. Monetary incentives are the norm but many of the interviewed individuals reported that non-monetary incentives could work as long as they are reasonable. This result corroborates findings of Voelpel and Han (2005) who studied knowledge sharing in China. However, there didn´t seem to be a difference between the Western and Japanese individuals on the preference between the types of incentives, for example between monetary and non-monetary incentives, as long as the incentives suit the context. Previous research has also questioned the link between knowledge sharing and incentives. Lin (2007) also studied the impact of incentives on knowledge sharing and found that there was no link between the two. However, as the results from the interview, and from previous research (Kidd, 1999; Matsuo and Easterby-Smith, 2008; Voelpe and Han, 2005), show strong support for the link between incentives and knowledge sharing possibly exists thus calling into question the results of Lin (2007).

In addition to incentive usage, the creation of a **common goal** was also deemed important. In fact, this common goal was so important that one western individual stated that the achievement of the goal was more important than anything that an incentive system could offer. The common goal creates vision for the company as one Japanese academic put it. As individuals work to achieve this goal, they are more likely to work together and thus share knowledge with each other. The creation of a common goal will also reduce the

need to have an official policy stating the need for sharing. Common goals have been previously discussed in knowledge sharing by Hinds & Weisband (2003) who theorized that working towards a common goal increases trust and motivation and reduces friction among individuals. These factors have a positive influence on knowledge sharing. Combining the common goal with management support, which has been shown previously to have a positive effect on knowledge sharing (McNichols, 2010; Taminiau, Smit & de Lange, 2007), will have a positive effect not only on knowledge sharing but also on other cooperation among workers and on commitment to the organization. These will also decrease the need for any official knowledge management policies as individuals engage in knowledge sharing while trying to achieve the goal.

Management support for knowledge sharing and **official knowledge sharing policies** were also found to be influential. The first one of these two is easier to understand in the research context. The influence of culture on how management supports knowledge sharing differs between cultures. This is partly shown in the existence of knowledge sharing policies, which were found to differ between Western organizations and Japanese organizations. Japanese organizations were found less likely to have a formal knowledge sharing policy, which was theorized by Strach and Everett (2006). According to them the reason for this was stated to be due to the embeddedness of knowledge sharing policies within the Japanese organization. One other possible reason is due to the previously discussed common goal. As Hinds & Weisband (2003) theorized a common goal increases employee commitment to an organization and trust in other employees. Up till recently, in Japan lifetime employment was common. This safety of employment increases commitment to the organization, which in turn most likely has a positive effect on knowledge sharing. Hence, the need for explicit knowledge sharing policies in Japan is different from the need in Western organizations, which do not offer lifetime employment. Management support for knowledge sharing practices can help to bridge this gap. Western managers, as well as Japanese managers, can show by own example that they also take part in knowledge sharing practices. This is just one part in the creation of a knowledge sharing culture in the office. The creation of a knowledge sharing culture needs the support of management (Smith et al., 2010).

Organization has a key role in innovation processes. It sets the goals and states which individuals participate in which project. Based on this, the managers of the projects and processes involved need to be able to understand how to create policies and incentive systems that help individuals to reach the set goals. However, the common goal of the workers should be aligned to be the same as the goal of the project. Individuals are more willing to share knowledge when working together towards meeting the goal (Lin, 2007). From a knowledge requirement point of view, this helps the organization meet the knowledge needs of the innovation process. This can be helped by creating a knowledge sharing mind set, which is based on having suitable policies and strategies in place (Smith et al., 2010). Having proper knowledge sharing policies and strategies in place will most likely lead to positive results in innovation processes. In addition, organizations can try to gain access to external knowledge housed within another organization. This type of knowledge acquisition is complementary to

internal research and development activities (Cassiman and Veugelers, 2006) and will likely enhance efficiency of innovation processes. Organizations can also use incentives to support not only knowledge sharing but innovation processes. As one interviewee disclosed that in her organization the innovator and the organization get the patent. This shows that the organization really values the innovations that individuals make. If properly thought out incentives are used they will most likely lead to better results in knowledge sharing, which in turn helps to improve the innovation processes.

Therefore, for practitioners understanding how incentives, common goals, knowledge sharing policies and management support are tied together is essential. Understanding that just by copying policies and practices from other organizations without recontexualizing will most likely not result in brilliant results. Nevertheless, the findings of this study can be used to as a basis for organizations to understand how knowledge-sharing practices need to be customized.

6.1.4 Analysis of The Trust influence factors

Trust is an essential antecedent for knowledge sharing. Without trust there is little sharing and the quality of the shared knowledge is most likely questionable. The results from the interviews closely correlate with the results of Usoro et al. (2007) who divide trust into three subcategories: **integrity-based trust**, **competency-based trust** and **benevolence-based trust**. It should be noted that the researcher has named these attributes, as the interviewees did not directly call the factors by these names. The results from the interviews show that integrity-based trust and competence-based trust are more important than benevolence-based trust. Integrity-based trust increases the correctness of the shared knowledge and benevolence-based trust insures that the shared knowledge is used in a proper way. Based on the interviews integrity-based trust is the most important trust type. This confirms the results that Usoro et al. (2007) had previously derived. Based on the interviews and on existing research (Usoro et al., 2007) it seems that the type of trust used in initial trust building in addition to integrity-based trust is different between Japanese and Western organizations. Japanese organizations take more on the role of an extended family where a generalist worker is appreciated (Glisby and Holden, 2003). This is in contrast to Western organizations where individuals are hired based on their specific skills. The extended family of the Japanese organization uses company outings to build a sense of community, or in another words, benevolence-based trust. In Western organizations, the individuals have been hired based on their resume and therefore it is expected that they are competent enough to do the tasks assigned. This is indicative of competency-based trust being the initial type of trust. These two types of trust are still secondary to integrity-based trust but accounting for the secondary trust type will most likely increase the speed of building trust.

Trust is greatly influenced by organizational, individual and cultural factors. From organizational point of view trust creation needs to be supported in

order to assure more efficient knowledge sharing (Noll, et al. 2010; Matsuo and Easterby-Smith, 2008). For example, the common goal can be used to increase trust among the workers. Trust in the other individuals increases the amount of knowledge shared, which in turn creates a positive feedback loop resulting in increased trust. From a cultural point of view, the time required to create trust varies. As the interviewees pointed out Western individuals need less time than Japanese individuals. This result is corroborated by the research of Möller and Svahn (2004) and Hofstede (1980). Understanding this is essential for all organizations engaged in international sharing. Nevertheless, there are positive sides to the long time it takes to create trusting relationships. Once trust has been created it alleviates the fear of losing face. This was mentioned by the interviewees and has been previously theorized by Usoro et al. (2007). It has also been discovered in a Chinese context by Tong and Mitra (2009). The results of the interview also indicate results confirming this assumption in the Japanese context. Therefore, for practitioners in international organizations taking the time to properly build trust among the workers is essential as this can overrule the national culture of the employee. From an individual point of view, trust is build on previous experiences and on interactions with other individuals and organizations (Luna-Reyes et al., 2004; Al-Alawi et al., 2007). Good experiences in knowledge sharing will increase the likelihood of sharing in the future (Luna-Reyes et al., 2004). The increase in interaction among the individuals will help organizations for a culture of sharing as described by Smith et al. (2010). Hence, enabling trust building between employees and organizations is key to improving knowledge sharing. Taking into account the differences in trust building that culture causes will make trust building faster.

Trust is also essential in innovation processes. In fact, the lack of trust is one of the barriers for any networked innovation process. Hence, improvements in the trust at the knowledge sharing level will positively reflect to the innovation process level. High levels of trust influences knowledge sharing as individuals and organizations don´t have to protect their knowledge from exploitation (Inkpen and Pien, 2006). However, distrust has also the same type of relationship. Lack of trust causes the collaborators to share less frequently (Luna-Reyes, 2004). With less knowledge shared, knowledge blocks appear (Park and Chan, 2003). This will lead to difficulties in collaboration at the innovation process level. The created framework depicts how culture influences trust and by studying it closely organizations can use knowledge sharing to support the innovation processes. Proper utilization of the framework enables the organizations to create more trust between both individuals and organizations involved in the innovation process and erase knowledge blocks..

Overall it can be said that trust is one of the key factors in knowledge sharing. Increase in trust most likely creates a positive feedback loop, which increases quantity and the quality of the shared knowledge, which in turn increase integrity-based trust. Practitioners should concentrate on combining trust creation efforts with pursuing of a common goal as the beneficial aspects of the related factors likely create a networked effect. This total sum of the benefits of the networked effect is most likely more than the sum of improvements in the individual components. The multiple influence factors related to trust

show that creating trust takes effort and many aspects need to be considered when creating knowledge sharing strategies. Lacking support for some parts of the trust influence factors will most likely have a negative effect on the trust. Hence, practitioners should closely follow the insight that the new framework presents.

6.1.5 Analysis of The Tools influence factors

Tools aspect of this research gained the least amount of attention during the interviews. Based on the interviews **ease of use** and **support for communication** both are important influencing factors and if they are used correctly they will have a positive effect on willingness to share. While Lin (2007) did not find any positive link between knowledge donating and ICT usage, researchers like Tian et al. (2007) and Gupta et al. (2009) have found indications that technical tools have a positive effect on knowledge sharing. The results from the interviews also support these findings. Lin´s results (2007) are most likely linked with the fact that knowledge sharing is mostly seen as a separate activity from the normal workflow (Riege, 2004). If it takes a bigger effort to share knowledge then the less likely individuals are to use the tools (Kankahalli, et al. 2005), then the key to effective software is the ability to share without having to break from the normal workflow. Eppler and Gallen (2000) stated that without supporting communication, knowledge management tools are hard to implement. In turn without supporting communication in an easy way the results from using the tool are most likely less efficient and individuals are less likely to use them. In the interviews ease of use and support for communication were found to influence the way the technical tools were used. For example, email usage has started to approach an instant messaging software in some organizations. This is supported by the findings of Gupta et al. (2009) who studied collaborative technologies more closely. In addition, previous research has found that email usage patterns show signs of cultural influence (Holtbrugge et al., 2012). This would indicate that some customization of software could help to improve interaction with other individuals. The ability to customize software to suit the needs of the individual is important for increasing the use (Matsuo and Easterby-Smith, 2008) but requires a relatively high level of technical skills before it can be done. The interviews show no difference in the way tools are customized in Japan and in the Western countries as during the interviews now such information was disclosed.

In the interviews no difference was found on the preference between substantial and incremental change, which was suggested by Strach and Everett (2006). However, during the research no access was had to any databases housed by the interviewed organizations, which hindered the study and limited the research just to the interview level. A more thorough research that has access to the organizational database might find different results on the effects of customizable software and on the preference between substantial and incremental change. Nevertheless, currently there is no evidence to support the in-

clusion of preference between substantial and incremental change to the attribute list of the proposed framework.

Technical tools provide the means of sharing knowledge in an international innovation process. Hence, individuals need to have access to tools that help them share knowledge easily. These tools can help make knowledge sharing seem less like a separate activity and therefore help increase knowledge sharing (Riege, 2005). However, even in the use of the technical tools cultural patterns can be seen. For example, the communication patters in email usage show cultural influences (Holtbrugge et al., 2012). Also, as has been shown previously by Gupta et al. (2009), teams of individuals that are collocated do less documenting than distributed teams. This means that the organization should encourage documentation, which can be then shared with the other members and organizations. In addition, having access to tools that are easy to use the individuals are also more likely to gather knowledge from other sources (Lin, 2007). Therefore, organizations should invest wisely on tools that are easy to use and support communication. Both of these features will help the individuals involved in the innovation process to distribute knowledge and to gather knowledge. This access should not be only limited to experts as having access to diverse knowledge across organizational boundaries will result in the generation of new expert knowledge (Alin et al., 2011). The newly created knowledge can then be refined in the innovation process.

Overall, it can be stated that technical tools are important to knowledge sharing also at the innovation process level due to the fact that good tools will increase sharing and also knowledge gathering resulting in increased knowledge within the organization. For practitioners selecting tools is an important step towards increasing the effectiveness of knowledge sharing. However, choosing tools that are too rigid will hinder the efforts. Enough time should be reserved to make an educated choice when choosing what software will be purchased for the organization. Listening to what the actual users want will give managers more information on how well does the candidate software support the users' needs. An unwise investment in expensive, ineffective tools will only hinder any knowledge sharing initiative that the organization wants to starts or improve.

6.1.6 Analysis of The Willingness influence factors

Willingness to share is another key component in sharing knowledge. Most of the influences for willingness come from outside attributes from **organization, individual** and **trust**. In addition, some influence was found to come from tools and individual factors. As most of the influences to willingness come from outside factors the analysis in the original influence factors also applies here. In this research the only internal attribute for willingness was **sharing outside of group**. This was mentioned by few Western interviewees, who stated that in their experiences there were more knowledge silos in Japanese organizations than in Western organizations. This factor was also mentioned in regards to

inter-organizational sharing, i.e. knowledge that was supposed to be passed on to another organization had not been shared outside of the organization. Reasons for this could be due to organizational rules on sharing (Lindner and Wald, 2011) or differences in communication styles (Bhagat et al., 2002) but also based on cultural factors. **Trust** in the other organization, and in other individual, increases the willingness to share even critical knowledge as suggested by Usoro et al. (2007). Another factor influencing willingness to sharing knowledge is cultural. As suggested by Möller and Svahn (2004) Bhagat et al. (2002) communicating across cultural and hierarchical barriers can have an effect on how much is shared and with whom is it shared with. In addition to organizational factors, this can be one factor explaining the existence of the knowledge silos especially in the international context.

As mentioned in the analysis section for **tools**, ease of use and support for communication are important. Ease of use meaning sharing can be done without breaking the workflow makes individuals more willing to share as was stated by one Western academic. The increased interaction between employees and organizations increases trust, which makes the affected parties more willing to share their knowledge. The strength of the influence on willingness to share coming from tools is, however, most likely smaller than the influence of other influence factors.

Individual factors also have some impact on willingness to share. As shown by Lin (2007) one reason for willingness to share is getting enjoyment from helping others, which strengthen the relationship between the individuals. A Japanese academic also mentioned this reasoning. However, as described in the chapter analyzing the individual influence factors, language skills and cultural distance can either improve this interaction or hinder it. If the individual´s language skills are not good enough then embarrassment over language skills has a negative effect on willingness to share (Ford and Chan, 2003). Also a big difference in cultures can have a negative effect on sharing (Möller and Svahn, 2004) as there will be differences in communication styles and language used, which will be needed to overcome before a more effective knowledge transfer relationship is established. Once again trust in other people and organizations can help to overcome most negative effects that stem in individual factors. Especially passion for sharing knowledge can help overcome any barriers that might hinder willingness to share (Usoro et al., 2007).

Innovation processes also gains from individual willingness to share. Most of the influence for willingness comes from the other influence factors, which means that the discussions on innovation processes in those sections also apply here. In the knowledge sharing level, positive influences to willingness vie trust increase the amount and quality of the knowledge shared (Usoro et al., 2007). In the innovation process level, increases in willingness to share knowledge can help organizations to improve their innovation capability (Lin, 2007). As influence of sharing outside of group is the only attribute within factors that influence willingness, it means that individuals and organizations involved in innovation processes also need to consider its effects on the innovation process. In fact, it could be argued that the differences in the styles of Open Innovation between Japan and the Western countries most likely has some of its roots in this

attribute. Western Open Innovation focuses on having a central market place for innovations where as Japanese Open Innovation mostly focuses on using close relationships with frequently collaborated organizations (Maegawa and Miyamoto, 2008). This indicates that Japanese organizations more likely collaborate with other Japanese organizations whereas Western organizations collaborate with organizations that have the specific knowledge needed. From a Japanese perspective this can be seen as sharing within the same group. Innovation processes combining internal capabilities and openness to sharing knowledge can help to improve innovation performance of the organization (Caloghirou et al., 2004). Hence, influencing willingness through organizational and individual factors can help sharing outside of the group, which in turn can have a positive effect on both

Overall, it can be said that the link between trust and willingness and organization and willingness are the most important ones out of all the links. Increases in trust most likely have a positive effect on both the quality and quantity of shared knowledge. Organizations can influence trust, which in turn influences willingness to share. In addition, organizations themselves can influence willingness to share directly via incentive usage. Therefore, practitioners should concentrate on improving antecedes of willingness in order to increase willingness. The advices given in the analysis of the trust influence factors are a good place to start.

7 Summary, Limitations, and Future Research

In this research, the affect of culture on knowledge sharing has been studied in detail. First, innovation processes and the need for knowledge management were discussed to show the larger context. Once the link between the two was shown, cultural models and previous research on culture´s affect on knowledge sharing were presented through a thorough literary review. After that the research methodology was discussed before moving on to the description of the interviews. In chapter five the results from the interviews were discussed and a new framework detailing the influence of culture on knowledge sharing was presented. Finally, in chapter six the new framework and the influence factors found in the interviews were analyzed against existing research.

Based on the results derived in this thesis, the affect of culture on knowledge sharing needs to be taken into account by academics and by practitioners. Culture affects not only individuals and organizations but also trust and willingness to share. The created framework details influence factors and attributes that are affected by culture and it is considered to be an answer for both of the research questions. The framework adds the following contributions to the existing literature: First, during the research it was shown that knowledge-sharing theories need to consider cultural, individual, organizational and technical factors. Any framework that does not consider all of these factors will take knowledge sharing out from its natural element. No such frameworks existed before the proposed framework. Therefore, the framework represents a step towards a more comprehensive theory on knowledge sharing. Second, some of the attributes within the influence factors represent new additions to theories regarding cultural influences on knowledge sharing. The biggest difference between previous frameworks and the proposed framework is the inclusion of a common goal in the organization influence factor. This factor has not been previously included in knowledge sharing frameworks that include culture. The roles of incentives and technical tools gained some support but there is still need for more research. The next logical step is to further validate the framework through quantitative research methods. As previously stated, the framework presents a significant improvement over the existing frameworks and models detailing the relationship between culture and knowledge

sharing. Closer study of the framework helps both academics and practitioners to understand the extent of cultures affects. The discussion section especially will be useful for all practitioners as the suggestions presented there are represent a practical starting point in increasing knowledge sharing in international organizations.

In regards to innovation processes, the presented framework can be used to support collaboration in international innovation processes. This means that individuals and organizations involved in cross-country projects and collaborations should study the presented framework in order to gain a deeper understanding where special attention needs to be taken to ensure correct transference of knowledge. The framework, and knowledge sharing in general, has a role in supporting innovation process. As the presented framework encompasses more details than any previous framework, the results derived from the proper utilization of the new framework will most likely increase the efficiency of knowledge sharing. With the increase in the amount of knowledge shared, individuals involved in the innovation processes will have access to the knowledge that they require faster than before. According to Wang & Wang (2012) this increase in sharing will then impact both the quality of innovations and innovation speed, which in turn has a positive effect on both the operational performance and financial performance of the organization. Therefore, organizations with knowledge sharing strategies should update the existing strategies in accordance to the results presented in this thesis. In addition to that, the analysis of the connections between the influence factors and innovation processes presented in the previous chapter also provide practitioners and academics more guidance on how to apply the new framework in the innovation process level of abstraction.

There are some limitations to the research. First of all, the sample size is relatively small, which can cause some problems in further validation phases. The limited number of interviews cause that there might be some unknown factors also, which were not found during the interviews. Especially, the sample size of Japanese academics is considerably small. Additional interviews with more specific interviewee groups, such as Japanese national working in a Japanese organization and Western national working in a Japanese organization, should be conducted to gain a more solid foundation before any future applications of the framework. These interviews allows for a cross-validation of the results between different interview groups. Another way to further validate the framework is to carry out a quantitative research. This approach would validate the framework beyond any doubt. As stated previously, a first step before carrying out any quantitative research should be a thorough qualitative research (Kuhn, 1961). This qualitative step has now been carried out and the results of this thesis can be used to take the next step, which is to modify the findings of this research into a foundation for a quantitative research. Quantitative methods such as structural equation modeling, SEM, can be used to test the framework of influence factors and their relationships in order to get validation on the model. Guidance on turning the results of this research into a foundation for a quantitative research can be found in the extensive literary review section as some of the literature used to build the current framework also includes previ-

ously used questionnaire question packets. These influence factors should be relatively easy to modify to meet the needs of the future researchers. Finally, a second round of quantitative study can be used to understand in detail how culture affects knowledge sharing in a multinational context. This would lead to an updated version of the framework. Overall, this plan follows the approach suggested by Miles & Huberman (1994), as shown in figure 11.

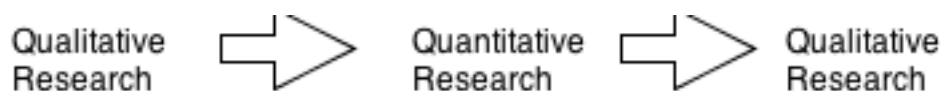Qualitative Research ⇨ Quantitative Research ⇨ Qualitative Research

Figure 11 Qualitative and quantitative research (Miles & Huberman, 1994)

The quantitative methods can also be then used to study the impact of the created framework on innovation speed and on the financial performance of the organization (Wang & Wang, 2012). This should motivate practitioners to test the framework in a real world situation.

Future research on this topic should concentrate on understanding more deeply culture specific phenomenon and their relation to knowledge sharing. For example, in Japan lifetime employment has long been a factor influencing knowledge sharing. However, as stated by Japanese individuals, lifetime employment has started become increasingly rare in Japan. This changes the knowledge sharing practices in Japanese organizations, as new recruits might not be as willing to share their knowledge due to uncertainty about their future employment. Another possible area for further research is to study how does national culture affect individuals crossing the horizontal-vertical and collectivistic-individualistic barriers. Especially in organizations that are of the opposite of the individuals own national culture. These extreme cases will most certainly reveal interesting factors concerning how individuals deal with knowledge sharing in such a different cultural environment.

REFERENCES

Afuah, A. (1998). *Innovation Management: Strategies, Implementation and Products*. New York: Oxford University Press

Al-Alawi, A. I., Al-Marzooqi, N. Y. & Mohammed, Y. F. (2007). Organizational culture and knowledge sharing: critical success factors. *Journal of Knowledge Management, 11*(2), 22 - 42.

Alin, P., Taylor, J. E. & Smeds, R. (2011). Knowledge Transformation in Project Networks: A Speech Act Level Cross-Boundary Analysis. *Project Management Journal, 42*(4), 58 – 75.

Berger, P. L. & Luckmann, T. (1966). *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Garden City, NY: Anchor Books.

Bhagat, R. S., Kedia, B.L., Harveston, P. D. & Triandis, H. C. (2002). Cultural variations on the cross-border transfer of organizational knowledge: an integrative framework. *Academy of Management Review*, *27*(2), 204 - 221.

Boh, W.F., Nguyen, T.T. & Xu, Y. (2013). Knowledge transfer across dissimilar cultures. *Journal of Knowledge Management, 17*(1), 29 - 46.

Cabitza, F., Colombo, G. & Simone, C. (2013). Leveraging Underspecification in Knowledge Artifacts to Foster collaborative Activities in Professional Communities. *International Journal of Human-Computer Studies*, *71*(1), 24 - 45.

Calantone, R., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial marketing management, 31*(6), 515–524.

Caloghirou, Y., Kastelli, I. & Tsakanikas, A. (2004). Internal capabilities and external knowledge sources: complements or substitutes for innovative performance? *Technovation, 24*(1), 29 – 39.

Cantner, U., Joel, K. & Schmidt, T. (2011). The effects of knowledge management on innovation success – An empirical analysis of German firms. *Research Policy*, *40*, 1453 - 1462.

Carneiro, A. (2000). How does knowledge management influence innovation and competitiveness? *Journal of Knowledge Management, 4*(2), 87–98.

Cassiman, B. & Veugelers, R. (2006). In Search of Complementarity in Innovation Strategy: Internal R&D and External Knowledge Acquisition. *Management Science, 52*(1), 68 – 82.

Chesbrough, H. (2003), *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press.

Cordeiro-Nielsson, C. M. & Hawamdeh, S. (2011). Leveraging socio-culturally situated tacit knowledge. *Journal of Knowledge Management, 15*(1), 88 – 103.

Creswell, J.W. (2009). *Research design: Qualitative, quantitative and mixed method approaches*. Newbury Park Ca: Sage Publications.

Crowne, K. A. (2013). Cultural exposure, emotional intelligence, and cultural intelligence: An explorative study. *International Journal of Cross Cultural Management, 13*(1), 5 – 22.

Dougherty, D. (2004). Organizing practices in services: Capturing practice-based knowledge for innovation. *Strategic Organization*, *2*(1), 35 – 64.

Davis, F.D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly, 13*(3), 318 – 339.

Darr, E.D. & Kurtzberg, T.R. (2000). An investigation of partner similarity dimensions on knowledge transfer. *Organizational Behavior and Human Decision Processes, 82* (1), 28 - 44.

du Plessis, M. (2007). The role of knowledge management in innovation. *Journal of Knowledge Management, 11*(4), 20 – 29.

Echeverri-Caroll, E. (1999) Knowledge flows in innovation networks: a comparative analysis of Japanese and US high-technology firms. *Journal of Knowledge Management*, *3*(4), 296 – 303.

Eppler, M. J. & Sukowski, O. (2000). Managing Team Knowledge: Core Processes, Tools, and Enabling Factors. *European Management Journal, 18*(3), 334 – 341.

Farber, M.L. (1950). The problem of national character: A methodological analysis. *The Journal of Psychology* , 30, 307 – 16.

Fernie, S., Green, S. D., Weller, S. J. & Newcomber, R. (2003). Knowledge sharing: context, confusion and controversy. *International Journal of Project Management,* 21(3), 177 – 187.

Fischer, R. & Poortinga, Y. H. (2012). Are cultural values the same as the values of individuals? An examination of similarities in personal, social and cultural value structures. *International Journal of Cross Cultural Management, 12*(2), 157 – 170.

Ford, D. P. & Chan Y. E. (2003). Knowledge sharing in a multi-cultural setting: a case study. *Knowledge Management Research & Practice, 1*(1), 11 – 27.

Garud, R. & Nayyar, P. R. (1994). Transformative capacity: continual structuring by intertemporal technology transfer. *Strategic Management Journal, 15*(5), 365 – 385.

Gassmann, O & Enkel, E. (2004). Towards a Theory of Open Innovation: Three Core Process Archetypes. *Proceedings of The R&D Management Conference, Lisbon, Portugal, July 6 – 9*

Gavigan, J.P., Ottitsch, M. & Mahrouh, S. (1999). The futures project, knowledge and learning: towards a learning Europe. European Commission Directorate—General JRC Joint Research Centre, Institute for Prospective Technological Studies, TECS Futures Programme.

Goh, S.W. (2002) Managing effective knowledge transfer: an integrative framework and some practical implications. *Journal of Knowledge Management, 6*(1), 23 - 30.

Gourlay, S. (2006). Conceptualizing Knowledge Creation: A Critique of Nonaka´s Thoery. *Journal of Management Studies, 43*(7), 1415 – 1436.

Glisby, M. & Holden, N. (2003). Contextual Constraints in Knowledge Management Theory: The Cultural Embeddedness of Nonaka´s Knowledge-creating Company. *Knowledge and Process Management, 10*(1), 29 - 36.

Gruenfeld, D. H., Mannix, E. A., Williams, K. Y. & Neale, M. A. (1996). Group Composition and Decision Making: How Member Familiarity and Infor-

mation Distribution Affect Process and Performance. *Organizational Behavior and Human Decision Process, 76*(1), 1 – 15.

Hajro, A. & Pudelko, M. (2010). An analysis of core-competencies of successful multinational team leaders. *International Journal of Cross Cultural Management, 10*(2), 175 – 194.

He, W. & Wei, K.-K. (2009). What drives knowledge sharing? An investigation of knowledge-contribution and –seeking belief. *Decision Support Systems, 46*(4), 826 – 836.

Hevner, A., March, S., Park, J., & Ram, S. (2004). Design Science in Information Systems Research. *MIS quarterly*, *28*(1), 75–105.

Hinds, P. J. & Weisband, S. P. (2003). Knowledge sharing and shared understanding in virtual teams. In Gobson, C. B. & Cohen, S. G. (eds.) In *Virtual teams that work: Creating conditions for virtual teams effectiveness*, 21 – 36.

Ho, D. (1967). On the Concept of Face. *The American Journal of Sociology, 81*(4), 867 – 884.

Hofstede, G. (1980) *Cultures Consequences: International Differences in Work-related Values*. Beverly Hills, CA: SAGE Publications.

Hofstede, G. (1991). *Cultures and Organizations: Software of the Mind*. McGraw-Hill. London

Holtbrugge, D., Weldon, A. & Rogers, H. (2012). Cultural determinants of email communication styles. *International Journal of Cross Cultural Management, 13*(1), 89 – 110.

Hutchings, K. & Michailova, S. (2004). Facilitating knowledge sharing in Russian and Chinese subsidiaries: the role of personal networks and group membership. *Journal of Knowledge Management, 8*(2), 84 - 94.

Inkpen A. C. & Pien, W. (2006). An Examination of Collaboration and Knowledge Transfer: China-Singapore Suzhou Industrial Park. *Journal of Management Studies, 43*(4), 779 – 811.

Imai, M. (1986). Kaizen: the key to Japan´s competitive success. Random House Business Division. New York.

Jackson, S. E., Chuang, C. -H., Harden, E. E., Jiang, Y., & Joseph, J. M. (2006). Toward developing human resource management systems for knowledge-intensive teamwork. In J. M. Joseph (Ed.), *Research in personnel and human resources management,* Volume 25, 27 − 70.

Joia, L. A. & Lemos, B. (2010). Relevant factors for tacit knowledge transfer within organizations. *Journal of Knowledge Management, 14*(3), 401 – 427.

Järvinen, P. (1999). On Research Mehods. Opinpaja, Tampere.

Kankanhalli, A., Tan, B. C. Y., & Wei, K. -K. (2005). Contributing knowledge to electronic knowledge repositories: An empirical investigation. *MIS Quarterly, 29*(1), 113 − 143.

Katz, R. & Allen, T.J. (1982). Investigating the not invented here (NIH) syndrome: a look at the performance, tenure and communication patterns of 50 R&D projects. *R&D Management, 12*(1), 7-19.

Kidd, J. (1999). Working together, but how? The need for intercultural awareness. In *Japanese Multinationals Abroad: Individual and Organizational Learn-*

ing. Beecher, S.L. & Bird, A. (eds). Oxford University Press; New York; 211 - 234.

Kodama, M. (2009). Boundaries Innovation and Knowledge Integration in the Japanese Firm. *Long Range Planning, 42* (4), 463 – 494.

Kubo, I. (2002). An inquiry in the motivation of knowledge workers in the Japanese financial industry. *Journal of Knowledge Management, 6*(3), 262 – 271.

Kuhn, T. S. (1961). The Function of Measurement in Modern Physical Science. *Isis, 52*(2), 161 – 193.

Lewis, R.D. (2006) *When Cultures Collide: Leading Across Cultures*. London: Nicholas Brealey Publishing.

Li, C.-Y. & Hsieh, C.-T. (2009). The impact of knowledge stickiness on knowledge transfer implementation, internalization, and satisfaction for multinational corporations. *International Journal of Information Management. 29*(6), 425 - 435.

Lin, C-P. (2007). To Share or Not to Share: Modeling Tacit Knowledge Sharing, Its Mediators and Antecedents. *Journal of Business Ethics, 70*(4), 411 – 428.

Lin, H.-F. (2007). Knowledge sharing and firm innovation capability: an empirical study. *International Journal of Manpower, 28*(3/4), 315 – 332.

Lindner, F., & Wald, A. (2011). Success factors of knowledge management in temporary organizations. *International Journal of Project Management, 29*(7), 877 – 888.

Linna, P & Jaakkola, H. (2010) Towards finding culture assessment tools for SE companies. *Technology Management for Global Growth (PICMET), 2010 proceedings of PICMET 2010, 1 - 6.*

López-Nicolás, C. & Merono-Cerdán, A. (2011). Strategic knowledge management, innovation and performance. *International Journal of Innovation Management. 31*(6), 502 - 509.

Luna-Reyes, L. F., Cresswel, A. M. & Richardson, G. P. (2004). Knowledge and Development of Interpersonal Trust: a Dynamic Model. Proceedings of the 37th Hawaii International Conference on System Sciences, 5—8.

Luo, Y. (1999). Dimensions of knowledge: comparing Asian and Western MNEs in China. *Asia Pacific Journal of Management, 16* (1), 75 - 94.

Mabawonku, A. O. (2003). Cultural framework for the development of science and technology in Africa. Science and Public Policy, 30(2), pp. 117-125.

Maegawa, Y. & Miyamoto, T. (2008). Japanese Retro-Modern Engines of Innovation. *The Kyoto Economic Review, 77*(2), 157 – 171.

Magnier-Watanabe, R., Benton, C. & Senoo, D. (2011) A study of knowledge management enablers across countries. *Knowledge Management Research & Practice, 9*(1), 17-28.

Magnier-Watanabe, R. & Senoo, D. (2010). Shaping knowledge management: organizational and national culture. *Journal of Knowledge Management, 14(2), 214 – 227.*

MacGregor, E., Hsieh, Y. & Kruchten, P. (2005). The Impact of Intercultural Factors on Global Software Development. *Electrical and Computer Engineering, 2005. Canadian Conference on. IEEE, 2005.*

Matsuo, M. & Easterby-Smith, M. (2008). Beyond the knowledge sharing dilemma: the role of customization. *Journal of Knowledge Management, 12*(4), 30 - 43.

McBeath, A & Ball, P. (2012). Towards a framework for transferring technology knowledge between facilities. *Strategic Outsourcing: an International Journal 5*(3), 213 - 231.

McLean, L. D. (2004). *A Review and Critique of Nonaka and Takeuchi's Theory of Organizational Knowledge Creation*, University of Minnesota, Minneapolis, MN, available at: www.mcleanglobal.com/public/MGC/publications/Nonaka%20and%20 Takeuchi.pdf

McSweeney, B. (2002). Hofstede´s model of national cultural differences and their consequences: A triumph of faith – a failure of analysis. *Human relations, 55*(1), 89 – 118.

Minkov, M. & Hofstede, G. (2012). Hofstede´s Fifth Dimension: New Evidence From the World Values Survey. *Journal of Cross-Cultural Psychology*, 43(1), 3 - 14.

Miles, M. B. & Huberman, A. M. (1994). Quantitative Data Analysis. Sage Publications, Inc: Thousand Oaks, CA.

Moran, R. T., Yungdahl, W. E. & Moran, S. V. (2009). Leading global projects: bridging the cultural and functional divide. In D. K. Deardorff (Ed), The SAGE Handbook of Intercultural Competence (p. 287-303). Thousand Oaks, CA: SAGE Publications

Markus, M. L., Majchrzak, A., & Gasser, L. (2002). A Design Theory for Systems that Support Emergent Knowledge Processes. *MIS Quarterly, 26*(3), 179 - 212.

Martinsons, M. G. & Davidson, R. M. (2007). Strategic decision making and support systems: Comparing American, Japanese and Chinese management. *Decision Support Systems, 43*(1),284 – 300.

Myers, M. D., & Avison, D. (2002). *Qualitative Research in Information Systems*. London: Sage Publications.

Möller, K. & Svahn, S. (2004). Crossing East-West boundaries: Knowledge sharing in intercultural business networks. *Industrial Marketing Management. 33*(3), 219 – 228.

Nonaka, I. & Takeuchi, H. (1995). The Knowledge-Creating Company. NY: Oxford University Press.

Noll, J., Beecham, S. & Richardson, I. (2010). Global Software Development and Collaboration: Barriers and Solutions. *ACM Inroads 1*(3), 66-78.

Okamoto, M. (2012). Nihon denki meekaa to opun inobeeshon [Open Innovation in Japanese electric industry]. *Inoneeshon manejimento [innovation management], 9*, 105 – 122.

Olson, C. L. & Kroeger, K. (2001). Global Competency and Intercultural Sensitivity. *Journal of International Education, 5*(2), 116 – 137.

Pawlowski, J. M. & Pirkkalainen, H. (2012). Global Social Knowledge Management: The Future of Knowledge Management Across Borders? Proc. Of European Conference on Knowledge Management, June 2012, Spain.

Pedersen, C. R., & Dalum, B. (2004). Incremental versus radical change—the case of the digital north Denmark program. International Schumpeter Society Conference, Italy. DRUID/IKE Group, Department of Business Studies, Aalborg University.

Philips, J. (2010). Open Innovation Topology. *International Journal of Innovation Science, 2*(4), 175 – 183.

Pirkkalainen, H. & Pawlowski, J. M. (2013). Global social knowledge management – understanding barriers for global workers utilizing social software. *Computers in Human Behavior*, (in press).

Pirkkalainen, H. & Pawlowski, J. M. (2013). Global Social Knowledge Management: From Barriers to the Selection of Social Tools. *The Electronic Journal of Knowledge Management, 11*(1), 3 – 7.

Popadiuk, S. & Choo, C. W. (2006) Innovation and knowledge creation: How are these concepts related? *International Journal of Knowledge Management 26*(4), 302 – 312.

Robson, C. (2002). *Real World Research* (2nd ed.) Blackwell Publishing.

Sousa, C. M. P. & Bradley, F. (2006). Cultural Distance and Psychic Distance: Two Peas in a Pod? *Journal of International Marketing, 14*(1), 49 - 70.

Schumacker, R. E. & Lomax, R. G. (2008). A Beginners Guide to Structural Equation Modeling. Lawrence Erlbaum Associates, Inc. Publishing.

Smith, H., McKeen, J. & Singh, S. (2010). Creating the KM mindset: why is it so difficult? *Knowledge Management Research & Practice, 8*(2), 112 - 120.

Strach, P. & Everett, A. M. (2006). Knowledge transfer within Japanese multinationals: Building a theory. *Journal of knowledge Management, 10*(1), 55 – 68.

Strauss, A. & Corbin, J. (1990). *Basics of Quantitative research – Grounded theory procedures and techniques*. Newbury Park, Ca: Sage Publications.

Taminiau, Y., Smit, W. & de Lange, A. (2009). Innovation in management consulting firms through informal knowledge sharing. *Journal of Knowledge Management, 13*(1), 42- 55.

Teece, D.J. (2000). Strategies for managing knowledge assets: the role of firm structure and industrial context. *Long Range Planning, 33*(1), 35 - 54.

Tian, J., Nakamori, Y., & Wierzbicki, A. P. (2009). Knowledge management and knowledge creation in academia: a study based on surveys in a Japanese research university. *Journal of Knowledge Management, 13*(2), 76 – 92.

Tong, J. & Mitra, A. (2009). Chinese cultural influences on knowledge management practice. *Journal of Knowledge Management, 13*(2), 49 – 62.

Treviranus, J. (2010). The Value of Imperfection: The Wabi-Sabi Pronciple In Aesthetics and Learning. In *Open ED 2010 Proceedings.* Barcelona: OUC, OU, BYU

Trompenaars, F. & Hampden-Turner, C. (1998). *Riding the Waves of Culture: Understanding Diversity in Global Business (2nd edition).* New York, NY: McGraw-Hill.

Triadis, H. C. (1995). Individualism and collectivism. Boulder, CO. Wesview.

Trott, P. (2005). *Innovation Management and New Product Development* (3rd ed.) Pearson Education Limited, New York, NY.

Tseng, S. (2008). Knowledge management system performance measurement index. *Expert Systems with Applications*, *34*(1), 734 – 745.

Ueltschy, L. C., Laroche, M., Zhang, M., Cho, H. & Yingwei, R. (2009). Is there really an Asian connection? Professional service quality perceptions and customer satisfaction. *Journal of Business Research, 62*(10), 972 – 979.

Usoro, A., Sharratt, M. W., Tsui, E. & Shekhar, S. (2007). Trust as an antecedent to knowledge sharing in virtual communities of practice. *Knowledge Management Research & Practice, (5)*, 199 – 212.

Vaccaro, A., Parente, R. & Veloso, F. M. (2010). Knowledge Management Tools, Inter-Organizational Relationships, Innovation and Firm Performance. *Technological Forecasting & Social Change, 77*(7), 1076 – 1089.

Venkatesh, V., Brown, S. A. & Bala, H., (2013). *Bridging the Qualitative–Quantitative Divide: Guidelines for Conducting Mixed Methods Research in Information Systems.* MIS Quarterly, 37(1), 21 – 54.

Voelpel, S. V. & Han, Z. (2005). Managing knowledge sharing in China: the case of Siemens ShareNet. *Journal of Knowledge Management,9*(3), 51 – 63.

Wang, S. & Noe, R. A. (2010). Knowledge sharing: A review and directions for future research. Human Resource Management Review, 20(2), 115–131.

Williamson, D. (2002). Forward from a critique of Hofstede's model on national culture. *Human Relations*, *55*(11), *1373 – 1395.*

Wu, C. & Lee, G. (1999). Use of BBS to facilitate a teaching practicum course. *Computers and Education, 32*(3), 239 – 247.

Young, M.-L., Kou, F.-.Y. & Myers, M. D. (2012). To share or not to share: a critical research perspective on knowledge management systems. *European Journal of Information Systems, 21*, 496 - 511.

Xu, J., Houssin, R., Caillaud, E. & Gardoni, M. (2010). Macro process of knowledge management for continuous innovation. *Journal of Knowledge Management, 14*(4), 573 - 591.

APPENDIX 1 INTERVIEW ON THE IMPACT OF CULTURE ON KNOWLEDGE SHARING

The goal of the interview is to help the interviewees to discuss what they think about the important factors related to knowledge sharing. Each broader category is bolded and underlined and the interviewees were asked to discuss the topic based on their own experiences. Additional questions were presented based on the topics that the interviewees brought up, and from the supporting topics listed bellow the broader topic. The goal of the interviews was to get the interviewees to describe their own understanding of knowledge sharing in their own words.

Culture

What aspects of culture do you think affect knowledge sharing the most? (How do you think culture affects knowledge sharing?)

Possible discussion topics

Individualistic - collectivistic
Horizontal - vertical
Explicit vs. tacit knowledge preference

Individual

What do you think are the most important aspects in knowledge sharing from the point of view of an individual?

Possible discussion topics

Cultural distance
Language fluency of the individual
Technical skills
Previous experiences in KS

Organization

How do you think the organization can help to increase knowledge sharing amongst its workers?

Possible discussion topics

Incentives
Language skills of the manager

Management support for knowledge sharing practices
Existence of formal knowledge strategies
Tolerance to mistakes
Openness to diversity

Trust

How would you define the impact of trust in knowledge sharing? What factors do you think affect your feeling of trust?

Possible discussion topics

Benevolence-based
Integrity-based
Competency-based

Tools/ technology

What aspects of tools do you find important in order to improve knowledge sharing?

Possible discussion topics

Support for communication
Ease of use
Customizability
Substantial vs. incremental change

Willingness

What factors do you think influence you willingness to share knowledge?

Possible discussion topics

Sharing out side of group
Trust types
Incentives

Knowledge Sharing

What other aspects do you think effect Knowledge sharing