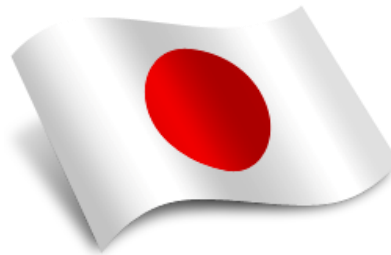




Preserving Knowledge from the Senior Worker in the Era of the Aging Workforce

The Japanese Case



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Preface

This master thesis is the final assignment of my study Business Administration at the University of Twente. The focus of this thesis lies with the identification of knowledge sharing methods and techniques which are being used by senior workers in Japan to share their knowledge with their younger co-workers or successors. All in perspective of an era of workforce aging in Japan. I could not have completed this master thesis without the support of some important people in my professional and personal environment.

First, I would like to thank Wakabayashi Fund LLC. in Tokyo, Japan for hosting me during my 5-month stay in Japan, and for helping me to acquire a visa for entering Japan. I appreciate it that I was allowed to use their corporate network for contacting other firms and institutions in Japan as possible participants for my research. Besides their support for my master thesis, I am also thankful that I was given the freedom and responsibility to help Wakabayashi Fund LLC. in their daily activities. Overall, it has been a great learning experience, both in terms of collecting data among Japanese firms for my master thesis as well as operating as a member in a financial firm in Japan.

Second, I would like to thank my supervisors at the University of Twente, Dr. Huub Ruël and Dr. Ida Wognum, for their guidance and support for writing this master thesis. Their input and feedback made an important contribution to write this master thesis according to academic standards.

Lastly, there were many people in my private life who have also enabled me to graduate. They have supported me and believed in me, and for this I want to thank them.

I hope you will enjoy reading this master thesis!

Johannes Woelders

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Abstract

Research Purpose

The impact of an aging workforce is beginning to be felt globally, and in particular, in the developed countries. One of the implications of an aging workforce is the possibility that large scale retirements may lead to an unrecoverable loss of knowledge. Many senior workers have built up a lot of experience and organizational know-how, and therefore, they will need to share their knowledge with others or with the organizational memory system in order to avoid a possible loss of knowledge and to keep the knowledge level of the organization in balance. Japan is, compared to other developed countries, experiencing the most rapid aging of the entire population, and thus its workforce is projected to be rapidly aging as well. Therefore, in order to increase our understanding, it is expected that research on the methods and practices which are being used by senior workers in Japan to share knowledge will allow other firms, who are coping with similar challenges, to reflect on their own knowledge sharing practices. Hence, the intention of this research is to see if firms in Japan are aware of the aging processes, and which methods and techniques these firms use to let the baby boom generation share their valuable knowledge before they retire en masse.

Methodology

The nature of this study is both quantitative and qualitative, and has predominantly a descriptive character. A semi-structured questionnaire, with open and closed questions, has been chosen to gather data and information among 55 Japanese firms and institutions. In addition, the open questions in the semi-structured questionnaire also allow this study to approach a more explorative character. In addition to the questionnaire, a follow-up e-mail with an open question has been sent in a later stadium.

Findings

The senior workers of the respondent firms use the following methods and techniques to share their knowledge with their younger successors: mentoring (52,7%), training (45,5%), storytelling (41,8%), information/expert systems (9,1%), after-action reviews (9,1%), communities of practice (5,5%), orientation period (5,5%), and expert interviews (3,6%). In 29,1 percent of the cases the respondent firms use a method, technique or procedure other than the ones found at first sight in the academic literature, such as nomination; role as advisor or external consultant; job rotation systems; and manuals or guidebooks. Overall, the senior workers of the participant firms seem to be using mentoring, training, and storytelling most frequently to share knowledge with their younger co-workers, regardless of size and industry. Additionally, one can state that there seems to be a relatively high level of awareness about the demographic projections among the respondent firms in Japan. Lastly, non-Japanese firms should be aware of the influence of the Japanese context on the findings here, and rather see the findings as a prism, through which own practices can be observed and reflected upon.

Limitations/Recommendations

There are several reasons why the results of this study have to be interpreted with certain wariness: a lack of multiple perspectives per respondent firm; perspectives of managing directors and HR managers possibly allow for social desirable answers rather than realistic input; the absence of scales (e.g. Likert scales) hinders providing an indication about the popularity per method or technique; and in order to collect relevant data the respondent firms were purposively sampled in such a way that at least 5 percent of the firms workforce is aged 50 and older, and that they were expected to have methods or techniques (specifically) in place for senior workers. Additionally, future research is desirable to see under which circumstances certain knowledge sharing methods and techniques would be most effective. Further, it is desirable to turn the roles of Western and Japanese firms in a similar study, and to see if Japanese firms could learn something from the West.

Keywords

Tacit and explicit knowledge; Knowledge preservation; Knowledge sharing; Methods and techniques; Seniors; Older workers; Baby-boom generation; Japan

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1 Introduction

1.1 Background

Knowledge is, according to Nonaka (1991), a critical organizational resource that provides a sustainable competitive advantage in a competitive and dynamic economy (Nonaka, 1991; Goh, 2002; Dalkir, 2005). The creation and diffusion of knowledge have become ever more important factors in competitiveness (Dalkir, 2005). For organizations it is necessary, in order to gain a competitive advantage, to rely on staffing and training systems that focus on selecting workers who have specific knowledge, abilities, skills or competencies, or to help workers to acquire them. Thereby, organizations also have to consider how to transfer knowledge from experts who have it, to novices who need to know (Wang & Noe, 2010). In other words, managing knowledge practices is nowadays a discipline that recognizes the importance of knowledge, and assists organizations in optimally using the knowledge that is present within the organization (Slagter, 2007).

A focus on the importance of knowledge and its role in helping an organization to become competitive is not new (Goh, 2002). In fact, the term knowledge management has been around for many decades. However, it did not enter popular usage until the late 1980s (Dalkir, 2005). As from that moment on there has been an explosion in the academic literature surrounding the developing concept of knowledge management (Yang & Wu, 2008). However, there still exists a lack of consensus in the academic literature over what constitutes a good definition of knowledge management (Ponzi & Koenig, 2002; Dalkir, 2005; Schlögl, 2005; Slagter, 2007). But there is a widespread agreement as it comes to the goals of a firm that undertakes knowledge management, namely to leverage knowledge to the advantage of the firm (Dalkir, 2005; Schlögl, 2005).

In regards to the term knowledge itself, it should be noted that researchers have not reached consensus on the distinctions, if any, between knowledge and information. Many researchers emphasize that there is not much practical utility in distinguishing knowledge from information and consequently consider knowledge as information processed by individuals including ideas, expertise, judgments and facts relevant for individual, team and organizational performance (Alavi & Leidner, 2001; Bartol & Srivastava, 2002). Other researchers believe that all information is considered knowledge, but that knowledge is more than just information, suggesting that there is more value and uniqueness to it (Zander & Kogut, 1995).

Continuously, knowledge management is largely regarded as a process involving various activities. At a minimum, one may consider four basic processes, namely creating, storing/retrieving, transferring/sharing, and applying knowledge (Alavi & Leidner, 2001; Dalkir, 2005). Additionally, much of the literature acknowledges that the success of knowledge management initiatives depend on knowledge sharing (De Long, 2004; Wang & Noe, 2010). Knowledge sharing between workers and within and across teams allows organizations to exploit and capitalize on knowledge-based resources (Cabrera & Cabrera, 2005). Furthermore, organizations can prevent a loss of corporate memory by facilitating a smooth transition of knowledge from those who are leaving or retiring, to those who are recruited to fill their positions (Dalkir, 2005).

Today, the body of academic literature about knowledge sharing research is comprehensive, and many research areas have been covered. However, surprisingly little research can be found on knowledge sharing in relation to senior workers in general, and in particular in a workforce aging context. This is remarkably, since it is likely that the challenge of preserving the knowledge from the relatively large amount of senior workers who are about to retire faces many organizations in the near future. Globally, the body of academic literature does foresee several demographic, labor force and workforce challenges for organizations. It is expected that, during the coming decades, the rapid aging of populations will not only have a severe impact on the composition, size and costs of the available labor force, but also on the knowledge level and way of knowledge sharing itself within organizations (Geipel, 2003; Slagter, 2007). Organizations will face the challenge of ensuring that the knowledge that was the spell of their success does not exit them with the slow but sure seismic shift in labor as the aging workforce depart (Kannan, 2010). Therefore, the theoretical

contribution of the study described here is to present insights into the role of knowledge sharing by senior workers in an era of workforce aging. In other words, how can an organization prevent a possible loss of knowledge, caused by the projected retirement of a relatively large amount of senior workers.

1.2 Objectives

There is a widespread agreement throughout the academic literature that many organizations, especially in the developed countries, are about to face several demographic challenges in regards to the aging topic. (Leibold & Voelpel, 2006; Kannan, 2010). One of the challenges is the possibility that large scale retirements among senior workers may lead to a loss of knowledge (Calo, 2008; Stam, 2009). Many senior workers have built up a lot of experience and organizational know-how, and therefore, they will need to share their knowledge with others or with the organizational memory system in order to avoid the possible loss of knowledge and to keep the knowledge level of the organization in balance (Calo, 2008; Slagter, 2007). Therefore, there will be a focus on knowledge sharing in this study, and not on knowledge management in general.

Furthermore, in this study, there will be a focus in this study on Japanese organizations in order to get a better understanding about which methods and practices are being used in Japan to let senior workers share their knowledge with younger co-workers or successors. The reason to collect primary data from Japanese organizations is two-fold. First of all, because Japan is, in comparison with many other developed countries, projected to face not only percentually the largest, but also the most rapid aging of their workforce and population in total (Lesser et al., 2006; Higo, 2007). Additionally, it should be noted that Japan is highly ranked compared to other developed countries when it comes to the percentage of economically active persons aged between 60 and 65 years. Second of all, Japanese researchers showed in the early 90s that the term knowledge plays an important role within Japanese organizations. In 1995 two Japanese academics, Ikujiro Nonaka and Hirotaka Takeuchi, published *The Knowledge-Creating Company*, a groundbreaking study on knowledge generation and usage in Japanese organizations (Davenport & Prusak, 1998). Therefore, it is expected that insights on Japanese organizations are trying to preserve the knowledge from the large group of mature Japanese workers who are about to retire; will be valuable for firms in Western and other developed countries with similar demographic workforce challenges. The practical relevance of the study consists of an overview of, and insights into, the methods and practices which are being used by senior workers in Japan to share their knowledge before they retire and leave the organization. Although cultural and organizational differences should be kept in mind, it is expected that insights into these methods and practices will be valuable for any organization dealing with similar workforce trends.

1.3 Research question

In sum, Japan is, compared to other developed countries, experiencing the most rapid aging of the entire population, and thus its workforce is projected to be rapidly aging as well (Higo, 2007). One of the implications of an aging workforce is the possibility that large scale retirements may lead to a loss of knowledge, skills and talents (Stam, 2009). Therefore, there is a need for organizations and managers to act and anticipate immediately, since these senior workers, who are about to retire, have a great pool of knowledge at their disposal (Slagter, 2007). Many senior workers have built up a lot of experience and organizational know-how, and therefore, there is a need for firms and managers to let senior workers share their knowledge with others or with the organizational memory system, in order to avoid the possible loss of knowledge and to keep the knowledge level of the firm in balance (Calo, 2008; Slagter, 2007; Stam, 2009). According to De Long (2004), firms most at risk are those with established traditional cultures where people have spent 20 years or more. In Japan, employment typically tends to be long-term or even for a lifetime. Hence, it is therefore expected that research on the methods and practices which are being used by Japanese organizations is useful, in order to increase our understanding on how Japanese organizations are trying to preserve the knowledge from their senior workers who are projected to retire en masse. The above mentioned results in the following research question:

Which methods and practices are, in the era of an aging workforce, being used by Japanese firms to let the senior workers, who are projected to retire en masse, share their knowledge with their younger co-workers and successors?

1.4 Research strategy

First of all, a literature review will be given. The literature section defines the problem statements keywords, and explores the constructs to arrive at a research framework. First, the two main topics, knowledge sharing methods and techniques and the demographic aging processes will be discussed separately, in order to create clarity about their content and meaning. Second, the issues will be combined and discussed in relation to each other as well as in relation to the Japanese context, after which the literature review will end in a research framework.

Further, primary data will be collected within Japanese organizations, in order to obtain the knowledge for answering the research question and meeting the research objective (Saunders et al., 2007). The findings consist of the collected data, which are then analyzed, theorized and discussed. Overall, the research strategy of this study follows a deductive approach. To a lesser extent, the study also has an explorative character, since it tries to identify if senior workers in Japan use any methods and techniques for preserving knowledge other than the ones described in the literature review.

2 Literature Review

2.1 Demographic trends

2.1.1 Aging: A worldwide trend

As mentioned earlier, there is a general agreement throughout the academic literature that aging is global. The evidence that the populations of many countries are aging rapidly due to longer life spans and decreased birth rates is undeniable (Calo, 2008). The expected change in the age structure is dramatic, and will lead to a substantially higher proportion of older people in the world (Börsch-Supan, 2004; Kinsella & Philips, 2005). However, while aging is global, there are differences in the extent and the speed of the aging processes across countries (Börsch-Supan, 2004). While the populations of more developed countries have been aging for well over a century, this process began only recently in most developing countries. However, for these less developed countries, the process is being compressed into a few decades (Kinsella & Philips, 2005).

During the coming decades, the rapid aging of populations will have a severe impact on the composition, size and costs of the available labor force (Geipel, 2003). Since a relatively large group of knowledgeable workers transitions into retirement; firms must plan for the replacement of this cohort of senior workers. But exactly which workers can be considered as senior workers? Unfortunately, there is a lack of consistency in the academic literature on who is, and who is not, a senior worker. As a consequence, it is difficult to compare and contrast demographic projections and/or the findings of demographic research. However, in this study senior workers will be considered as those aged 50 years and older. The age cut-off of 50 years was chosen, because a significant group of workers ranging from 50 to 65 years old is about to retire within the coming decades. At the same time, many countries are also facing flat, if not declining, birth rates; which reduces the amount of new workers entering the labor force (Lesser, Farrell & Payne, 2006). However, the precise implications of these processes for the workforce will vary widely between countries, regions and specific industry clusters (Geipel, 2003). The next paragraph will discuss the risks and challenges of an aging workforce.

2.1.2 The challenges of an aging workforce

Today, the workforce of most organizations has a higher overall age than at any time in history. Most of the concerns that have been expressed regarding the risks of the aging workforce involve the loss of knowledge of the retiring baby boomers; and a lower productivity level of senior workers. Strack, Baier & Fahlander, (2008) divide these concerns in relation to workforce aging into two categories, namely capacity and productivity risk. Capacity risks involve the upcoming retirement of a relatively large number of senior workers and the loss of accumulated expertise and knowledge; whereas productivity risks involve the overall effects of having senior workers still on the payroll. While age often brings valuable expertise and wisdom, age can also mean a lack of fully up-to-date skills, lowered motivation, and health problems due to job and career satisfaction or inertia. Therefore, preparing only for the retirement of senior workers, then, is an insufficient response to an aging workforce (Strack et al., 2008). However, in this study there will be predominantly a focus on organizations which face a capacity risk, since the goal of the study here is to see which methods and practices organizations have in place for the relatively large amount of senior workers to let them share their knowledge with their younger counterparts. But it is worth noting that productivity risks play a role in deciding which senior worker to select for the knowledge sharing processes, since it is likely that not all knowledge is worth sharing. Later on, this study will elaborate further on which knowledge it is that firms want to preserve.

Thus, in this study, there will predominantly be a focus on firms which are facing a capacity risk; firms which are running the risk of losing great stores of knowledge from the impending retirement of a large number of senior workers. Given the age demographics of many organizations, an unprecedented loss of human capital will occur between now and 2020, unless steps are taken to let valued long-time workers proactively share their knowledge. If this does not happen, then the knowledge of these retiring senior workers will disappear, and as a consequence, it is likely that the knowledge level of the organization will

become unbalanced (Slagter, 2007). In this study there will be, as mentioned earlier, a focus on Japanese firms, and on their methods and practices for preserving knowledge. Therefore, the next paragraph will discuss the population and workforce aging in Japan in more detail.

2.1.3 Population, labor force, and workforce trends in Japan

Demographic trends are producing a decline in the number of the Japanese population. Unless demographic trends are reversed, the Japanese population will decline in absolute size throughout the twenty-first century (Faruqee & Mühleisen, 2002). At first, the decline will be relatively small, but from 2020 and onwards the population will begin to shrink more rapidly. This decline is the direct result of extremely low fertility rates in combination with a national policy that severely restricts immigration (Clark, Ogawa, Kondo & Matsukura, 2010; Morioka, 2010). These processes severely affect the population pyramid of Japan, as can be seen in Figure 1 (see appendices). Japan went from being quite a young nation in 1950 to a middle-aged nation in 2008, and it is projected to become a remarkably old nation around 2050 (Morioka, 2010). In addition, Figure 1 (see appendices) shows that the Japanese population pyramid continues to collapse at the base due to several decades of declining and below-replacement-level fertility rates (Venne, 2001).

But the Japanese population is not only declining in numbers, it is also rapidly aging (Faruqee & Mühleisen, 2002; Komine & Kabe, 2009; Clark et al., 2010). The aging process is caused by the low-fertility rates in combination with one of the highest life expectancies in the world. In fact, the Japanese population enjoys, according to Clark et al. (2010), the highest longevity worldwide, and the share of elderly people relative to the working population is already among the highest, as can be seen in Figure 2 (see appendices). Thus, Japan is experiencing the most rapid aging of the entire population among the developed countries (Higo, 2007). In addition, Komine and Kabe (2009) are stating that compared with Europe, which was able to absorb the impact of aging over a long period of time, Japan has been forced to prepare for an aged society in a relatively short period of time. Japan became an aging society in 1970. An aging society is defined as a society with 7% or more of people aged 65 and over. In 1994, Japan became an aged society, which means that 14% of the Japanese population was aged 65 and over (Morioka, 2010). An international comparison in the speed of these processes can be seen in Figure 3 (see appendices). Since Japan is experiencing one of the most, if not the most, rapid aging of the entire population among the developed countries; careful assessment of the impact of population decline and rapid aging in Japan can provide insights and important lessons for the future of Western and other developed countries with similar demographic trends (Clark et al., 2010). Next, the extent to which the labor force and the workforce in Japan are being affected by these demographic changes will be discussed

At the level of the labor force, aging consists of an increase in the number of senior workers relative to the number of younger workers. The workforce of Japanese organizations is projected to be rapidly aging during the coming decades. The impending retirement of the post-war baby boom generation in Japan has accelerated public concerns about its impact on the already aged workforce, and the country's economic vitality in an increasingly competitive global economy (Higo, 2007). In fact, according to Higo (2007), the share of senior workers as a percentage of the whole working population is in Japan already one of the highest in the world. Thereby, the fertility rate is among the lowest. Projections for the Japanese labor force show a decline by one-third during the first half of the twenty-first century, falling from its current level of 67 million to only 42 million by 2050, unless specific policy changes are made by the government and employers (Clark et al., 2010). In addition, Japan is at the moment also one of the few developed countries to have substantive high labor force participation rates among their senior workers. As Figure 4 shows (see appendices), in 2005, the labor force participation rate for Japanese persons aged 60 and older was 34.8 percent, exceeding all other developed countries in the world.

In conclusion, the Japanese population, the labor force, and the workforce of many Japanese organizations are aging, and according to future projections, the rapid aging will continue during the coming decades. As a consequence, a relatively large number of senior workers are about to retire. Organizations should ask themselves if they have captured, or if they are planning to capture the knowledge of their senior workers whom are about to retire. The next paragraph will discuss the terms knowledge and knowledge sharing in more detail; and will make an attempt to identify which methods and techniques can be used by senior workers to share knowledge.

2.2 Knowledge

2.2.1 Defining knowledge

As Drucker (2000) has pointed out, the foundation of the 21st century organization is no longer money, capital, or technology: it is knowledge. Knowledge in organizational settings tends to be fuzzy in nature and closely attached to the individuals who hold it, challenging the efforts to define it (Ipe, 2003). Therefore, the term knowledge can have several meanings. Hence, knowledge will be considered here as a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information (Davenport & Prusak, 1998; Ipe, 2003). It originates in and is applied in the mind of the knower (Ipe, 2003). A broader definition is given by Nonaka and Takeuchi (1995), stating that information is the 'flow of messages', and that knowledge is created when this kind of messages interact with the beliefs and commitments of its holder. These Japanese authors were among the first to recognize the importance of individual workers in the knowledge creation process. Nonaka and Takeuchi argued that knowledge is created through interaction between individuals at various levels in the organization. Organizations cannot create knowledge without individuals, and unless individual knowledge is shared with other individuals and groups, the knowledge is likely to have limited impact on organizational effectiveness (Nonaka & Takeuchi, 1995; Drucker, 2000). Hence, knowledge sharing is an important strategy for developing a competitive advantage for any organization (Chua, 2003). Below, the taxonomies of knowledge will be discussed; before elaborating further on knowledge sharing.

2.2.2 Types of knowledge

The key to understanding whether a particular management support process can be effective lies in the type of knowledge to be shared. Too often it is assumed that knowledge freely exists and can be captured and shared between contexts (Fernie, Green, Weller & Newcombe, 2003). In this paragraph, the different types of knowledge will be discussed.

According to Nonaka and Takeuchi (1995), the type of knowledge can be considered on a continuum with on the one end explicit knowledge, and tacit knowledge on the other (Osterloh & Frey, 2000; Goh, 2002; Foss, Husted & Michailova, 2010). Explicit knowledge is described as knowledge that can be easily expressed or codified (Fernie et al., 2003). It is formal and systematic, and it consists of facts, rules, relationships and policies that can be faithfully codified in paper or electronic form and shared without need for discussion (Nonaka & Takeuchi, 1995). Tacit knowledge on the other hand is described as personal and context dependent, and as such differs from explicit knowledge since it is very difficult to express, formalize or communicate (Nonaka & Takeuchi, 1995; Fernie et al., 2003). Therefore, sharing tacit knowledge generally requires face-to-face contact (Osterloh & Frey, 2000). It is also generally more complex, existing in the mental models and expertise gained over time and through personal insights (Goh, 2002). As a consequence, tacit knowledge is, according to most academic studies, a crucial source of sustainable competitive advantage, because it is difficult for competitors to imitate (Nonaka, 1991; Osterloh & Frey, 2000; Foss et al., 2010). Sharing knowledge may lead to improved absorptive capacity, improved innovation capacity, and other capabilities, and therefore, to sustained competitive advantage (Argote & Ingram, 2000; Foss et al., 2010). Although the tacit-explicit knowledge classification is widely cited, there are other knowledge classifications in the academic literature present as well.

Knowledge can also be viewed as existing in the individual or collective (Nonaka, 1994; Alavi & Leidner, 2001). Individual knowledge is created by and exists in the individual according to her beliefs, attitudes, opinions, and the factors that influence her personality information (Alavi & Leidner, 2001; Connell, Klein & Powell, 2003; Popadiuk & Choo, 2006). Whereas collective knowledge is created by and resides in the collective actions of a group. It involves the norms that guide intra-group communication and coordination. (Alavi & Leidner, 2001; Connell et al., 2003; Popadiuk & Choo, 2006).

Continuously, others refer to knowledge classifications depending on its use or usefulness. Either as declarative (know-about), procedural (know-how), causal (know-why), conditional (know-when), or relational (know-with) (OECD, 1996; Alavi & Leidner, 2001; Popadiuk & Choo, 2006). Learning to master these different kinds of knowledge takes place through different channels. While know-what and know-why can be obtained through reading books, attending lectures, and accessing databases, the other types of

knowledge are rooted primarily in practical experience, and therefore, they are more difficult to codify and measure (OECD, 1996).

In sum, the challenge in knowledge management is to determine how each type of knowledge can be codified and/or shared within an organization. Organizations need to be aware that the type of knowledge is a critical factor in deciding on the type of process needed to facilitate knowledge sharing. Furthermore, several knowledge classifications can be identified in the academic literature, namely tacit or explicit knowledge; individual or collective knowledge; and procedural, declarative, causal, conditional or relational knowledge. However, in order to simplify, this study here will distinguish types of knowledge based on the tacit-explicit knowledge classification. Since this study focuses on senior workers aged 50 years and older; the next paragraph will discuss the relation between knowledge and senior workers in more detail.

2.2.3 Knowledge of senior workers

According to a study of Kanfer and Ackerman (2004) there exists a strong positive association between adult age and knowledge level. Furthermore, Warr (1994) states that the greater average experience of older individuals in a variety of domains often results in a positive relationship between age and knowledge. The knowledge of aging workers is essentially tacit, embedded in their 'memory'; in their knowledge of the professional environment; and in their relational knowledge instituted in networks of contacts (Ebrahimi, Saives & Holford, 2008). Thus, several authors indicate that there is a positive association between adult age and knowledge level.

In addition, Schultz and Adams (2007) state that there is little definitive research on the value of the knowledge of the senior workers. However, Casher & Lesser (2003) argue that intervention will be critical for those positions where the retiring senior workers hold knowledge which is of high strategic importance, and where the expected level of attrition is elevated. From here on, this kind of knowledge will be referred to when using the terms critical (or valuable) knowledge. Organizations should, according to Calo (2008), take an inventory of the organizations workforce; in order to identify those positions where the senior workers hold critical knowledge. Based upon the lengths of service, ages, and provisions of the organizations pension plan, it is possible to project the number of workers who are about to retire, or who will retire in the near future. In addition, a knowledge risk profile allows the organization to identify critical jobs that are essential to the organization, but which are currently occupied by retirement-eligible workers (Calo, 2008).

In conclusion, several authors indicate that there is a positive association between adult age and knowledge level. The knowledge of senior workers is essentially tacit, embedded in their 'memory'; in their knowledge of the professional environment; and in their relational knowledge instituted in networks of contacts. In regards to the value of the senior workers, intervention will be critical for those positions where the retiring senior workers hold knowledge which is of high strategic importance, and where the expected level of attrition is elevated. Next, since the focus of this study lies with the senior workers in Japanese firms, let us discuss the Japanese approach to knowledge.

2.2.4 Role of knowledge in Japan

The context of this study lies with firms in Japan, and therefore, the context in which Japanese firms operate will first be discussed in terms of the role of knowledge in Japan. First of all, the Japanese approach to knowledge and innovation is more heavily based on tacit knowledge rather than on explicit knowledge (Nonaka & Takeuchi, 2004). However, the Japanese acknowledge that the interaction of both tacit and explicit knowledge is necessary for new knowledge to be created (Shibata & Takeuchi, 2006). In comparison, Japanese firms have a very different understanding of knowledge compared to the Western management view of knowledge. They recognize that the knowledge expressed in words and numbers represents only the tip of the iceberg. They view knowledge, more than Western companies, as being primarily tacit. Something that is not easily visible and expressible. According to Shibata and Takeuchi (2006), tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others. This is why Japanese often resort to figurative language, metaphors, and analogies. Managers in Japan emphasize the importance of learning from direct experience, as well as through trial and error. Like a child learning to eat, walk and talk, they learn with their bodies, not just with their minds

(Shibata & Takeuchi, 2006). Thus, in comparison with the Western approach to knowledge, which is merely focused on explicit knowledge; the Japanese approach to knowledge is predominantly focused on tacit knowledge. In the next sub-chapter, the term knowledge sharing will be described, as well as the different methods and techniques available for sharing knowledge.

2.3 Knowledge sharing

2.3.1 Defining knowledge sharing

As mentioned earlier, at a minimum, one may consider four basic processes in knowledge management, namely creating, storing/retrieving, sharing, and applying knowledge (Alavi & Leidner, 2001; Dalkir, 2005). Hence, in this study, there will be a focus on knowledge sharing in particular, instead of on knowledge management in general; since organizations can prevent a loss of corporate memory by facilitating a smooth process of knowledge sharing between those who are retiring, to those who are recruited to fill their positions (Dalkir, 2005). Ipe (2003) states that knowledge sharing is basically the act of making knowledge available to others within the organization. In addition, Yang and Wu (2008) state that knowledge can not only be personally shared with other individuals in the organizations, but also through the use of repository systems (Yang & Wu, 2008). In other words, knowledge sharing between individuals is the process by which knowledge held by an individual is converted into a form that can be understood, absorbed, and used by other individuals (Ipe, 2003). It is only possible to leverage knowledge when people in an organization can share the knowledge they have, and build on the knowledge of others. An organization's ability to effectively leverage its knowledge is highly dependent on its workers, who actually create, share and use the knowledge. Bartol and Srivastava (2002) identified four major mechanisms for individuals to share their knowledge in organizations. First, contribution of knowledge to organizational databases or repository systems; second, sharing knowledge in formal interactions within or across teams or work units; third, sharing knowledge in informal interactions among individuals; and fourth, sharing knowledge within communities of practice, which are voluntary forums of workers around a topic of interest.

In addition, many academic studies acknowledge that knowledge sharing can be studied and managed at different levels of analysis, namely individual, group, or organizational knowledge sharing. Knowledge-based scholars increasingly pay attention to the linkages between the organizational or collective level of interaction and the levels of individual interaction (Foss & Minbeava, 2009). However, present research seems to agree on the thought that organizational and group knowledge sharing is ultimately rooted in individual behaviors and its drivers (Foss & Minbeava, 2009; Foss, Minbeava, Pederson & Reinholt, 2009). Thus, individuals use knowledge, and its utility can only be realized through the interaction between individuals (Yang & Wu, 2008). This study will follow this thought in present research, and consider the knowledge sharing behavior of (senior) workers as rooted in individual interaction, as opposed to in group or organizational interaction.

In conclusion, since firms can preserve the knowledge of the retiring senior workers by facilitating the knowledge sharing processes; there will be a focus on knowledge sharing in this study instead of on knowledge management in general. Knowledge sharing is basically the act of making knowledge available to others in the organization, either by sharing knowledge personally with other individuals or through the use of repository systems. Furthermore, in line with present research, knowledge sharing will be considered as rooted in individual behavior rather than at a group or organizational level. Individuals can use several methods and techniques to share their knowledge with others. Below, an attempt will be made to identify the different kind of methods and technologies for knowledge sharing known in the academic literature.

2.3.2 Methods and techniques for knowledge sharing

Basically, the academic literature identifies two groups of methods which firms use to preserve organizational memory. However, even though two groups of methods can be identified; it should be noted that there is not a clear overview of all the methods and techniques currently present in the body of academic literature. Further, it should be noted that different terms are being used in the body of academic literature for the two groups of methods, namely codification versus personalization strategy; structured

versus less structured methods; and elicitation versus exchange techniques (Hansen, Nohria & Tierney, 1999; Goh, 2002; Bartol & Srivastava, 2002; Casher & Lesser, 2003).

Hence, Casher and Lesser (2003) describe and discuss the two groups of methods in light of preserving knowledge in an aging workforce; whereas the other authors describe the two groups of methods in general (Hansen et al., 1999; Goh, 2002; Bartol & Srivastava, 2002). Therefore, the article of Casher and Lesser (2003) will be used as a starting point in an attempt to give an overview of the knowledge sharing methods and techniques which are currently present in the academic literature, and accordingly, the terms elicitation and exchange techniques will be used for making a distinction between the two groups of methods and techniques. The different methods and techniques for knowledge sharing will be described in more detail below, and where possible, the role of age, and in particular the role of seniors, will be discussed per method or technique.

Elicitation techniques

One set of methods centers on elicitation techniques. These techniques focus on working with individuals to take their tacit or explicit knowledge, and to transform it into, or share it by means of a more explicit and tangible format. Formats can range from simple written documents to multimedia formats that combine audio and visual recordings (Casher & Lesser, 2003). Elicitation techniques may be characterized as structured, and center on databases and (electronic) information systems (Goh, 2002). In any case, the primary objective of knowledge elicitation is to increase both the visibility and retention of an individual's knowledge by preserving it in some form of repository. Elicitation techniques include information and expert systems, subject matter expert interviews, and after-action reviews (Casher & Lesser, 2003). Each technique will be described in more detail below.

- *Information or expert systems*: An information system is an electronic document system that codifies, stores, disseminates, and allows for reuse of explicit knowledge. Information systems, in the form of knowledge management systems (KMS), have been regarded as effective to support knowledge sharing; since these information systems are specifically designed to facilitate the sharing and integration of knowledge (Wasko & Faraj, 2000). For example, an expert system is a kind of knowledge management system that attempts to provide an answer to a problem, or clarify uncertainties where normally one or more human experts would need to be consulted. The basic idea behind expert systems is that tacit knowledge is transferred from a human to a computer. This knowledge is then stored in the computer, and users can call upon the computer for specific advice if needed (Liao, 2004). They are designed to carry the intelligence, knowledge, and information found in the intellect of experts, and provide this knowledge to other members in the organization for problem-solving purposes. Like a human consultant, it gives advice and explains, if necessary, the logic behind the advice. Expert systems are most valuable to firms that have a high-level of expertise and experience, but which cannot be easily transferred to other members in the organization (Casher & Lesser, 2003; Liao, 2004). In regards to senior workers and their use of such information systems; Morris and Venkatesh (2000) state that age matters for technology adoption decisions. It is believed that senior workers have less ability and fewer incentives to acquire the necessary ICT skills for using technology systems. One possible explanation is that the opportunity for senior workers to interact with information technology before entering the workforce was much more limited. Thus, it is reasonable to assume that senior workers may be much more accustomed to seeking and applying non-technology solutions (Morris & Venkatesh, 2000).
- *Subject matter expert interviews*: Subject matter expert interviews are another knowledge elicitation technique that allows an organization to capture actual thoughts and words of the expert. A subject matter expert is a person who is an expert in a particular topic or area. Expert interviews are simply the solicitation of expert opinions. Interview questions are generally open ended, and the discussion can cover all areas that the expert may be knowledgeable about. Here, explicit knowledge, in the form of interview transcripts can easily be linked to documents and other knowledge artifacts to reinforce and expand learning. (Casher & Lesser, 2003; Molenaar, 2010). In case this technique is being used to preserve the knowledge of the retiring senior worker; than expert interviews are typically being conducted prior to departure. If the senior worker is willing to participate, an interview should be

organized preferably in an informal setting. The interview could be conducted by his or her successor (Haytmanek, Leavitt & Lemons, 2003).

- *After-action review*: Furthermore, after-action review techniques provide insights that are closely linked to a particular event or project. This technique provides a structured review or de-brief process for analyzing what happened, why it happened, and how it can be done better by the participants and those responsible for the event or project. Here, multiple perspectives can ensure that relevant point of views are being addressed, since all the persons involved can provide their comments and feedback in regards to the event or project. However, this technique may be time consuming, and it needs to be conducted soon after the actual event to maximize accuracy (Goldsmith, Morgan & Ogg, 2004). Although after-action review categorizes and stores explicit knowledge, the greatest value from after-action review comes from the sharing of tacit knowledge during the post-activity review (Haytmanek et al., 2003). Hence, in order for younger co-workers or identified successors to learn from the tacit knowledge of the retiring senior workers; it seems that both seniors and their successors should operate in the same team or group; therefore, the composition of the group or team seems to be of vital importance here.

Exchange techniques

While elicitation mechanisms for capturing knowledge may be used more as support for a knowledge sharing effort; exchange techniques for knowledge sharing focus more on helping individuals to make connections with other individuals or experts. In other words, knowledge exchange methods are designed to bring together knowledge seekers and knowledge sources in a way that they can interact with one another, and share tacit knowledge more effectively (Casher & Lesser, 2003). This suggests that tacit knowledge may be best shared through more interpersonal means, and using processes which are less structured (Goh, 2002). Therefore, the purpose is to create conditions where individuals can discuss experiences, engage in complex problem solving, and in some cases, observe actual work activities. Exchange techniques include training, mentoring, storytelling, communities of practice, and orientation (Casher & Lesser, 2003).

- *Training*: Training is an exchange technique that refers to the acquisition of skills, knowledge and competencies as a result of the teaching of skills and knowledge that relate to specific useful competencies. Training methods are, according to Landy and Conte (2010), generally categorized into on-site programs (e.g. on-the-job training) and off-site programs (e.g. classroom learning, simulators, e-learning). Furthermore, firms and managers should be aware of outdated material and the quality of the communication abilities of the expert (Casher & Lesser, 2003; Landy & Conte, 2010). Also, training programs should allow trainees to practice the required skills, and provide for feedback during and after practice (Landy & Conte, 2010). Even though little research could be found on the role of a senior worker as training instructor; it is likely that training allows senior workers for the sharing of both explicit and tacit knowledge with their younger co-workers, either through on-site programs (e.g. on-the-job training) or through off-site programs (e.g. classroom training).
- *Mentoring*: Another common knowledge exchange technique is mentoring. The recognition of mentoring as an important knowledge sharing mechanism has grown significantly in the past couple of decades (Swap, Leonard, Shields & Abrams, 2002). Mentoring can be, according to Henriques and Curado (2009), defined as an interpersonal relationship in which a senior (or more experienced person) helps a junior or inexperienced person in the organization. This method focuses on building close relationships that can lead to sharing tacit knowledge. Organizations can benefit from the use of mentoring relationships, as they enhance higher knowledge retention, organizational commitment, managerial succession and productivity. Organizations should keep in mind that this technique can be very time consuming and labor intensive, and it requires active and ongoing participation (Lesser et al, 2006). Mentoring can be a valid method or techniques for senior workers to share their knowledge; since senior workers are more experienced and higher-placed employees. Senior workers have the capability to interpret knowledge and situations that have no formal applicable processing rules. Mentoring programs between senior workers and their successors allows for talent development and sharing of tacit knowledge (Lindbo & Schultz, 1998; Henriques & Curado, 2009).

- *Storytelling*: Storytelling is another technique for sharing tacit knowledge. Swap et al. (2002) define an organizational story as a detailed narrative of past employee interactions, management actions, or other organizational events that are communicated informally within the firm. Sharing experiences through stories may be a powerful way to exchange and consolidate knowledge. Stories can be a very powerful way to represent and convey complex, multi-dimensional ideas. Well-told stories can convey both information and emotion, both the core and the context, and can contain both explicit and tacit knowledge (Sole & Wilson, 1999). However, Swap et al. (2002) state that stories are ideal carriers of tacit dimensions of knowledge, because of the rich contextual details encoded in stories. Lastly, no specific research could be found on the relation between the use of organizational stories and differences in age.
- *Communities of practice*: Another powerful knowledge exchange technique is communities of practice. Many firms have, according to Davenport & Prusak (1998), encouraged the formation of social groups within their firm to help stimulate knowledge flows. Wenger, McDermott & Snyder (2002) state that cultivating such social groups, named communities of practice, is a practical way to manage knowledge as an asset, just as systematically as firms manage other critical assets. Communities of practice are groups of people who voluntarily share a concern, a set of problems, or a passion about a topic, and who deepen their expertise and knowledge in this area by interacting on an ongoing basis. These people don't necessarily work together every day, but they meet because they find value in their interactions. As they spend time together, they typically share knowledge, insights, and advice (Wenger et al., 2002). However, participation is voluntary, and therefore, it may take longer for effective knowledge sharing to occur (Bartol & Srivastava, 2002). Furthermore, in order for senior workers to share their knowledge with younger co-workers or successors; the group composition of communities of practices seems to be important for firms and senior workers. However, no academic research could be found on the relation between senior workers and the group composition of communities of practice.
- *Orientation*: Furthermore, orientation can be considered as an exchange technique. Basically, an orientation period is an overlap period, limited in time, in which knowledge sharing is being facilitated into the job changeover process. This technique gives the senior worker an opportunity to exchange tacit knowledge and to discuss challenges with its successor. Time is an important aspect in this matter, since the newcomer needs to have enough time to absorb knowledge before the existing worker retires or leaves the organization. Additionally, this technique requires the existing worker somehow to be motivated to share knowledge (Casher & Lesser, 2003). Hence, no research could be found on the role of senior workers during an orientation period.

To summarize, two groups of knowledge sharing methods and techniques can be identified, namely elicitation and exchange methods. On the one hand, elicitation techniques are focused on working with individuals to take their tacit or explicit knowledge, and to transform it into, or share it by means of a more explicit and tangible format; such as information or expert systems, expert interviews, or after-action reviews. On the other hand, exchange techniques allow for effectively sharing tacit knowledge, and are designed for individuals to connect in a more interpersonal way with other individuals or experts; such as training, mentoring; storytelling; communities of practice, and orientation. The next paragraph will discuss if the academic literature indicates if senior workers have a preference for certain knowledge sharing methods and techniques.

2.3.3 Preserving the knowledge of senior workers

As described in the paragraph above, there are many viable methods and techniques for preserving the valuable knowledge of the senior workers. However, Casher and Lesser (2003) state that little research has been done on the circumstances under which knowledge sharing methods and techniques are most appropriate and effective for senior workers. In other words, even though there are many viable methods and techniques available for senior workers to share knowledge; little can be found on the preference of senior workers for certain methods or techniques under certain circumstances. Furthermore, in regards to the number of methods and techniques required for effective knowledge sharing to occur; Casher and Lesser (2003) argue that many successful efforts will combine a variety of methods and techniques to help ensure both effective capture and reuse of the knowledge to be retained.

Moreover, Casher and Lesser (2003) note that selecting the best techniques at hand is not always possible; since firms are often forced to reactively (as opposed to proactively) combat their knowledge preservation problems. However, firms should take the following steps in selecting the right method or technique for senior workers to share knowledge. First, it is important to understand what existing capabilities and infrastructure can be leveraged to achieve success and save effort and cost. While leveraging existing resources and capabilities should be considered, selecting the right approach will depend on several additional factors. These include: the reason why knowledge assets are at risk (in this case the large scale retirements of senior workers); the time horizon in which the firm must plan the knowledge preservation initiative; the extent to which the knowledge to be preserved is tacit (vs. explicit) and, therefore, difficult to capture; and the geographic dispersion between the expert(s) and the audience of the knowledge preservation initiative (Casher & Lesser, 2003).

In sum, little research can be found on the circumstances under which knowledge sharing methods and techniques are most appropriate and effective for senior workers. However, normative research indicates that firms should, after identifying the critical jobs occupied by retirement-eligible workers, select the right methods and techniques for knowledge sharing based on the existing capabilities, infrastructure and circumstances in their firm. However, all the best intentions will not achieve the desired results if the context does not encourage and support knowledge sharing (Calo, 2008), and therefore, the context of knowledge sharing in general as well as on the Japanese context of knowledge sharing in particular will be discussed next.

2.4 Context of knowledge sharing: General perspective versus a Japanese perspective

It is expected to be valuable for firms in Western and other developed countries to get a better understanding of the factors that may influence the context in which knowledge sharing occurs. Therefore, an attempt to give an overview of the individual and organizational factors that can influence the knowledge sharing process will be given; although it should be mentioned that other factors than the ones described in this study may exist. Hence, Wang and Noe (2010) identified several factors in this area; and these factors will be used as a starting point for categorizing individual and organizational factors. Furthermore, since the focus of this study lies with Japanese cases; an attempt will be made to discuss too what extent the individual and organizational factors are embedded in Japanese values and practices.

Figure 5
Individual and Organizational Factors Embedded in Japanese Values and Practices

Context of Knowledge Sharing: Individual & Organizational Factors	Underlying Japanese Values and Practices	
Individual Factors		
Motivational Factors	- Group consciousness - Seniority-based system - Uncertainty avoidance	- Very high inter-personal trust
Education and Work Experience	- Universal education - Seniority-based system	- Hierarchical relationships based on age
Absorptive Capacity	- Group consciousness	
Self-efficacy	- Life-time employment system	
Organizational Factors		
Organizational Culture	- Group consciousness	- Uncertainty avoidance
Organizational Structure	- Hierarchy based on age and seniority, education, and sex	- High power distance
Management Support	- Authority based on consensus-building - Human-relations focus	- Decision making with bottom-up element
Rewards and Incentives	- Life-time employment system	- Seniority-based system
Technologies for Knowledge Sharing	- Tacit knowledge approach	- Open access systems, regardless of position
Organizational Demographics		

A number of researchers, including Glisby and Holden (2003) and Redding and Witt (2007), have attempted to characterize Japanese work culture. Therefore, the writings of these authors will be used as a starting point. Hence, the intention here is not to give a complete overview of all the individual and organizational factors (or Japanese values and practices) at play, rather, the purpose is to show that knowledge sharing is embedded in its context. The mere reason for discussing the underlying Japanese values and practices in the following paragraph is to place the findings of this study in perspective of the Japanese context; to show that knowledge sharing does not interact independently of its context.

This sub-chapter is structured in the following way, first of all, an overview of the underlying Japanese values and practices in which the individual and organizational factors are embedded can be found in Figure 5. Second of all, the individual and organizational factor will be discussed separately. Thereby, each factor will first be discussed generally, and in addition, an attempt will be made to see to what extent it is embedded in Japanese values and practices.

2.4.1 Individual factors

First, the factors on an individual level will be discussed. These include motivational factors, education and work, absorptive capability, and self-efficacy. Each individual factor will be described in more detail below.

Motivational factors

Nonaka (1991) argues that self-transcendence is the key for facilitating the sharing of knowledge. Simply put, individuals must be motivated and willing to share and exchange knowledge. Even though overlapping; the following aspects can influence the level of motivation of an individual to share knowledge: interpersonal trust and justice, perceived benefits and costs, beliefs of knowledge ownership, and individual attitudes. First of all, trust and justice are, according to Wang and Noe (2010), two key components in interpersonal relationships; because knowledge sharing involves providing knowledge to another person with expectations for reciprocity (Wu, Hsu & Yeh, 2007). Individuals who are seen as trustworthy sources of knowledge tend to act with discretion, be consistent between word and deed, ensure frequent and rich communication, engage in collaborative communication, and ensure that decisions are fair and transparent (Abrams, Cross, Lesser & Levin, 2003). Second, research shows that perceived benefits are positively associated with knowledge sharing, while perceived costs have a negative influence on knowledge sharing (Wang & Noe, 2010). Hew and Hara (2007) found, while examining the perceived costs that might inhibit knowledge sharing, that a lack of time and unfamiliarity with the subject to be the two most frequently cited reasons for not sharing knowledge. Another motivational factor for workers to share knowledge depends on the situation whether workers believe they own knowledge themselves, rather than the organization. In the former case, workers are more likely to report that they want to engage in knowledge sharing. This result can be attributed to workers' internal satisfaction, derived from sharing their knowledge with others (Jarvenpaa & Staples, 2001). Lastly, knowledge sharing behavior is influenced by individual attitudes. Individuals' expectations of the usefulness of their knowledge, and that they can improve relationships with others through sharing, have been shown to result in positive knowledge sharing attitudes; which in turn were related to knowledge sharing intentions and behaviors (Bock & Kim, 2002; Wang & Noe, 2010).

In Japan, the willingness and motivation to share knowledge comes merely forth out of a strong attitude of corporate affiliation and a high sense of identity with the enterprise and its mission (Glisby & Holden, 2003); these attitudes are deeply rooted in Japanese cultural values, such as group consciousness (collectivism) and the seniority-based system. On the one hand, group consciousness, a concept referring to the group interest of the Japanese people rather than individual interest; inclines that the Japanese build strong personal relationships with others with whom there is a strong sense of shared fate: people in one's family, in the same company, from the same university, etc. With such people there is not only a tradition of sharing knowledge, but also considerable experience of negotiating the meanings and obligations, around which social interaction revolves. On the other hand, the seniority-based system, which traditionally links promotion and pay to seniority; allows the Japanese to see knowledge not as a source of power; creating the assumption that knowledge can, and indeed should, be openly shared within Japanese firms. In addition, interpersonal trust can be interpreted as high in Japanese society. A striking expression of this trust is that many Japanese employers do not have written employment contracts (Redding & Witt, 2007). A relatively high level of interpersonal trust seems to ensure that the Japanese engage in frequent and rich knowledge

sharing. To make that important point unambiguous, a Japanese person who does not show willingness to learn would be rapidly identified as a liability, a failure to think for the group. That would be a stigma that most Japanese would wish to avoid at all cost (Glisby & Holden, 2003). Furthermore, driven by a high level of uncertainty avoidance, the Japanese have developed a predisposition of collecting and sharing knowledge that is needed in order to minimize the impact of uncertainties. In more detail, the Japanese have a strong motivation for reducing ambiguities through sharing and seeking knowledge, and in general, they are willing to open up for new ideas, perspectives and thinking by continuously reflecting from the experience (Hong, 2010). Thus, Japanese values and practices, such as group consciousness; seniority-based system; high interpersonal trust; and uncertainty avoidance create the assumption that within Japanese firms knowledge can, and indeed should be, shared.

Education and work experience

Workers with a higher level of education and longer work experience are more likely to share their expertise, and are more likely to have a positive attitude towards sharing (Riege, 2005; Wang & Noe, 2010). Sveiby and Simons (2002) found that a collaborative climate tends to improve with a higher educational level. Furthermore, the age and the career stage of workers affect their knowledge sharing behavior through the size and utility of their social networks. Experienced workers may simply be more able to share their knowledge, because they know more of the right people in the organization (Connelly & Kelloway, 2003). However, if the differences in the level of expertise are significant, than it may become a barrier in knowledge sharing processes (Riege, 2005).

In line with the academic literature, the Japanese seem to have a collaborative climate based on educational level and work experience; since both education and work experience play an important role in Japan in one's career. The universal Japanese education system still functions in such a way, that one's career perspectives in essence depend on which university one has graduated from. Also, work experience plays an important role in one's career; since the hierarchy in relationships is mostly a function of seniority. Contrary to recent assumptions that seniority was giving way to performance-based promotions, there is no statistical evidence that the seniority principle has been weakening in Japan (Redding & Witt, 2007). A major reason is that performance always did matter in Japanese firms. The seniority-based system in Japan recognizes that 'a man grows and matures on the human and technology levels as experience accumulated through work increase, and this recognition is reflected in salary and promotion (Redding & Witt, 2007; Adhikari, Budhwar & Hirasawa, 2010). Thus, the seniority-based system, as well as the hierarchical relationships based on age, seem to suggest that the senior workers in Japan are in the position to share knowledge with their younger co-workers, and that the accumulated knowledge of the senior workers is generally considered to be growing in value through work increase.

Absorptive capability

If knowledge sharing is the input, than absorptive capacity may be considered as the output of knowledge sharing activities (Liao, Fei & Chen, 2007). The capabilities of an individual to either share or absorb knowledge affects the individual payoff of knowledge sharing (Yang & Wu, 2008). Thus, organizations have to ensure that individuals who need to interact, and work together, should have similar knowledge capacities. I.e. individuals need to have a similar knowledge base so that knowledge can be effectively shared from the source to the recipient (Goh, 2002).

In regards to similar knowledge capacities; the Japanese seem to have to a large extent similar knowledge bases. Grounded in the concept of group consciousness, the Japanese are inclined to build strong personal relationships with others with whom there is a strong sense of shared fate. As mentioned earlier, while family and school ties matter in Japan, the defining community, or 'in-group', for most Japanese is the company. This is to be seen in the context that employment tends to be long-term or even for a lifetime, and employees typically spend more hours a week at work than with their families. Moreover, with such people there is not only a tradition of sharing knowledge, but also considerable experience of negotiating the meanings and obligations, around which social interaction revolves; thus, suggesting that the Japanese have a rather similar knowledge base as the group members with whom they interact (Glisby & Holden, 2003).

Self-efficacy

Cabrera, Collins & Salgado (2006) suggest that a sense of personal competence and confidence may be a requirement for a worker to engage in knowledge sharing. The existing self-efficacy of workers can be affected by the level of autonomy and participation in decision making, and the richness of the two-way communication between the worker and the organization (Cabrera et al., 2006).

In Japan, the long-term character of employment, which ensures a high degree of alignment between the interests of employee and employer; enables that Japanese firms exhibit very high levels of delegation and of employer-employee interdependence (Glisby & Holden, 2003). This way, it seems that the self-efficacy of the Japanese is affected in a positive way. On the one hand, by high levels of delegation (i.e. participation in decision making), and on the other hand, by a rich two-way communication between the worker and organization (i.e. employer-employee interdependence). Thus, in the Japanese context, the long-term character of employment provides the Japanese workers with the necessary competencies and confidence to engage in knowledge sharing.

2.4.2 Organizational factors

Knowledge sharing can be managed by providing the context and means to manage knowledge. Several factors can be identified to influence the organizational context for knowledge sharing. Key infrastructures, such as cultural, structural, technical, and managerial enable maximization of social capital. In other words, these infrastructures do not directly influence knowledge sharing, but can help create a context in which such processes are stimulated and facilitated (Van der Hooff & Huysman, 2009). Hence, the following factors on an organizational level will be discussed below: organizational culture; organizational structure; management support; rewards and incentives; technologies for knowledge sharing; and organizational demographics.

Organizational culture

Culture may be considered as an essential factor, which not only leads to successful knowledge management, but also influences effective knowledge sharing (Goh, 2002; Yang & Wu, 2008). The culture of knowledge is described as an organizational lifestyle, which enables and initiates people to create, share and use knowledge on behalf of the organization and continuous success (Girdauskiene & Savaneviciene, 2010). De Long and Fahey (2000) identified four methods by which culture influences knowledge sharing and usage. Initially, culture creates an assumption, that some knowledge is worth to be managed, and other is not. Secondly, culture defines the relationship between individual and organizational knowledge determining who is likely to have knowledge to be transferred, and to whom knowledge should be transferred. Thirdly, culture creates the context of social interaction, which defines how knowledge will be applied in specific situations. Fourthly, culture forms the processes resulting in creation, validation, and distribution of knowledge in the organization.

In regards to Japan, first of all, the concept of familism affects the organizational culture of Japanese firms. Familism refers to Japanese togetherness and the feeling of belonging to a family; sacrificing personal or individual interest for the good of a family. With this notion, the collective utility of the family is regarded as more important than the utility of the individual members. Furthermore, Japanese organizations are regarded not only as an economic entity; they are also more significantly social organizations which value social considerations when dealing with their members. In other words, Japanese firms exist foremost for the sake of their own employees. It seems that such a high level of employer-employee interdependence stimulates open sharing and communication between the employee and the organization or other members of the organization. Furthermore, according to Hong (2010), the key cultural value affecting the knowledge sharing process can be attributed to the general level of uncertainty avoidance, which is understood as the extent of which the ambiguities and risks are tolerated by people. As mentioned earlier, driven by a high level of uncertainty avoidance, the Japanese have developed a cultural predisposition of collecting and sharing knowledge that is needed in order to minimize the impact of uncertainties. In conclusion, the organizational culture in Japan is affected by the concept of familism as well as by a high level of uncertainty avoidance. Both seem to provide for open knowledge sharing; respectively through employer-

employee interdependence and through the development of a cultural predisposition of collecting and sharing knowledge in order to minimize uncertainty.

Organizational structure

Knowledge sharing may, according to Kim and Lee (2006), also be facilitated by having a less centralized organizational structure. Breaking down the hierarchies in the organization will enable knowledge sharing behavior (Goh, 2002). An organizational structure that emphasizes centralization, rules and regulations, and control systems may serve as a barrier to knowledge sharing behavior in organizations (Goh, 2002; Kim & Lee, 2006). Knowledge in such organizations frequently becomes sticky. That means in particular, that knowledge resides in one area, and that it cannot easily be moved to other parts of the organization (Goh, 2002). It is likely that a more transparent structure will positively influence knowledge sharing behavior by providing more insights into the location of knowledge, and how to contact relevant people (Van den Hooff & Huysman, 2009). Overall, organizations should create opportunities for worker interaction to occur, and workers' rank, position in the organizational hierarchy, and seniority should be deemphasized to facilitate knowledge sharing (Wang & Noe, 2010).

The academic literature agrees on the assumption that hierarchies in the organization are barriers to knowledge sharing behavior. Hence, in Japan, there is a strong notion of hierarchy within Japanese firms. Here, the traditional criteria by which hierarchy is established are well preserved; age and education as well as the predominance of the male sex (Redding & Witt, 2007). A one-year difference in age is sufficient to define a hierarchy, typically expressed in the terms *sempai* and *kohai* (senior and junior). Once this kind of relationship is defined, the hierarchy persists one's entire life. Furthermore, it seems that these strong hierarchic relationships are accepted by the organizational members; since the power distance in Japan is regarded as high. This means that to a large extent the less powerful members in the firm accept and expect that power is distributed unequally (Davies & Ikeno, 2002). Thus, if less hierarchical structures are stimulating knowledge sharing behavior; than it seems that the strong hierarchic relationships in Japan, in combination with a high level of power distance, provide a barrier to knowledge sharing behavior in Japan.

Management support

Management support is, according to Lin (2007), one of the most important factors to influence knowledge sharing behavior. Individuals who see management as being committed to knowledge sharing will perceive a more positive knowledge sharing culture (Connelly & Kelloway, 2003; Lee, Kim & Kim, 2006). In other words, management support positively influences worker willingness to share knowledge with colleagues, both in terms of sharing and absorbing (Lin, 2007). In fact, the perception of top management encouragement of knowledge sharing intentions is necessary for creating and maintaining a positive knowledge sharing culture in an organization (Connelly & Kelloway, 2003; Lin, 2007). It appears that workers are interested in acting in accordance with management direction (Connelly & Kelloway, 2003). Therefore, management should recognize the importance of promoting knowledge sharing activities, in order to facilitate a culture of social interaction (Lin, 2007). One way by which organizations can demonstrate commitment to knowledge management is by having management assume the visible role of sharing knowledge. Other important actions include instituting policies and procedures for rewards and incentives, recognition, promoting internalization of knowledge sharing and reuse practices. Management should take on the role of exemplar, and not that of a mere coach (Kulkarni, Ravindran & Freeze, 2006). In addition, the attitudes and actions of supervisors and co-workers also influence how knowledge sharing is perceived by workers (Cabrera et al., 2006; Kulkarni et al., 2006). People who perceive their co-workers and supervisors to value knowledge sharing feel more inclined to engage in similar behavior (Cabrera et al., 2006). Organizations may find that it helps to arrange periodic meetings between and among work groups to stimulate such behavior. This may help to instill the desired knowledge culture among the individuals (Kulkarni et al., 2006).

While leadership and a strong hierarchical system is not alien to Japanese firms, decision-making is typically consensus-driven and involves a strong bottom-up element. This is consistent with the general conviction that Japanese management is human-relations focused and participatory in style. Within Japanese firms, there is no clear-cut division of functions between information-processing and decision-making on the one hand, and operational implementation on the other. Thus, the former function is never

limited to management, and operational workers also participate in considerable collective decision-making. As an example of working holistically and combining the knowledge of all employees, let us consider the Japanese ringi system. This is an integral part of decision making in most Japanese organizations, and the system implies that decisions begin as a plan or idea drafted by top or middle management. Thus, in line with the strong hierarchical structure within Japanese firms, the initiative starts at top or middle management. Accordingly, this plan is then circulated as a draft document among all employees who then suggest modifications that are successively incorporated into the original draft. Basically, the ringi system encourages input from all employees, excluding in principle no one from the consultative decision-making process (Glisby & Holden, 2003). In conclusion, consensus-driven management support, with a strong bottom-up element, seems to stimulate open knowledge sharing; resulting in management practices such as the Japanese ringi system.

Rewards and incentives

According to Hansen et al. (1999), people need incentives to participate in the knowledge sharing process. Managers need to reward people for sharing knowledge directly or indirectly with other people (Hansen et al., 1999). Incentives, including recognition and monetary rewards, have been recommended as interventions to facilitate knowledge sharing, and help to build a supportive climate. In fact, a lack of incentives has been suggested to be a major barrier to knowledge sharing across cultures (Wang & Noe, 2010). In addition, Bartol and Srivastava (2002) identified several mechanisms of knowledge sharing, and suggest that each mechanisms should be rewarded accordingly. Firstly, knowledge contributions to databases enables organizations to record, measure and reward knowledge sharing accordingly. Second, the reward allocator is likely to observe, track and weight the knowledge sharing behavior of individuals in formal interactions. In the case of formal interactions, it is also likely that knowledge sharing behavior will be influenced by incentives based on group or company performance (e.g. team-based rewards, gain sharing, profit sharing, and/or worker stock options). Furthermore, in the case of informal interactions, rewards can still be contingent on knowledge sharing behaviors observed by multiple sources over a certain period of time (e.g. 360 degree appraisal systems).

In contrast with the assumption that people need monetary incentives to participate in knowledge sharing; it seems that the Japanese generally do not require monetary incentives for their knowledge sharing behavior. In addition, the fact that employees will stay for the long-term, and are rewarded according to job tenure, generally prevents workers from seeing knowledge as a source of power and concealing it from obtaining personal gains (Hong, 2010). Whilst this view dominates, competition among individuals in the same corporation tends to give way to cooperation, under which the sharing of knowledge is not felt to jeopardize the power or status of people (Glisby & Holden, 2003).

Technologies for knowledge sharing

Many organizations that are striving to increase knowledge sharing among their workers create or acquire a database or knowledge repository, where workers contribute their expertise electronically to the organization in a way that can be accessed by other workers within the organization (Connelly & Kelloway, 2003). Hence, it is worth noting that the technologies referred to here; provide for the infrastructure for information systems and knowledge management systems, such as expert systems. Technologies for knowledge sharing offer a number of advantages. Communication can be nearly instantaneous, even across a wide geographical separation. Thereby, most technologies are non-intrusive, that is, they can be accessed at the convenience of either party, and they may be well-suited for shy workers who prefer to avoid face-to-face interaction (Connelly & Kelloway, 2003; Lee et al., 2006). However, all knowledge simply cannot be stored on a computer, or in a database, even if it houses the most sophisticated technology system available. Due to the complexity of the (tacit) knowledge involved, and the time and expense required to input it. Also, when knowledge is separated from its appropriate context, it loses much of its richness and value (Connelly & Kelloway, 2003).

Since the knowledge approach of Japanese firms is focused on tacit knowledge; it is likely that the Japanese use knowledge sharing technologies foremost in a supporting function. Furthermore, the knowledge within databases and repositories is predicated on free access to company knowledge. In Japan, knowledge may be stored in a single integrated database; open to any employee regardless of position in the hierarchical

structure (Glisby & Holden, 2003). Glisby and Holden (2003) argue that the general absence of inter-departmental rivalry and the tendency of employees not to abuse company information (a culprit would suffer almost unbearable loss of face), make open systems more straightforward in Japanese firms.

Organizational demographics

Although they have not received much attention in the academic literature on knowledge sharing behavior, certain demographic variables may also influence whether a worker will choose to share their knowledge (Wang & Noe, 2010). For example, the size of the organization may be related to knowledge sharing behavior. Workers in smaller organizations are more likely to rely on each other, and to interact with each other socially (Connelly & Kelloway, 2003). In addition, no information could be found on the embeddedness of demographic variables in Japanese values and practices.

Overall, on an individual level, factors such as motivation; education and work; absorptive capability; and self-efficacy can influence knowledge sharing. On an organization level, factors such as organizational culture, organizational structure; management support; rewards and incentives; technologies for knowledge sharing; and organizational demographics can affect knowledge sharing behavior. However, these factors are context dependent, and embedded in Japanese values and practices. While strong hierarchic relations tend to be a barrier against knowledge sharing; other underlying Japanese values and practices, such as familism, group consciousness, uncertainty avoidance, high power distance, high interpersonal trust and management practices such as the life-time employment system, universal education system, and the senior based system all seem to provide for a kind of natural backdrop for the willing and open sharing of knowledge. Furthermore, the Japanese context for knowledge sharing seems to create the assumption that senior workers in Japan possess valuable knowledge; since the seniority-based system recognizes that the knowledge and experience of seniors accumulates according to age. In addition, the fact that employees will stay for the long-term, and are rewarded according to job tenure, generally prevents workers from seeing knowledge as a source of power and concealing it from obtaining personal gains. Lastly, in regards to relationships between senior and juniors; these relationships are based on age, which means that relations with seniors are regarded as more important than relations with others. Overall, even though relatively strong hierarchical structure are applied within Japanese firms; one can presume that senior workers in Japan are active in a climate which is rather open to knowledge sharing. In the next paragraph, the research framework of this study will be discussed.

2.5 Research framework

As mentioned earlier, many firms are at the forefront of the so-called baby boomers to retire en masse (Calo, 2008). The problems associated with the aging workforce trends are exacerbated by the demands of an increasingly knowledge-based economy. Nowadays, knowledge is considered by most organizations to be a critical organizational asset and an important economic resource (Nonaka, 1991; Casher & Lesser, 2003; Stam, 2009). Therefore, the valuable knowledge of the baby-boom generation needs to be shared with younger generations before they retire. Several authors indicate that there exists a strong positive association between adult age and knowledge level (Kanfer & Ackerman, 2004; (Ebrahimi, Saives & Holford, 2008). Knowledge about the organization; about the processes within the organization; and other critical organizational knowledge needs to be shared with the next generation of workers. As discussed earlier; there are many viable techniques available to help ensure both effective capture and reuse of the knowledge to be retained. Hence, in this study there will be a focus on the methods and practices being used for knowledge sharing in Japan. The rapid aging of the Japanese population and workforces exceeds the aging processes of all other developed countries. Therefore, it is expected that insights into the methods and practices being used by Japanese organizations to preserve the knowledge from the senior workers whom are about to retire, will be valuable for firms in Western and other developed countries with similar demographic trends. The above mentioned results in the following main research question:

- i) *Which methods and practices are, in the era of an aging workforce, being used by Japanese firms to let the senior workers, who are projected to retire en masse, share their knowledge with their younger co-workers and successors?*

In more detail, an attempt will be made to analyze the knowledge sharing methods and techniques which are being used by senior workers, and to discuss the findings along several dimensions. Namely, the differences regarding the size of the firm and the industry it is operating in; the timeframe for the knowledge sharing processes; and the combinational usage of knowledge sharing methods and techniques. Since the Japanese approach to knowledge is more heavily based on tacit knowledge rather than explicit knowledge, and since it is likely that the critical knowledge that needs to be shared is tacit knowledge residing in the minds on the senior workers; it is assumed that Japanese organizations will predominantly use exchange techniques to prevent the loss of valuable knowledge. The use of elicitation techniques is less likely, since tacit knowledge is very difficult to express, formalize, and communicate. However, it is expected that elicitation methods are being used as supporting techniques.

Furthermore, several researchers point out that most firms are not fully aware of the consequences that the retirement of the baby-boom generation, and the accompanied loss of their knowledge, can have on the knowledge level of their firm (Ekamper, Remery, Henkens & Schippers, 2003; Slagter, 2007; Calo, 2008). Unless steps are taken to proactively share the knowledge and expertise from valued long-time workers; then this knowledge will disappear and the knowledge level of many organizations will become unbalanced (Slagter, 2007). Since several authors indicate that most firms are not aware of the demographic projections; an attempt will be made to see too what extent firms and institutions in Japan are aware of the aging of the workforce, which results in the following sub question:

- a) *Too what extent are firms in Japan aware of the current and/or projected aging of the workforce, and the possible consequences for the knowledge level of the workforce?*

Based on the fact that Japan already has one of the most rapid aging societies, and on the projections that the Japanese society and labor force will age further; it is expected that most firms are in fact aware of the demographic situation in general, as well as about the demographic projections for the workforce in particular.

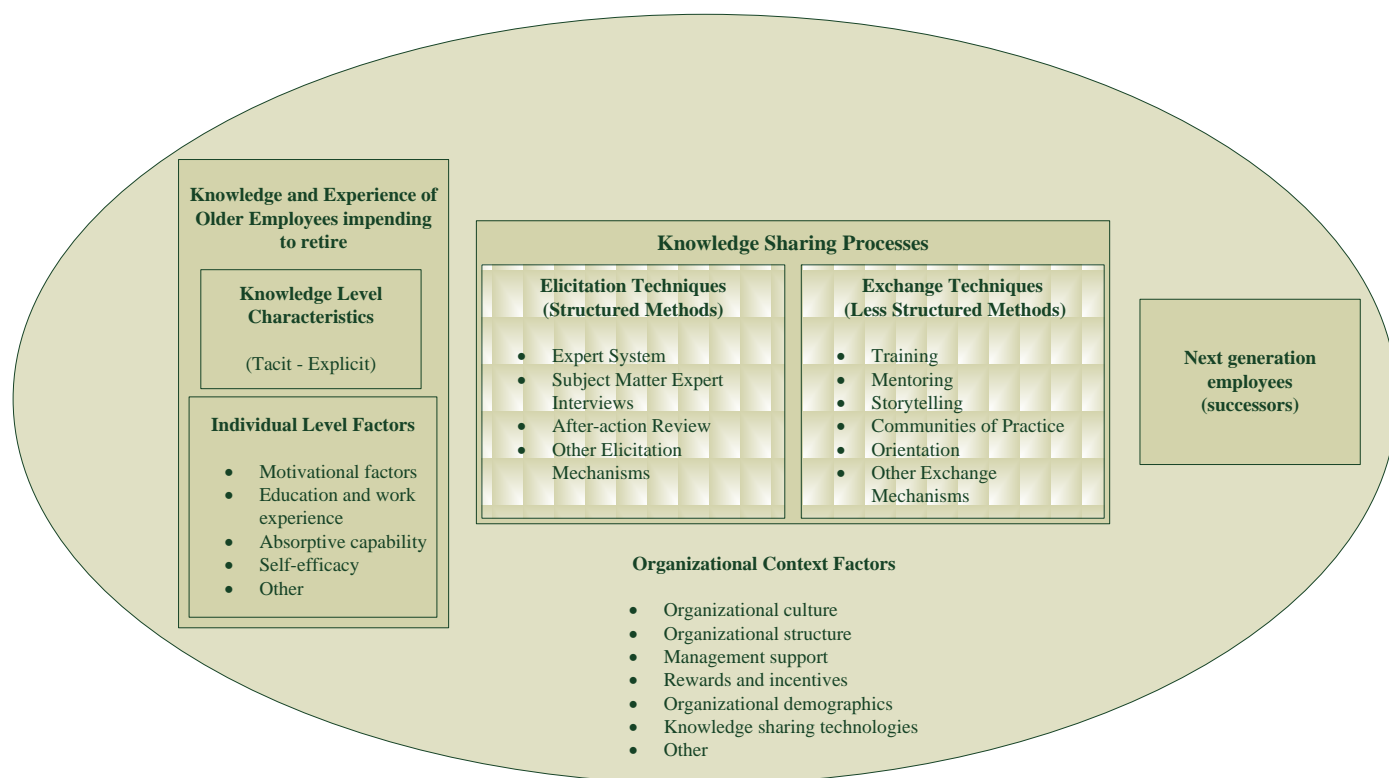
Lastly, as described in the literature review, individual and organizational factors which can affect knowledge sharing behavior; are embedded in the Japanese values and practices. In this study, it is assumed that knowledge sharing is embedded in its context; and therefore, an attempt will be made to see which individual and organizational factors affect the knowledge sharing processes within Japanese firms. This assumption results in another sub question:

- b) *Which contextual individual and organizational factors affect the knowledge sharing processes within Japanese firms?*

Based on the literature review, in which the embeddedness of the individual and organizational factors in Japanese values and practices has been discussed; it is expected that the Japanese context provides for a kind of natural backdrop for the willingness and openness on sharing knowledge. Even though the relatively strong hierarchic relations in Japan is supposed to be a barrier against knowledge sharing; it is expected that the other underlying Japanese values and management practices, such as familism, group consciousness, uncertainty avoidance, high power distance, high interpersonal trust, the life-time employment system, universal education system, and the senior based system all together provide for a climate which is predominantly open to knowledge sharing. In regards to the individual factors, it is expected that all the factors play a significant role. In regards to the organizational factors, it is assumed that motivational factors play a more significant role than other factors, since Nonaka (1991) argued that self-transcendence (motivation) is the key for facilitating the sharing of knowledge. In regards to organizational factors, it is expected that rewards and incentives influence knowledge sharing behavior to a lesser extent than the other organizational factors; since workers are generally prevented from seeing knowledge as a source of power and concealing it from obtaining personal gains, because of the fact that employees will stay for the long-term, and are rewarded according to job tenure.

To conclude this paragraph, Figure 6 shows the research framework for this study; based on the literature review. In the next chapter, the methods for collecting data will be described in more detail.

Figure 6
Research framework



3 Methodology

3.1 Data collection methods

The nature of this study is both quantitative and qualitative, and has predominantly a descriptive character: the identification of methods and techniques being used in Japanese organizations in order to preserve the knowledge from the senior Japanese workers whom are about to retire. A semi-structured questionnaire was chosen as the main data collection method. An internet-mediated questionnaire is expected to provide adequate data to answer the “how” question (Saunders, Lewis & Thornhill, 2009). In the questionnaire, a mix of open, probing and closed (specific) questions has been used. The closed questions will be analyzed through a quantitative data analysis, whereas, the open questions will be analyzed through a more qualitative data analysis. In addition, the questions in the semi-structured questionnaire also allow this study, if necessary, to approach a more explorative character. As said before, a comprehensive overview of all the techniques and methods being used for knowledge sharing is currently not present in the academic literature. Therefore, several questions contain a more explorative character which allow respondents to note and elaborate on methods and techniques which are being used in their firm, but which are currently not present in the academic literature.

Furthermore, the structure of the questionnaire was divided in three sections, namely demographic information; methods and techniques being used for knowledge sharing in the respondent’s company; and the individual and organizational factors that influence the knowledge sharing processes. In addition, a follow-up e-mail with an open question has been send to question if the respondents firm is aware of the demographic aging in Japan. The reason for sending an additional follow-up e-mail in addition to the questionnaire, is because the respondents level of awareness on the aging topic was believed to be a valuable addition. Since the data collection process had already been started; the follow-up e-mail has been added to this study in a later stadium. Below, the three sections of the question, and the follow-up e-mail, will be described in more detail.

Measuring the demographic information of the respondent firms

In the first section, the respondents were questioned about the number of workers in total within their firm or Japanese branch (*‘How many employees are currently employed within your organization, or Japanese branch?’*); as well as about the number of senior workers aged 50 years and older (*‘How many of them are aged 50 and over?’*).

Measuring the knowledge sharing methods and techniques being used within the respondent firms

In the next section, the participants were asked about the methods and techniques being used in their firm in general (*‘Which methods and techniques are being used for sharing knowledge in your organization?’*); as well as about the methods and techniques (specifically) in place for the senior workers (*‘In particular, which methods and techniques are being used by older employees (50+) to share knowledge with their younger colleagues/successors?’*). This, in order to see to what extent Japanese firms have methods and techniques (specifically) in place for the senior workers in comparison with the workforce as a whole. The methods and techniques found in the academic literature were mentioned here in the form of a checklist; in addition, the respondents had the opportunity to elaborate on this checklist by giving additional comments or notes (*‘Please describe in more detail below.’*). In addition, the respondent were asked about the availability of knowledge sharing methods and techniques for senior workers in the period right before retirement (*‘In order to preserve the knowledge of the senior employees, are there in your organization any methods or techniques specifically in place to allow an older employee to share knowledge in the period (1 or 2 years or so) before he/she retires or leaves? If yes, please describe in more detail below.’*). This, in order to give an indication about the timeframe in which Japanese firms let their senior workers share knowledge.

Measuring the contextual individual and organizational factors which influence knowledge sharing within the respondents firms

In the last section, the respondents were firstly asked about the organizational factors that influence the knowledge sharing processes in their firm (*'Which of the following organizational factors influence the knowledge sharing processes in your organization?'*). Hence, the organizational factors currently present in the academic literature, and discussed in the literature review, were given in the form of a checklist, and the respondents had again the opportunity to give comments or notes in addition to the checklist (*'Please describe in more detail below.'*). Secondly, the same set-up structure has been used for the question in which the respondents were asked about the individual factors that influence the knowledge sharing processes within their firm.

Measuring the level of awareness of the respondent firms about the (projected) aging workforce trends

In addition, a follow-up e-mail with an open question has been send to question if the respondent firms are aware of the demographic aging in Japan; and in which way the respondent firms are, if necessary, anticipating the aging of the workforce (*'As you might know, the Japanese workforce is projected to age and shrink rapidly in the coming decades. Is your firm aware of these processes, and is your firm anticipating the projected aging and shrinking of the Japanese workforce in one way or another?'*). Lastly, a complete overview of the questionnaire and the additional question per e-mail can be found in the appendices (see 7.3 and 7.4)

It should be noted that making initial contact with a Japanese firm or institution was, and is, not an easy task; because the proper Western approach can be improper and ineffective in the Japanese context. Writing a letter requesting an appointment, making a telephone call, and paying a visit in person are usually considered impolite and discourteous in Japan (Nishiyama, 2000). "Making initial contact can be challenging in Japan. You have to build a network. People have to trust you" (Kuriakose, 2010). Even though the questionnaire has no purpose towards business ends, the way of initiating contact in the Japanese culture will be respected in regards to contacting Japanese firms with the questionnaire. The way of contacting persons and firms in Japan has predominantly been done through 4 months of purposive (online) networking. Furthermore, the questionnaire has been given a bilingual character, and confidentiality in regards to the name of the respondent and the name of their firm has been offered. All in order to increase the comfort level for the respondent.

As mentioned above, the questionnaire was given a bilingual character. A professional translation agency translated the questionnaire into Japanese, in order to prevent a possible language barrier as well as to increase the understanding and accessibility for the respondents. Also, the respondents were allowed to fill out the questionnaire in either English or Japanese. The questionnaires filled out in Japanese were translated into English by the same professional translation agency. Furthermore, the questionnaire was pre-tested to evaluate it for clarity, ambiguous questions, bias, and relevance to the designated knowledge sharing processes in Japanese firms. In regards to the form of pilot-testing; the questionnaire was pretested by a small group of actual respondents in order to refine the measuring instrument. Three respondents offered valid feedback and advice that was considered sufficient for serving the pilot study. Only minor changes were required to the questionnaire after this stage. Lastly, following-up occurred in all the cases where the content of the open questions was unclear.

3.2 Sample

A non-probability technique will be used for the sample in this study, namely purposive (or judgmental) sampling. The reasons for this choice include that no statistical inferences are desired, and that this technique allows for selecting cases that are particularly informative (Saunders et al., 2009). The units in the sample exist of firms and institutions in Japan. However, no particular industry has been chosen for the selection of the Japanese respondents. The reason for this decision is that organizations in different industries may use different techniques for sharing and preserving knowledge.

The data collection process followed the following three stages. In the first stage, the semi-structured questionnaire has been send digitally to approximately 1500 small, medium and large firms and institutions in Japan; with the question if he or she was willing to participate. No semi-structured questionnaire had been included yet in this stage. In the second stage, out of the 174 responses; 67 respondents indicated that they were willing to participate. The other respondents which were not willing to participate, indicated that

they were either too busy or not interested. The reason for the relatively low participation rate (4,5%) can only be guessed upon. Perhaps it is the sensitive approach with which the Japanese openly share information about their firm with others that explains the relatively low participation rate. Hence, the semi-structured questionnaire has been send to the 67 respondents who were willing to participate; who filled out the semi-structured questionnaire and returned it by e-mail. However, not all these 67 respondents were included in the sample size. Based on two criteria, 55 respondents were selected, all in order to exclude the non-relevant respondents. First of all, regardless of size, only those firms of which the senior workers represent 5 percent or more of the firm's workforce were allowed to participate. A limit of at least 5 percent of senior workers has been used here in order to exclude those firms with no or with a relatively low percentage of senior workers. It is very likely that these firms are not relevant enough as participants, since the focus of this study lies with the senior workers of 50 years and older. Second of all, those firms, which do not have any knowledge sharing methods or techniques (particularly) in place for their senior workers, were excluded from the sample size. In the selection process, these criteria were used in order to create a sample size which consists out of relevant cases only. Eventually, 55 firms were included for analyzing the semi-structured questionnaire. In the third and last stage, an e-mail has been send to the 55 respondents with the open questions if the respondents firm is aware of the demographic projections, and if the respondents firm is anticipating workforce aging in one way or another. As stated earlier, the reason for sending an additional follow-up e-mail, is because the awareness topic was identified as a valuable addition in the middle of the data collection process, and has therefore been added to this study in a later stadium.

Additionally, several participants noted that they were willing to participate, but only if their name; position; and the name of their company would not be mentioned in this study. These wishes in regards to their privacy will be respected, and in order to maintain a level of consistency in this study, only the type of firm or the name of the industry in which the 55 firms are operating will be mentioned.

3.3 Data processing and analysis

The collected data will be analyzed, theorized and discussed. The breadth of coverage of many people or events means that it is more likely than some other approaches to obtain data based on a representative sample, and can therefore be generalized to a population (Saunders et al., 2009). The methods and practices which are being used within Japanese organizations to share and preserve the knowledge from the senior workers will be analyzed and described based on the following: the existing academic literature, the quantitative and qualitative data analysis of the semi-structured questionnaire; and the validation of the findings by several subject-matter experts. Additionally, if necessary, methods and/or practices for knowledge sharing which are currently not present in the academic literature will be described in more detail.

To provide statistical support for research propositions and questions, the closed questions of the internet-mediated questionnaire will be analyzed by using general descriptive analysis, processed by SPSS version 17.0. Furthermore, the findings based on the descriptive analysis will be illustrated by the notes and comments given by the respondents in the open-ended questions. In addition, the illustrative quotes, that were thought to be relevant as additional information or as illustrative quotes, were selected by the author of this study. Excluding the comments and notes that were thought to be not relevant enough to support the findings of the descriptive analysis. Next, the findings and analysis of this study will be dealt with.

4 Findings & Analysis

4.1 Respondent profile summary

First, a respondent profile summary will be given. Table 1 displays the positions of the respondents; the size of the respondents firm; the industry the firms are operating in; and the level of awareness of the respondents about the aging workforce trends in Japan.

Table 1
Respondent Profile Summary

		Frequency	Percent
Position	Managing Director	41	74,5
	HR Manager or HR Department	6	10,9
	Unknown	8	14,5
	Total	55	100,0
Size	Large Firms	27	49,1
	Small & Medium Firms	23	41,8
	Unknown	5	9,1
	Total	55	100,0
Industry	Services	32	58,2
	Manufacturing and Others	19	34,5
	Retail / Wholesale	4	7,3
	Total	55	100,0
Industry Profile Extended	Manufacturing (Low-Medium Technology)	6	10,9
	Manufacturing (High Technology)	13	23,6
	Retail/Wholesale	4	7,3
	Financial Services	9	16,4
	Consultancy and Communications Services	11	20,0
	Computer and Information Services	5	9,1
	Transportation Services	5	9,1
	Travel and Recreational Services	2	3,6
	Total	55	100,0
Level of Awareness	Aware of Aging Workforce Trends	28	100,0
	Unaware of Aging Workforce Trends	0	0,0
	Total	28	100,0

Additionally, the respondent profile summary will be discussed and analyzed in more detail before continuing with the analysis of the findings of the semi-structured questionnaire. First, the definition used for the categorization in size and industry will be described, and second, the level of awareness of the respondent firms about the aging workforce trends will be analyzed. Furthermore, in regards to the structure throughout the analysis, it should be noted that the quantitative results of the questionnaire will firstly be given and discussed per topic. Second, if available, qualitative results of the questionnaire will be given, merely to illustrate and exemplar the findings of the quantitative analysis.

4.1.1 Categorization of respondent firms in size and industry

In regards to the size of the firm; the respondent firms were categorized either as a small or medium enterprise (SME) or as a large firm, based on the definition of the SME Agency.

Table 2
Definition for Small and Medium Firms in Varied Industries

Industries	Number of employees
Manufacturing and Others	300 or less
Wholesale	100 or less
Retail	50 or less
Services	100 or less

Source: Small and Medium Enterprise Agency (2011)

Firms in Japan can be categorized; based on the industry it is operating in, and on the number of employees within in the firm. The SME Agency considers itself as a supporting framework of the Japanese economy, and its most important tasks are providing strong backup to energetic SMEs and integrating/upgrading existing laws and regulations in regards to SMEs. Table 2 displays the definition of the SME Agency for SMEs.

Likewise, the respondent firms were categorized based on the industry categorization in the definition of the SME Agency, see Table 2. The definition allows us to divide the firms in the following industries: service industry; manufacturing and others; and retail/wholesale. Most of the respondent firms are active in the service industry, representing 58,2 percent of the sample size. Furthermore, 34,6 percent of the respondent are operating in the manufacturing industry. However, a certain level of wariness is needed when analyzing the retail and wholesale industry, since only 7,27 percent of the sample size represents firms from out of these two industry categorizations. In more detail, Table 1 (see tab Industry Profile Extended) allows for a better understanding of the types of firm that participated in this study. The overview gives us a better insight in the diversity of the respondent firms. However, it lies not in the scope of this study to analyze each of these categorized industries, since the validity and generalizability of the relatively small sample sizes would become highly questionable. Next, the level of awareness of the Japanese firms about the aging workforce trends will be analyzed.

4.1.2 Respondent level of awareness of the aging of the Japanese workforce

In a response to a follow-up e-mail to the questionnaire send to 55 respondents; 28 respondents answered the open question about the level of awareness about the demographic trends, and if their firm is anticipating to the workforce aging projections or not. All the 28 respondents acknowledged to be aware of the projected aging and shrinking of the Japanese workforce. Therefore, it seems that the level of awareness of the firms in Japan in regards to the projected demographic changes in Japan can be addressed to as high. However, a certain level of wariness is needed; since only 28 out of the 55 participants (50,9%) responded to the follow-up e-mail. The quote of a respondent of the Japan Senior Research Institute (JSRI) illustrates the responses of the 28 respondents who acknowledge to be aware of the demographic trends:

“In Japan, the declining birthrate and a growing proportion of elderly people is a big issue. Everybody knows this.” (Unknown position - Research Institute in Japan)

However, the responses in regards to the consequences of the demographic projections differ substantially. Most of the respondent firms, in 23 out of 28 cases, actively pursue to maintain a healthy organization. Hence, these respondent firms actively make an inventory of their workforce, and consequently, a succession plan and/or graduate intake program has been put in place. Below, the quotes of the two participants illustrate that their firm uses a staffing or succession plan:

“My firm certainly is abreast of the market and social trends in Japan and formulates plans and measures to address the critical issues. We have started a few years back with a strategic approach in staffing plan in order to maintain organizational health in longer term. Based on the pattern of average attrition in the past years, a target percentage of hiring, out of the anticipated total hires each year, is allocated to fresh graduates.” (CEO/Managing Director - Telecom firm)

“We have a robust succession planning model in place in our organization that allows us to be strategic in our workforce planning. As part of this process, we identify high-potential employees early in their career and then map out a career progression plan for them that helps to give them the necessary experiences they will need to eventually replace our existing leaders in the future. As the workforce in Japan ages, we are constantly developing the next generation of leaders to replace those who retire.” (HRM position - Manufacturer of construction equipment)

In contrast, the minority of the respondent firms (in 5 out of 28 cases) is not worried about the impact of the projections on their workforce (at this point in time). On the one hand, these respondent firms are aware of the demographic trends, but on the other hand, they emphasize the opportunities that the retirement of the baby-boom generation can create. The following quote of the respondent below illustrates this:

“Our firm is not concerned about this at all. I guess many Japanese firms welcome the seniors of the baby-boom generation to retire soon, as they can now shift the working force to younger generations from expensive elder workforces. This will also solve the problem of many young people who cannot find

jobs today, even after college graduations. In addition, Japanese firms, today and in the future, will start taking advantage of hiring more woman workforces or excellent foreign workers who can well communicate with the world.” (Unknown position - IT firm)

Overall, the 28 responses to the follow-up e-mail, suggest that there is a relatively high level of awareness of the projected demographic changes among the firms in Japan. However, a certain level of wariness is needed; since only 28 out of the 55 participants (50,9%) responded to the follow-up e-mail. Furthermore, the expected future effects on the workforce differs per firm. In 23 out of 28 cases, the respondents indicate that they are aware of the possible consequences of an aging workforce, and are anticipating by actively making an inventory of their workforce, and consequently, putting a succession plan and/or graduate intake program in place. Hence, in 5 out of 28 cases, the respondents indicate that, while they are aware of the demographic projections, they are not overly concerned to respond directly. Next, the knowledge sharing methods and techniques which are being used by senior workers in Japanese firms will be analyzed.

4.2 Knowledge sharing profile: Senior workers

The intention of this study is to see which methods and techniques, if any, firms in Japan use to let the baby boom generation share their valuable knowledge before they retire en masse. In the following paragraphs, the data gathered will be analyzed along several dimensions, namely combinational usage of the knowledge sharing methods and techniques; the timeframe for the knowledge sharing processes of senior workers; differences in size; differences in the industries in which the firms are operating; and the individual and organizational factors which influence the knowledge sharing process. But first, the knowledge sharing methods and techniques that are available for senior workers in Japanese firms will be analyzed; as well as compared to the knowledge sharing methods and techniques available for the workforce as a whole.

4.2.1 Knowledge sharing methods and techniques for senior workers

Hence, as stated earlier, the firms were purposively sampled in such a way that they were expected to have methods or techniques in place which are being used (more intensively) by senior workers, or which are specifically in place for the senior workers in their firm. Therefore, one should be wary of generalizing the results of the descriptive analysis for all the firms in Japan. Rather, it gives an indication or overview of the knowledge sharing methods and techniques which are being used by firms once they have put practices in place to stimulate senior workers to share knowledge.

Table 3
Methods and Techniques for Knowledge Sharing

Methods and Techniques for		Workforce in General		Senior Workers in Particular (50+)	
		Responses		Responses	
		N out of 55	Percent of Cases	N out of 55	Percent of Cases
Methods and Techniques	Training	46	83,6%	25	45,5%
	Mentoring	39	70,9%	29	52,7%
	Storytelling	23	41,8%	23	41,8%
	Communities of Practice	14	25,5%	3	5,5%
	Information Systems	33	60,0%	5	9,1%
	Expert Interviews	6	10,9%	2	3,8%
	After Action Review	24	43,6%	5	9,1%
	Orientation Period	19	34,5%	3	5,5%
	Other	19	34,5%	16	29,1%
Total Number of Methods and Techniques		223	405,5%	111	201,8%

n = 55

Above, Table 3 shows the frequency usage of the methods and techniques for knowledge sharing in numbers and percentages. The respondents were asked, at first, which methods and techniques are being used by their workforce in general to share knowledge, and second, which methods and techniques are being used by the senior workers in particular. This way, the structure of the questionnaire allowed for a comparison of the methods and techniques being used in the workforce in general, with the methods and techniques being used by senior workers in particular. The reason behind such a structure lies with the

thought that such a comparison would contribute to a better understanding of the methods and techniques being used by senior workers as well as the extent to which methods and techniques are (specifically) put in place for senior workers to share knowledge.

When we compare the knowledge sharing methods and techniques which are being used in the workforce in general, with the methods and techniques being used by the senior workers in particular; then it seems that the respondent firms in Japan do not have as many methods and techniques at hand for their senior workers as they have for their workforce in general. The workforce in general uses on average approximately 4 methods or techniques per firm for sharing knowledge ($223 / 55 = 4.05$); whereas the senior workers on average use approximately 2 methods or techniques per firm for their knowledge sharing processes ($111 / 55 = 2.02$). Furthermore, the quantitative analysis indicates that the workforce as a whole uses training (83,6%), mentoring (70,9%) and information systems (60,0%) most frequently to share knowledge; whereas the senior workers most frequently use mentoring (52,7%); training (45,5%) and storytelling (41,8%). It seems that both training and mentoring are being used most frequently by the senior workers as well as by the workforce in general to share knowledge. Even though mentoring is the technique which is being used most frequently by senior workers; whereas training is the technique which is being used most frequently by the workforce in general. Furthermore, in regards to storytelling, the findings seem to suggest that is likely that senior workers use storytelling when the organizational environment allows for this technique; since storytelling has been used by senior workers in 23 out of the 23 cases in which it is available as a knowledge sharing technique for the workforce as a whole. Additionally, it is noteworthy that, while in 60,0% of the cases the participant firms use an expert or information system for their workforce as a whole; that the senior workers only use these kind of systems in 9,1% of the cases. Lastly, it is worth noting that the senior workers as well as the workforce as a whole use other methods or techniques than the ones found in the academic literature, in respectively 29,1% and 34,6% of the cases. For their workforce in general, the respondents referred to the following methods and techniques: official meetings/communication sessions; e-learning; job rotation systems; noncommunications (after-work drinks/ communication); subject seminars; advisory role; and the use of a manual or guidebook; whereas the respondents only referred to the use of the following methods and techniques by the senior workers in their firm: job rotation systems; noncommunications (after-work drinks/communication); advisory role; and the use of a manual or guidebook.

Now that we analyzed the differences between the workforce in general and the senior workers; let us use the quantitative and qualitative results to analyze the methods and techniques being used by senior workers in more detail. First of all, the methods and techniques which are being used most frequent by the senior workers of the participant firms will be analyzed. Table 3 suggest that senior workers in Japan most frequently uses mentoring, training and storytelling to share their knowledge with their successors; and these methods and techniques will therefore be included in the analysis below. In comparison, information systems (9,1%); after-action review (9,1%); communities of practice (5,5%); orientation periods (5,5%); and expert interviews (3,6%) are being used to a far lesser extent, and will therefore not be included in the analysis below. In addition, in 29,1 percent of the cases the senior workers referred to the usage of several methods and techniques which were not mentioned and included in the research framework. Even though these methods and techniques are being used to a lesser extent than mentoring, training and storytelling; they will be analyzed in more detail as well, since the intention of this study is not only to give an indication about the frequency usage with which methods and techniques are being used, but also to give an overview of methods and techniques which are available for senior workers in Japan to share their knowledge. Hence, the following methods, techniques and procedures will be analyzed further below, and enriched with illustrative notes and quotes of the respondents: training and mentoring; storytelling and noncommunication; advisory or consultancy role; job rotation systems, and manuals or guidebooks.

Training and Mentoring

As mentioned earlier, Table 3 suggests that both training (45.5%) and mentoring (52,7%) are being used most frequently by participant firms in Japan to let senior workers share their knowledge with their younger co-workers. The following respondent refers to the use of training and mentoring in his/her firm:

“On-the-job training and informal mentoring/coaching are part of the everyday job duties of senior employees, and are the most common methods of sharing knowledge.” (HRM position - Manufacturer of construction equipment)

Mentoring is referred to in the context of this study as interpersonal relationships in which a senior worker helps a junior or inexperienced co-worker. Hence, it is interesting to note that in 4 out of 29 cases, the participant firms count on mentoring to happen and expect their senior workers to build interpersonal/informal relationships with their successors and junior co-workers. The usage of mentoring as a method by senior workers in the participant firms is illustrated by the following two quotes of respondents:

“We typically use on-the-job mentoring. We pair older employees, especially those approaching the 60, with younger employees to help them with knowledge building/sharing. Both parties typically like it.” (CEO/Managing Director - Seller of semiconductor products)

“One of the critical tasks senior leaders are expected to deliver is to share valuable information/knowledge to team members through mentoring.” (CEO/Managing Director - Investment firm)

Training is just as mentoring a frequently used method to let senior workers share their knowledge. When it comes down to the training methods specifically in place for senior workers to share knowledge; the qualitative analysis seems to suggest that the participant firms in Japan limit themselves to on-the-job training and training sessions given (or monitored) by senior workers. The following participants refer to the use of training in their firm:

“On-the-job training is the primary vehicle here. For example, we encourage junior staff to visit customers with senior representatives to learn skills and knowledge through joint activities.” (CEO/Managing Director - Manufacturer of medical instrument)

“We have monthly business speaker sessions where a senior member of the staff will present on their business or function to all those who want to listen.” (HRM position - Investment firm)

Storytelling & Nomunication

As mentioned in the literature review, sharing experiences through telling stories is a powerful way to exchange and consolidate knowledge, since stories can be a very powerful way to represent and convey complex, multi-dimensional ideas. In 41,8 percent of the cases the respondents mentioned that senior workers use storytelling to spread their knowledge. However, it should be noted that nomunication is being referred to under the category storytelling (in 7 out of 23 cases), as well as under the category with other methods and techniques (in 2 out of 16); suggesting that some participants see nomunication as a kind or type of storytelling, and therefore, storytelling and nomunication will be combined and discussed in the same paragraph here. Furthermore, as stated earlier, Table 3 indicates that is likely that senior workers use storytelling when the organizational environment allows for this technique; since storytelling has been used by senior workers in 23 out of 23 cases in which it is available as a knowledge sharing technique for the workforce as a whole. A respondent from a financial firm in the service industry elaborates on the choice to share knowledge through storytelling, and on the role between the senior worker and his/her younger colleague:

“Valuable knowledge is based on experience. So, sharing valuable knowledge should be done by storytelling which reflects experience. Success stories might be valuable, but failure stories are much more important and critical. An important point in storytelling is that younger colleagues/successors should respect the elderly. In other words, younger colleagues/successors should be good listeners, and listen carefully to the stories of the older employees. Additionally, they should be well motivated to learn from the experience of the older employees.” (CEO/Managing Director - Financial services firm)

Additionally, communication or storytelling after work seems to be in several cases an important way in which senior workers share knowledge. Several respondents refer to these occasions as nomunication. Nomunication is the combination of the Japanese verb *nomu* (to drink) and the English word ‘communication’. Receptions, dinners, and drinking parties are common occasions for nomunication; a

chance to build relationships and bonding over drinks. Below, the respondents refer to the use of communication within their firm:

“Casual communication through ‘happy hour’ drinks gives seniors the opportunity to tell stories about their experiences to next generations. This is unique Japanese culture and way of knowledge sharing.”
(CEO/Managing Director - Firm in container transportation services)

“The best suitable environment to tell success or failure stories is a casual, informal occasion, like a cozy drinking party. It is difficult to tell such stories at formal meetings or training sessions.”
(CEO/Managing Director - Financial services firm)

Advisory or consultancy role

As mentioned earlier, the additional information provided by the respondents indicates that it is a rather common procedure in Japan to discuss with senior workers a role as an advisor if no successor can be found (or trained) in time. In 8 out of 55 cases, senior workers in the participant firms move to either a role as advisor in the last years of employment, or as a (part-time) external consultant after retirement. Based on the sample size of this study; a specific industry in which such practices occur cannot be identified, and it seems that firms in Japan, regardless of industry, make such arrangements with their retirement-eligible workers. This way, the firm has the opportunity to tap into the knowledge of the senior workers anytime, even after retirement. Also, the senior workers will be less reluctant to share their knowledge, since the hierarchical system no longer influences their position and status. The following respondents all refer to either an advisory role in the last years of employment, or to a role as an external consultant after retirement:

“We often have senior employees spend a year or so in an advisory role, after giving up their hierarchy position to someone else. This is done prior to retirement, or as a special retirement extension. These people have no incentive to “hoard” knowledge, and teaching others in their main role.”
(CEO/Managing Director - Manufacturer in healthcare products)

“In general this is a big issue. What usually happens is that employees who are about to retire are being rehired as consultants.” (Unknown position - Manufacturer of glass tubes)

“It depends on the situation. Usually, a handover process will be taken before the senior employees leave the organization. If there is no successor, he/she works longer (maximum of 5 years) as an internal advisor until the company finds a replacement. Technology transfer takes place after that.” (Unknown position - Research Institute in Japan)

Job rotation systems

Although the respondents more frequently referred to the methods, techniques and procedures mentioned above; there are other methods which senior workers use to share knowledge. For example, in 5 out of 55 cases, respondents indicate that knowledge is being shared in their firm by means of job rotation. Hence, the following respondent from a law firm refers to the use of job rotation:

“There is no formal program to share knowledge, but I think it is built into the system. Managers and senior employees frequently transfer within the company. In each position, they transfer knowledge over the course of the assignment. Employees learn by close contact and daily interaction. In a Japanese company, where lifetime employment is still the norm, all knowledge eventually become institutional rather than individual.” (Unknown position - Law firm)

Manuals and guidebooks

Lastly, manuals or guidebooks, being updated by senior workers, are being talked about as an efficient way for senior workers to share knowledge with others. Hence, one respondent from an investment firm refers to the value of manuals and guidebooks in the knowledge sharing processes:

“In addition, I think that making manuals is critical, especially in operating functions. So many people and procedures are related to these functions. It is essential to standardize those procedures by making manuals and let people follow them. Here again, seniors are the ones to create those manuals.”
(CEO/Managing Director - Investment firm)

To summarize, the respondents seem to indicate that the firms in Japan do not have as many methods and techniques at hand for the senior workers as they have for their workforce in general. The workforce in

general uses on average approximately 4 methods or techniques per firm for sharing knowledge; whereas the senior workers on average use approximately 2 methods or techniques per firm for their knowledge sharing processes. Furthermore, in regards to the methods and techniques being used by senior workers in particular, it seems that senior workers in Japan most frequently use mentoring, training and storytelling to share their knowledge with their successors. In addition, it is worth noting that about 29,1 percent of the firms use a method, technique or procedure other than the ones found in the academic literature, such as nomunication; advisory role or external consultant; job rotation systems; and manuals or guidebooks. Next, the combinational usage of the knowledge sharing methods and techniques will be analyzed.

4.2.2 *Combinational usage of knowledge sharing methods and techniques*

Furthermore, the data of the semi-structured questionnaire will be analyzed to a further dimension here, in order to see if certain patterns or frequent combinations, if any, can be discovered in regards to the methods and techniques being used. Table 3 displays that there is on average more than one method or technique available for senior workers to share their knowledge; since the 55 respondents firms use in total 111 methods or techniques for the senior workers in particular. The coverage of Table 4 below only accounts for the methods and techniques being used by the senior workers in the respondent firms, since the focus of this study lies with the knowledge sharing behavior of senior workers. Table 4 should be analyzed in the following way, for example, out of the 29 cases in which mentoring is being used, the respondents indicate that in 13 cases also training is being used, and in 11 cases also storytelling is being used, etc.

Table 4 indicates that in 13 out of 29 cases; firms use mentoring in combination with training. In addition, firms seem to use training in combination with mentoring in 13 out of 25 cases. Thus, suggesting that mentoring and training are not only being used most frequently by senior workers to share knowledge; they are also being used simultaneously rather frequently within the respondent firms in Japan. Furthermore, the data suggest a pattern between the usage of storytelling in relation to training or mentoring, since it occurs relatively frequently that when firms use storytelling; that it happens in combination with training or mentoring, in 8 out of 23 and in 11 out of 23 cases respectively.

Table 4
Combinational Usage of Knowledge Sharing Methods and Techniques being used by Senior Workers

	Training	Mentoring	Storytelling	Communities of Practice	Information Systems	Expert Interviews	After-Action Review	Orientation Period	Other
Training	25	13	8	2	2	1	2	2	5
Mentoring	13	29	11	2	0	1	0	1	7
Storytelling	8	11	23	1	3	0	3	1	8
Communities of Practice	2	2	1	3	1	1	1	2	0
Information Systems	2	0	3	1	5	0	3	2	2
Expert Interviews	1	1	0	1	0	2	0	1	0
After-Action Review	2	0	3	1	3	0	5	1	2
Orientation Period	2	1	1	2	2	1	1	3	1
Other	5	7	8	0	2	0	2	1	16

n = 55

Moreover, it is noteworthy, that methods and techniques other than the ones mentioned in the literature review are mainly being used in combination with storytelling (50,0%); mentoring (43,8%); and training (31,3%). The relatively low usage of other combinations, as well as the relatively low usage of other methods and techniques, prevents Table 4 from indicating other patterns or combinations. Continuously, the pre-retirement knowledge sharing processes of the senior workers (in the last year or so) before retirement will be analyzed.

4.2.3 *Knowledge sharing processes in period (right) before retirement*

As stated earlier, the respondents were also asked about the presence of any methods and/or techniques, if any, right before retirement. This, in order to see if the senior workers in Japan have a short or long term perspective in regards to their knowledge sharing processes; a greater focus has been placed on pre-retirement timeframe. Therefore, the respondents were questioned if there are any methods or techniques specifically in place for the senior workers to share their knowledge in the period right before retirement (1 or 2 years or so). However, none of the 55 respondent firms refer to the use of methods or techniques

specifically in place for senior workers in the period right before retirement. In fact, the respondents below actually suggest that the knowledge sharing processes regarding the senior workers are an on-going process:

“In our firm, the transition of knowledge shall not be processed at once, right before retirement. It is on-going and time-consuming, and it needs day-to-day efforts as our valuable knowledge is something we cannot easily describe and keep in databases or files.” (CEO/Managing Director - Investment firm)

“No, we do not have any pre-retirement methods in place. The knowledge sharing is on-going and targeted.” (CEO/Managing Director - Facilitator of office and building projects)

However, it should be noted that some respondents do mention the use of hand-over procedures, such as (latest) contact knowledge, right before retirement. Also, it seems to be a rather common procedure in Japan to discuss a role as external consultant in case no successor can be found (or trained) in time, either in the last year(s) of employment or during the early years of retirement. To conclude, the respondent firms in Japan seem to suggest that knowledge sharing is merely an on-going process as opposed to a one-time procedure. Next, the methods and techniques being used in large firms will be compared to the ones being used in SMEs.

4.2.4 Differences regarding size

Not all the firms were willing to provide data in regards to the number of (senior) employees as it concerned private information. In total, 9,1 percent of the respondents were not willing to share or indicate the number of senior workers in their firm. The results of the categorization of the remaining respondents, displayed in Table 1, indicates that 27 participants represent large firms, and that 23 participants are operating as SMEs. Furthermore, Table 5 below display a simplified table of the methods and techniques being used for knowledge sharing by senior workers within large and SMEs. In the appendices, a complete overview for SMEs and large firms can be found in Table 6 and 7.

Table 5
Knowledge Sharing Methods and Techniques for Senior Workers in SMEs and Large Firms

Methods and Techniques for		SMEs		Large Firms	
		Responses		Responses	
		N out of 23	Percent of Cases	N out of 27	Percent of Cases
Methods and Techniques	Training	6	26,1%	16	59,3%
	Mentoring	10	43,5%	17	63,0%
	Storytelling	8	34,8%	12	44,4%
	Communities of Practice	1	4,3%	2	7,4%
	Information Systems	2	8,7%	3	11,1%
	Expert Interviews	1	4,3%	1	3,7%
	After Action Review	3	13,0%	2	7,4%
	Orientation Period	1	4,3%	2	7,4%
	Other	8	34,8%	8	29,6%
	Total	40	173,9%	63	233,3%

n = 55

The figures in Table 5 indicate percentually that large firms generally use more techniques and methods to let their senior workers share knowledge than SMEs. The participant large firms use on average approximately 2.3 methods or techniques per firm for sharing knowledge ($63 / 27 = 2.33$); whereas the senior workers of SMEs on average use approximately 1.7 methods or techniques per firm for their knowledge sharing processes ($40 / 23 = 1.74$). Furthermore, in line with Table 3, both large and small/medium firms tend to have a preference to use training, mentoring and storytelling to let senior workers spread knowledge. However, it should be noted that large firms use these three methods with a higher frequency than small and medium firms. Also, it interesting to see that SMEs prefer to use storytelling (34,8%) above training (26,1%). While larger firms tend to choose training (59,3%) more frequently than storytelling (44,4%). Moreover, it is remarkable that, especially among SMEs, information and expert systems are being used extensively by the workforce as a whole (see Table 6 and 7 in the appendices), but that senior workers hardly use these systems to share knowledge with co-workers. This

observation accounts to a lesser extent also for expert interviews, after-action review and orientation periods.

Additionally, based on 27 large firms and 23 SMEs, the average percentage of senior workers indicates that SMEs (22,0%) have a larger share of senior workers in their workforce than large firms (12,8%). It is remarkable to note that, even though SMEs have a larger share of senior workers in their workforce, several respondents of SMEs indicate not to be overly concerned by the aging and shrinking of their workforce. Hence, the quotes of the respondents below refer to the size of their firm as the reason for not being (overly) concerned about the demographic processes in Japan:

“We are aware of the changing demographics here in Japan, but we have a very small business. We aren’t overly concerned about the aging and shrinking of the Japanese workforce due to more urgent and pressing issues.”(CEO/Managing Director - Retailer in clothing industry)

“We are a small company and have no specific measures for sharing knowledge pre-retirement. Our only retirees remain as external consultants, and if we need information, we simply ask them.” (Unknown position - Firm in academic paper services)

In sum, both large firms and SMEs seem to have a preference to use training, mentoring and storytelling in order to let senior workers of the participant firms spread their knowledge. However, it should be noted that large firms use these three methods with a higher frequency than SMEs. Also, it interesting to see that SMEs prefer to use storytelling (34,8%) above training (26,1%). While large firms tend to choose training (59,3%) more frequently than storytelling (44,4%). In the next paragraph, the differences in regards to the industries where the respondent firms are operating in will be compared and analyzed.

4.2.5 Differences regarding industry

As stated earlier, even though there is a high level of awareness of the projected demographic changes among the firms in Japan; the following respondent seems to suggests that the impact of the demographic changes will differ per company and/or per industry:

“The impact of the projected aging of the Japanese workforce is well known. However, while the macro economic impact is felt by everyone as changes to the market we compete in, and manifests itself in deteriorating government finances, the company specific effect on an individual company is so different per company/industry, that it is difficult to generalize.” (CEO/Managing Director - Manufacturer in healthcare products)

Hence, the focus of this paragraph lies with the differences per industry, if any, when it comes down to the methods and techniques being used by the senior workers to share knowledge. In Table 8 below, a simplified table on the results of the quantitative descriptive analysis per industry sector can be found.

Table 8
Knowledge Sharing Methods and Techniques for Senior Workers per Industry

Methods and Techniques for Senior Workers in Particular (50+)	Service Industry		Manufacturing Industry		Retail / Wholesale Industry	
	Responses		Responses		Responses	
	N out of 32	Percent of Cases	N out of 19	Percent of Cases	N out of 4	Percent of Cases
Training	12	37,5%	9	47,4%	4	100,0%
Mentoring	17	53,1%	11	57,9%	1	25,0%
Storytelling	14	43,8%	9	47,4%	0	0,0%
Communities of Practice	2	6,3%	1	5,3%	0	0,0%
Information Systems	2	6,3%	3	15,8%	0	0,0%
Expert Interviews	1	3,1%	1	5,3%	0	0,0%
After Action Review	2	6,3%	3	15,8%	0	0,0%
Orientation Period	1	3,1%	2	10,5%	0	0,0%
Other	12	37,5%	4	21,1%	0	0,0%
Total	63	196,9%	43	226,3%	5	125,0%

n = 55

In addition, the complete tables per industry sector can be found in Tables 9, 10, and 11 in the appendices. It is expected that a variety of participant firms operating in a diversity of industries enriches the results.

Therefore, firms operating in the service, manufacturing, and retail/wholesale industry will be compared and analyzed.

In comparison, mentoring is being used most frequently by the senior workers in both industries, closely followed by storytelling and training. As can be seen in Table 8, in the service industry, most respondents mention that senior workers use mentoring (53,1%) as a tool to share their knowledge, closely followed by storytelling (43,8%) and training (37,5%); whereas in 57,9 percent of the cases the senior workers in the manufacturing industry use mentoring as their primary tool to spread knowledge, followed closely by training (47,4%) and storytelling (47,4%). Thus, the respondent firms in the service and manufacturing industry tend to have a preference to use training, mentoring and storytelling to let senior workers spread knowledge; which is again in line with the overall situation for senior workers in Table 3. Furthermore, the quantitative results in Table 8 seem to suggest here that mentoring, training and storytelling are being used with a higher frequency in the manufacturing industry than in the service industry. In addition, Table 12 (see appendices) reflects the knowledge sharing methods and techniques which are being used in the retail and wholesale industry. Although the sample size of the retail/wholesale industry is relatively small, it is remarkable that the respondents only mention training and mentoring as methods to let senior workers spread knowlegde. However, considering the relatively small sample size; one should be cautious analyzing and generalizing the results for the retail and wholesale sector.

Overall, according to the respondents, the findings suggest that senior workers who are active the service industry and manufacturing industry most frequently use mentoring to share their knowledge, closely followed by training and storytelling. However, mentoring, training and storytelling are being used more frequently in the manufacturing industry. Thereby, the senior workers in the retail and wholesale industry predominantly use training to share knowledge, but it is very likely that the sample size for these combined industries is too small to generalize the results. Next, the context of the knowledge sharing processes, in terms of individual and organizational factors will be analyzed.

4.3 Context for knowledge sharing: Individual and organizational factors

As mentioned in the literature review, there are several factors which can influence the knowledge sharing process. Broadly, we can divide these factors in individual and organizational factors. Both individual and organizational factors which play a role in the Japanese context will be analyzed, this, in order to get a better understanding of the context of the knowledge sharing methods and techniques analyzed above. First, the individual factors will be analyzed, and second, the organizational factors will be discussed.

4.3.1 Individual factors

The respondents give, in Table 12 below, an indication of which individual factors play a role in knowledge sharing processes within Japanese firms. Hence, the additional notes and quotes of the respondents allow for enrichment of the descriptive analysis of the internet-mediated questionnaire, and give an indication of the importance and impact of each factor.

Table 12
Individual Factors influencing Knowledge Sharing Processes

		Responses	
		N out of 55	Percent of Cases
Individual Factors	Motivational Factors	44	80,0%
	Education and Work Experience	28	50,9%
	Self-efficacy	31	56,4%
	Capacity to Absorb Knowledge	25	45,5%
	Other	3	5,5%
Total		131	238,2%
n = 55			

First of all, Table 12 suggests that motivational factors are perceived to play an important role on the individual level of knowledge sharing, since 44 out of the 55 the respondents indicate that motivational factors influence the knowledge sharing process. The respondent below illustrate the importance of motivational factors in knowledge sharing processes:

“Motivation is important. The motivation to collect, gather information and then share it. The motivation to learn, experience and share is what drives our people.” (CEO/Managing Director - IT firm)

However, motivation is a term that can be used for several motivational aspects, such as trust, perceived benefits and costs, beliefs of ownership etc. Hence, the quote of the following respondent suggests that motivation is a rather broad concept which embraces many terms and aspects; indicating that one should be cautious analyzing such broad concepts:

“In addition to trust, perceived benefits and ownership of knowledge, motivational factors such as transparency, recognition and commitments are also important.” (CEO/Managing Director - Pharmaceutical firm)

Furthermore, self-efficacy; education and work experience; and capability to absorb knowledge influence in approximately half of the cases the knowledge sharing processes. In 56,4 percent of the cases the respondents are aware of the impact of self-efficacy on knowledge sharing. The following respondent even suggests that self-efficacy is a key factor in knowledge sharing behavior:

“Self-efficacy is a key factor. In other words, if employees do not have the competence and confidence, they may not be willing and/or they will not even be asked to share.” (CEO/Managing Director - Manufacturer of chemicals)

Continuously, educational background and work experience influences knowledge sharing in 28 out of 55 cases. However, work experience is in general regarded as more influential on knowledge sharing processes than the educational background. The following respondent, active in the business law industry, elaborates on the importance and difference between educational background and work experience:

“Work experience also plays a role. More so than education, since most professional employees in our organization have similar educational backgrounds. But the more work experience an employee has, the more they will be able to share such experiences with others within the organization. Work experience also ties in with concepts of personal competence and confidence, since employees with greater experience will generally have greater confidence in their knowledge, and are therefore more willing to share that knowledge with others.” (Unknown position - Law firm)

Thereby, the participant firms in Japan believe, in 45,5 percent of the cases, that the capability to absorb knowledge plays a role. Hence, the speed with which the listener or learner absorbs the knowledge decides for a large part the speed in which knowledge sharing occurs. This is illustrated with the following quote:

“The capability to absorb knowledge is important, since in every organization there are quick and slow learners.” (CEO/Managing Director - Consultancy firm)

Additionally, it should be noted that, in 11 out of the 55 cases, the respondents acknowledge that knowledge sharing is actually a complex interaction, and that all the factors above, and perhaps even more, influence knowledge sharing behavior simultaneously. In other words, these participants state that it is questionable and not realistic to simplify and analyze each individual factor individually, since sharing knowledge is rather complex process in which several or many factors interact simultaneously. The following respondent summarizes this feeling in the following way:

“I do not see how one could separate any of the above listed characteristics from the others in a knowledge sharing situation. Each of them is present, and trying to tease one out from the others is an artificial attempt to enforce simplicity on what is actually a complex interaction.” (CEO/Managing Director - Firm in market expansion services)

To conclude, it stands out that motivational factors are regarded most frequently as an important influential factor in knowledge sharing. To a lesser extent, but still in approximately 50 percent of the cases, self-efficacy; education and work experience; and capability to absorb knowledge are regarded as influential factors in knowledge sharing processes. Even though these factors are analyzed here individually, approximately 20 percent of the respondents indicate that knowledge sharing is a rather complex interaction, and that the individual factors influencing these processes cannot be seen independently of each other. Next, the organizational factors will be analyzed and discussed.

4.3.2 Organizational factors

The organizational factors which influence the knowledge sharing processes within firms in Japan will also be analyzed with a descriptive analysis. Table 14 shows a percent of cases, which suggest to which extent each organizational factor is believed to influence the knowledge sharing processes.

Table 14
Organizational Factors influencing Knowledge Sharing Processes

		Responses	
		N out of 55	Percent of Cases
Organizational Factors	Organizational Culture	48	87,3%
	Management Support	40	72,7%
	Organizational Structure	34	61,8%
	Rewards and Incentives	11	20,0%
	Organizational Demographics	19	34,5%
	Knowledge Sharing Technologies	38	69,1%
	Other	2	3,6%
Total		192	349,1%

n = 55

First of all, Table 14 indicates that the culture of an organization is considered by the respondents most frequently as a factor which influence the knowledge sharing processes in Japanese firms. In 87,3 percent of the cases, the respondents indicate that the culture of the organization influences the knowledge sharing processes in their firm. Hence, the quotes of the respondents below seem to suggest that the culture of the organization plays an important role:

“Organizational culture is a key factor in developing a sharing mindset. People in general do not openly share unless the act of sharing and the reasoning behind it are ingrained in the culture and are explicitly and implicitly communicated 24/7, so that it becomes second nature to people.” (CEO/Managing Director - Facilitator of office and building projects)

“Culture is important. I would like to define culture as the methodology of how to solve problems. If an organization has a culture to respect elders’ experiences (both success and failure), and to be willing to learn from the history to solve problems, than it is easy to share the knowledge.” (CEO/Managing Director - Innovative laboratory)

In more detail, some of the respondents refer, not necessarily to their own firm, about the consequences of a lack of an open culture for knowledge sharing. Hence, the participants below refer to such a situation with the term ‘silo mentality’; in which the (senior) worker is silo-oriented and only communicates with others in his/her direct group:

“We have a culture where teamwork and collaboration are fairly strong. Because of this, sharing of knowledge is pretty strong. That said, especially here in Japan, I find that people can be very silo-oriented, meaning that they’re less likely to be proactively cooperative with others that are not in their direct group. We can force it with goals and direct requests, but they won’t typically do it on their own.” (CEO/Managing Director - Seller of semiconductor products)

“The silo mentality within a matrix organization is perhaps one of the biggest impediments. The sharing of knowledge disrupted by the vertical nature of the organization.” (Unknown position - Financial services firm)

Furthermore, Table 14 seems to suggest that the support of management is a key factor within knowledge sharing processes. In 72,7 percent of the cases, the participants indicate that management support influences the knowledge sharing processes in their firm. In general, management should allow their workers enough time and methods for knowledge sharing, and in addition, it is their duty to remind their workers about the importance of sharing knowledge. The two respondents below illustrate the importance of management support in regards to the knowledge sharing processes within their firms:

“Management support is particularly important to ensure that staff have the impetus and time available to focus on knowledge sharing. Without this, due to daily workload pressures, it may be that knowledge sharing activities decline.” (CEO/Managing Director - Manufacturer of cars)

“Management performs the function of nagging. It is management’s responsibility to continually reinforce the message about sharing.” (CEO/Managing Director - Facilitator of office and building projects)

Continuously, knowledge sharing technologies and the organizational structure are considered as important factors in knowledge sharing behavior, and influence the knowledge sharing processes in 69,1 and 61,8 percent of the cases respectively. In relatively many firms, knowledge sharing technologies are considered to influence knowledge sharing behavior. Some even argue that knowledge sharing is far less effective without the use of (supporting) technologies. Hence, the following quote illustrates the perceived influence of technologies on knowledge sharing:

“Any knowledge sharing system needs to be supported by written guides and proper technology, otherwise, it ends up being less effective at best and sloganeering at the worst.” (CEO/Managing Director perspective - IT firm)

In regards to the organizational structure as a factor; the participant firms seem to suggest that especially the hierarchy of the organization plays an important role. Generally, the stronger the hierarchy present in the firm, the more difficult it will be for (senior) workers to share knowledge. The following respondent supports the indication that the organizational structure, and in particular the hierarchical structure of a firm, influences knowledge sharing behavior:

“Knowledge sharing is also facilitated by the relatively hierarchical structure of the organization, which encourages communication between junior employees and more senior employees.” (Unknown position - IT firm)

Additionally, the organizational demographics of a firm are believed to influence the knowledge sharing processes in 34,5 percent of the cases. Here, especially the size of the firm and the composition of the workforce in terms of different nationalities and cultures seem to be playing a role at hand. The participant below, working for a consultancy firm in the financial industry, refers to the influence of the size of the firm on the knowledge sharing processes in his/her firm:

“The demographics of our firm, with its large size and concentration in Tokyo, make effective knowledge sharing (at a personal level) more difficult and challenging, particularly for older employees. It is a constant concern to achieve a manageable group size in order to aid knowledge sharing. As our global firm seeks standardization, this becomes more challenging.” (CEO/Managing Director - Consultancy firm)

Lastly, to a relatively low extent in comparison with the other factors, rewards and incentives influence knowledge sharing in Japan. Only 20,0 percent of the respondents indicate that rewards or incentives play a role in their firm. Hence, rather than financial rewards; the participants seem to suggest that the long-term employment of (senior) workers is affecting the matter in which (senior) workers share knowledge. The following participants refer to rewards and incentives for knowledge sharing behavior in terms of job security; rather than referring to financial incentives:

“To some extent, job security and team spirit affect the depth of knowledge sharing. If there is less security in the job, the less loyalty there is to the company among staff, and staff has less incentive to share their expertise.” (CEO/Managing Director - Insurance firm)

“The incentive to keep your job is pretty big in such a bad job market. Employees are willing to take on more responsibilities and learn new skills. This will insure that they are less likely to be let go if things go bad, and they can use those skills in case they have to look for a new job.” (CEO/Managing Director - IT firm)

In conclusion, most of the respondents indicate that the culture of an organization plays a role in the knowledge sharing processes. In addition, the respondents believe that organizational factors such as management support, information sharing technologies, and the organization structure have a relatively large impact on knowledge sharing. Organizational demographics, and rewards and incentives on the other hand influence the knowledge sharing to a relatively lower extent. Next, the conclusions of this study will be stated and discussed, and recommendation for future research will be given.

5 Conclusions, discussion and recommendations

5.1 Conclusions and discussion

Based on the internet-mediated questionnaire; an attempt will be made to answer the main research question as well as the additional sub questions. In addition to the main conclusions, this paragraph will also discuss the answers, the findings, as well as the following questions: how do the findings of this study relate to earlier findings in the academic literature?; from which point of view should the findings here be considered by Western firms, and how could the findings here be useful for Western firms; and in addition, what is the role of the context of the findings of this study?

Before continuing with the discussion, it should be noted that one should be wary of generalizing the results of the descriptive analysis for all the firms in Japan; since the participant firms were purposively sampled in such a way that they were expected to have methods or techniques in place which are being used by senior workers, or which are specifically in place for the senior workers in their firm. Thus, the findings here rather give an indication of the knowledge sharing methods and techniques which are being used by the respondent firms in Japan once they have put practices in place to stimulate senior workers to share knowledge. In addition, one should be aware of the positions of the participants; since the possibility exists that the input of participants in a managing or HR position could reflect a social desirable situation, rather than a realistic image.

First, the knowledge sharing methods and techniques being used in the workforce in general will be compared to the situation for senior workers in Japan. Accordingly, the methods and techniques which are predominantly being used by senior workers in Japan to share their knowledge will be described, and an attempt will be made to indicate the value of these findings for Western firms. Furthermore, the level of awareness and the sense of urgency to act on the aging of the workforce will be discussed. Additionally, the context of findings, as well as the context of knowledge sharing in general will be discussed. Lastly, the value of the results of this study will be reflected upon, and considered in light of its context.

5.1.1 Preserving the knowledge of the retiring senior workers

First of all, when we compare the workforce in general with senior workers in particular; it seems that Japanese firms do not have as many methods and techniques for knowledge sharing at hand for their senior workers as they have for their workforce in general. The workforce in general uses, according to the respondents, on average approximately 4 methods or techniques per firm for sharing knowledge; of which the senior workers on average use approximately 2 methods or techniques for their knowledge sharing processes. Hence, these findings suggest that the participant firms tend to see knowledge sharing processes more as companywide practices instead of having a focus on knowledge sharing practices for senior workers. Even though the workforces of Japanese firms are projected to age rapidly in the coming decade; as well as considering the notion that the seniority-based system (which is still widely accepted in Japan) recognizes the value of the knowledge of senior workers. However, a certain level of wariness is needed here, since the collected data only allows for a snap-shot of the situation, and not for indicating a declining or increasing tendency in the number of knowledge sharing methods and techniques being used by senior workers in Japan. When comparing the results of the quantitative analysis in more detail, it appears that the workforce as a whole uses training (83,6%), mentoring (70,9%) and information systems (60,0%) most frequently to share knowledge; whereas the senior workers most frequently use mentoring (52,7%); training (45,5%) and storytelling (41,8%). Thereby, it seems that both training and mentoring are being used most frequently by the senior workers as well as by the workforce in general to share knowledge. Even though mentoring is being used more frequently by senior workers; whereas training is being used more frequently by the workforce in general. Overall, the findings suggest that the workforces of the participant firms, as well as the senior workers in particular, predominantly use exchange techniques for sharing knowledge. Hence, suggesting that the workers of the participant firms, except for the use of information and expert systems, have a preference for sharing knowledge through more interpersonal means and using processes which are less structured. However, it is remarkable that the participant firms use expert or information systems in 60,0% of the cases for their workforce in general; while the senior workers only use these kind of

systems in 9,1% of the cases for sharing knowledge. The percentages seem to suggest here that the senior workers in the participant firms tend to be more accustomed to seeking and applying non-technology solutions for sharing knowledge; whereas their younger co-workers seem to share knowledge regularly by means of information and expert systems. Now that the workforce in general has been compared with the knowledge sharing processes for senior workers; we will continue with a further focus on the knowledge sharing processes of the senior workers in the Japanese participant firms.

In an attempt to answer the main research question of this study, which questions which methods and techniques are being used by senior workers in Japan to share their knowledge with their successors; then it appears that the senior workers of the participant firms seem to be using (to a greater or lesser extent) all the knowledge sharing methods and techniques that were discussed in the research framework. Additionally, the senior workers of the respondent firms were using methods and techniques other than the ones mentioned in the research framework for sharing their knowledge, namely nomunication; a role as advisor/consultant; job rotation systems; and manuals and guidebooks. However, certain knowledge sharing methods or techniques are being used more frequently than others. As noted earlier, the senior workers within the respondent firms in Japan mainly seem to be using mentoring (52,7%), training (45,5%) and storytelling (41,8%) to share knowledge with others in their firm; suggesting that the senior workers predominantly use exchange methods for sharing knowledge, which is in line with the Japanese approach to knowledge. As stated earlier, the Japanese view knowledge, more than Western companies, as primarily tacit. Here, knowledge is generally regarded as highly personal, hard to formalize, and difficult to communicate or share with others. The aspect of sharing tacit knowledge prevails in methods and techniques such as mentoring, storytelling, and training. Thus, the findings suggest here that, even though all the methods and techniques in the research framework are being used by the senior workers to share knowledge; that the participant firms in Japan mainly try to bring together the senior workers and their younger co-workers or successors in a way that they can interact face-to-face, and share tacit knowledge more effectively by means of exchange methods rather than elicitation methods.

In addition, it is interesting to see that mentoring, training and storytelling are being used most frequently by the senior workers in the participant firms, regardless of size and industry. Both the senior workers of the participant SMEs and large firms use these three exchange techniques more frequently than other methods and techniques; even though they are being used with a relatively higher frequency within large firms. Likewise, the senior workers in the service and manufacturing industry also use mentoring, training and storytelling most frequently to share knowledge. Thereby, the senior workers in the retail and wholesale industry predominantly use training to share knowledge, but it is very likely that the sample size for these combined industries is too small to generalize the results. Thus, even though the participant firms in the sample size differ in size and industry; the findings seem to suggest that the approach of the respondent firms on the selection of knowledge sharing methods and techniques for senior workers is rather similar, regardless of firm size and throughout different industry sectors. Furthermore, it is noteworthy that the findings also seem to suggest a relatively high combinational usage (or combinational patterns) between mentoring, training, and storytelling (see Table 4). However, one should be cautious generalizing the results here; since the relatively low usage of other combinations, as well as the relatively low usage of other methods and techniques, prevents us from indicating other patterns or combinations.

Furthermore, mentoring, training and storytelling will be discussed in the paragraph below in light of the Japanese context for knowledge sharing, and thereby, the usefulness of the findings here for firms in Western and other developed countries will be discussed as well. In addition, it is worth noting that about 29,1 percent of the firms use a method, technique or procedure other than the ones found in the academic literature, such as nomunication; a role as advisor/consultant; job rotation systems; and manuals or guidebooks. It is believed that including these methods and techniques in the discussion below is valuable; since these methods and techniques were not included and discussed in the literature review, and since it is the intention of this study to give an overview of, and better insights into, the methods and techniques which are available for senior workers in Japan to share their knowledge.

First of all, the respondents indicate most frequently that training and mentoring are being used by the senior workers in their firm to share knowledge. In regards to training as a method for sharing knowledge;

the respondents particularly refer to sharing knowledge by means of on-the-job training. Typically, on-the-job training is conducted when the trainees are working, while their supervisors or more skilled colleagues instruct them. Here, it seems that managers in Japan emphasize the importance of learning from direct experience as well as through trial and error. Like a child learning to eat, walk and talk, they learn with their bodies, not just with their minds. In addition, Jacobs (2003) states that most Japanese firms, regardless of size, offer little if any off-the-job training programs. So, most vocational training within Japanese firms occurs within the firm; this means that many of the skills acquired are firm specific. In contrast with most Western firms, in which employees have an incentive to develop general skills that are transferable to different employees; the long-term nature of Japanese employment increases the willingness of the employees to invest in firm-specific skills. Characteristic for the Japanese approach to on-the-job training is that this technique, based on the relatively long term employment system, supports career ladders. Thus, Western firms should, in case they are using on-the-job training, be aware of the influence of the expected term of employment on the skills being learned by the employee. Concerning mentoring as a method to share knowledge, Bright (2005) made an attempt to compare the Japanese mentoring context with the Western context of mentoring. Bright (2005) stated that the Japanese views of mentoring are characterized by informality, organic growth of relationships at all organizational levels, and are based on emotional bonds between seniors and juniors. Hence, it is interesting to note that a couple participant firms in Japan are counting on mentoring to happen, and they expect their senior workers to build interpersonal/informal relationships with their successors and junior co-workers. These indications seem to support the notion that mentor-junior relationships within Japanese firms are relatively informal. In contrast, the Western mentoring context consists increasingly of formalized schemes, targeted at specific groups (such as the talented and socially disadvantaged), and forms a co-ordinated activity of human resource departments. In sum, it seems that the Japanese mentoring context, which is informal and grounded in emotional bonds between seniors and juniors, allows senior workers not only to share explicit knowledge, but also tacit knowledge. Since the Western mentoring context is rather formal compared to the Japanese mentoring context; Western firms should therefore be aware of the mentoring context in case it is the tacit knowledge of the retiring baby-boom generation they are trying to preserve.

Second of all, storytelling and nomunication are also frequently referred to by the respondents of the Japanese firms as methods or techniques which senior workers use to share knowledge. When comparing the two methods, the environmental setting seems to be the distinguishing factor here. Nomunications are informal meetings that take place over drinks at the end of the work day with the aim of building up a mutual group identity. Here, workers grow closer to each other and create a level of trust in which experiences and worries can be shared freely. The notes and quotes of the participant Japanese firms indicate that nomunication, or casual communication over drinks, gives a senior worker the opportunity to tell stories about his/her experiences to the next generation of workers. Moreover, they refer to a casual, informal occasion, like a cozy drinking party, as the best suitable environment to tell success or failure stories. In addition, the respondents refer to the difficulty of telling success and failure stories at formal meetings or training meetings. Hence, nomunication is rooted in the Japanese culture, and since Japanese values such as group consciousness and familism are at play here; Western firms should be wary of bluntly copying this method to their own practices. However, firms in Western countries should take notion of the characteristics of nomunication, namely the casual, informal environment that stimulates knowledge sharing; as well as the creating of a group identity and trust among workers, which results in the willingness to share and exchange knowledge.

Now that training, mentoring and storytelling have been discussed, we will continue by discussing methods and techniques other than the ones found in the academic literature. Nomunication has already been discussed above in relation to storytelling, since these two techniques appear to be rather similar. Below, job rotation systems; senior workers in a role as advisor or external consultant; and manuals and guidebooks will be discussed.

Hence, before discussing job rotation systems in more detail, it should be noted that job rotation was not identified in the research framework as a method or technique for sharing knowledge, while it is in fact a well-known term in the academic literature. In the identification process of knowledge sharing methods and techniques, job rotation was not seen as method for workers to share knowledge, but merely as a practice to

enhance worker flexibility and motivation. Yet, in 5 out of 55 cases, respondents indicate that knowledge is being shared in their firm by means of job rotation. According to Haghirian (2010) job rotation, or *haichi tenkan*, is a distinctive characteristic of Japanese management, which redistributes or relocates employees within the same firm or organization. A respondent from a Japanese law firm states that the knowledge in his/her firm lies with a wide employee base, since managers and other employees are frequently transferred. In addition, Nonaka (1991) argues that the practice of rotation of employees in firms substantially enhances knowledge sharing. Rotation helps the workers to understand the business from a multiplicity of perspectives. This makes organizational knowledge more fluid, and easier to put into practice. However, one should be cautious when discussing the applicability of job rotation to Western firms, since workers are predominantly hired as specialists in Western firms, and are therefore inclined to resist rotation into job areas for which they feel ill-suited or, worse, regard the job area as below their dignity (Nonaka, 1991; Taplin, 1995).

In addition to the methods and techniques above, the quantitative results of the 55 respondents within the Japanese firms seem to indicate that it is a common procedure to give senior workers in Japan an advisory role during the last years of employment, or a role as (a part-time) external consultant after retirement; since 8 out of 55 cases refer to such practices. This is in line with the suggestion made by Lindbo & Schultz (1998), that when an individual retires, the fear of knowledge loss could be diminished by giving the retiree the option of returning as a mentor or consultant. However, besides such normative statements, little can be found in the academic literature on giving senior workers a role as an external consultant after retirement. Yet, an attempt will be made to discuss the usefulness and advantages of such practices for Western firms. It is suggested here that the advantages are twofold, namely, the senior workers have no incentive to hoard knowledge anymore, since teaching becomes their main role as an consultant; furthermore, the firm has the opportunity to tap into the knowledge of the senior workers, even if no successor can be found (or trained) in time. Even though these kind of practices depend on the willingness of senior workers to accept a role as an consultant of mentor after retirement; these practices or arrangements can also be a valid method for Western firms to preserve the knowledge of their senior workers. Although it is noteworthy that further research about the applicability in Western firms, and the incentives for senior workers to accept such a role, is desirable here.

Lastly, manuals or guidebooks, which are being made or updated by senior workers, are being mentioned as a method or technique for senior workers to share their knowledge with others. However, it should be noted that standardized manuals and guidebooks were not identified in the research framework as a method or technique for sharing knowledge, even though the way in which explicit knowledge is being captured and stored may show some overlap with other elicitation techniques (e.g. information systems, and expert interviews). Furthermore, since only one of the 55 participants refers to using manuals and guidebooks to let senior workers share knowledge; it seems to suggest that the senior workers use guidebooks and manuals rather infrequently to share their knowledge with their successors.

To summarize, it seems that the senior workers of the participant firms seem to be using (to a greater or lesser extent) all the knowledge sharing methods and techniques that were discussed in the research framework. In addition to the methods and techniques identified in the research framework; the senior workers of the respondent firms mentioned the use of noncommunication; a role as advisor/consultant; job rotation systems; and manuals and guidebooks for sharing knowledge. Hence, regarding the frequency usage of the knowledge sharing methods, the senior workers within the respondent firms in Japan mainly seem to be using mentoring, training, and storytelling; suggesting that the senior workers predominantly use exchange methods for sharing knowledge. Comparing the methods and techniques being used by senior workers with the situation for the workforce as a whole; it seems that that the workforce in general has on average approximately 4 methods or techniques for sharing knowledge; of which the senior workers of the respondent firms use approximately 2 methods or techniques. Hence, for Western firms, the value of these findings lies mostly with the (Japanese) characteristics of these techniques and practices. Later on, we will elaborate further on the value of the findings here for Western and other developed countries. First, the timeframe for the senior workers to share their knowledge with their younger co-workers will be discussed.

5.1.2 Timeframe for knowledge sharing processes before retirement

In regards to the time span for sharing knowledge, the findings of this research indicate that knowledge sharing processes within Japanese firms do not have a short-term focus. In response to the question if there are any methods or techniques specifically in place for the senior workers to share their knowledge in the period right before retirement (1 or 2 years or so); none of the respondents referred to the use of such practices. Moreover, the qualitative results of the questionnaire actually seem to suggest that the respondent firms see knowledge sharing rather as an on-going process. This appears to be in contrast with earlier research of Calo (2008); which suggested that many firms continue to maintain a short-term focus by laying off talented workers and facilitating early retirements before putting in place a strategy to capture and retain the valuable knowledge that is lost when the most experienced workers leave the firm. Opposed to this statement, the findings here suggest that Japanese firms see knowledge sharing rather as an on-going process, as opposed to a one-time procedure. Thus, the participants seem to indicate that recruiting and retaining a talented workforce are not short-term problems or passing fads; and seem to be aware of the status of their workforces. In regards to the projected retirement of the baby-boom generation; 23 out of 28 respondent firms in Japan indicated that they have formulated plans and measures to address to this demographic issue. If necessary, an adjustment in their approach to their staffing plan will be made, for example by putting in place a succession plan, or (a more aggressive) graduate intake program. In sum, the main assumption here is that the respondent firms in Japan see knowledge sharing predominantly as an on-going process as opposed to a one-time procedure right before retirement (1 or 2 years or so). Next, the level of awareness of the respondent firms about workforce aging will be discussed.

5.1.3 Level of awareness of the aging workforce

Hence, in a response to a follow-up e-mail to the questionnaire send to 55 respondents; 28 respondents answered the open question about the level of awareness about the demographic trends, and if their firm is anticipating to the workforce aging projections in one way or another. Based on the responses of the 28 participants, who all acknowledge to be aware about the aging workforce trends and its consequences; it seems that that firms in Japan are, more often than not, aware of the upcoming retirement of the baby-boom generation, as well as about the consequences it can have for their workforce. However, a certain level of wariness is needed; since only 28 out of the 55 participants (50,9%) responded to the follow-up e-mail. Thus, in an attempt to answer the first sub research question, too what extent firms in Japan are aware of the aging workforce trends; the responses of the participant firms seem to suggest that there is a relatively high level of awareness about the demographic projections among firms in Japan. However, this notion is not in line with the general thought in the academic literature; since several authors point out that most firms are in fact not fully aware of the consequences that the retirement of the baby-boom generation, and the accompanied loss of their knowledge, can have on the knowledge level of their firm (Ekamper et al., 2003; Slagter, 2007; Calo, 2008).

Furthermore, the responses to the follow-up e-mail seem to suggest that the sense of urgency with which firms respond differ per firm, since some firms are actively pursuing to maintain a healthy organization in terms of human resource activities (in 23 out of 28 cases); while others are aware of the demographic projections, but not worried (at this point in time) about the impact of the projections on their workforce (in 5 out of 28 cases). These indications are in line with earlier statements in the academic literature; since earlier research has shown that not all managers seem to have a sense of urgency that they need to anticipate and act on the projected retirement of the baby-boom generation (Slagter, 2007; Calo, 2008). In more detail, it is possible that the sense of urgency with which managers are trying to preserve the knowledge of the retiring baby-boom generation depends on the extent the knowledge of this generation is regarded as valuable. Preserving the knowledge will be critical for those positions where the retirement-eligible workers hold knowledge which is of high (strategic) importance, and which is regarded as valuable by its firm. However, we can only guess upon the underlying reasons that explain the sense of urgency with which managers are trying to preserve the knowledge of the senior workers in their firm; since the follow-up e-mail does not provide for a statistical indication here.

In sum, while there seems to exist a relatively high level of awareness about the demographic projections among the participants firms in Japan; not all the respondent firms act with the same sense of urgency when

a lack of knowledge sharing could result in a continuous loss of unrecoverable knowledge as valued employees transition to retirement. Next, the individual and organizational factors which influence the knowledge sharing processes in the Japanese context will be described and discussed.

5.1.4 Context of knowledge sharing: Individual and organizational factors

As stated earlier, all the best intentions will not achieve the desired results if the context does not encourage and support knowledge sharing (Calo, 2008). Moreover, several authors state that knowledge sharing should always be seen in light of its context, and that one should be cautious not to see knowledge sharing methods and techniques apart from their context (Glisby & Holden, 2003). Therefore, an attempt will be made to relate the findings of this study to the values and management practices in the Japanese business environment. Hence, the goal here is not to give a complete overview of all the Japanese values at play, rather, the intention is to show that the findings of this study should be seen in the context of the Japanese business system. Below, the context in which the findings of this study should be seen will be discussed; also, an attempt will be made to relate the findings to the Japanese values discussed earlier in the literature review.

The respondents of the 55 Japanese firms indicate that motivational factors influence the knowledge sharing processes more frequently than other individual factors, such as the capacity to absorb knowledge, self-efficacy, educational background, or work experience. An attempt will be made to explain why in 80 percent the cases the respondents believe that motivational factors influence knowledge sharing, while in approximately 50 percent of the cases the respondents indicate that self-efficacy; education and work experience; and capability to absorb knowledge play a role as well. At first sight, it seems that the motivation and willingness to share knowledge is embedded relatively stronger in broad Japanese values, such as a strong corporate affiliation (group consciousness) and trusted, long-term relationships (familism, social harmony). This assumption should be seen in the context that in Japan, employment generally tends to be long-term or even for a lifetime, and that firm ties are regarded as more important in comparison to other groups. The other individual factors, perhaps except for work experience, appear to be less rooted in (or related to) broad Japanese values. Overall, one can assume that the presence of individual factors such as motivation, self-efficacy, educational background, work experience, and capability to absorb knowledge enhance knowledge sharing behavior; and should always be seen in the context in which knowledge sharing occurs. Yet, it is difficult to say to what extent motivational, or other individual factors for that matter, influence the knowledge sharing processes in Japan; since no Likert scales have been used in the semi-structured questionnaire. However, it is noteworthy to state that, even though the factors are analyzed here individually; approximately 20 percent of the respondents indicate that knowledge sharing is a rather complex interaction, and that the individual factors influencing these processes should not be seen independently of each other.

Not only were the respondents of the 55 participating firms asked about the individual factors, but also about the organizational factors that influence the knowledge sharing processes within their firm. Here, it is interesting to see the findings indicate that rewards and incentives are believed to influence knowledge sharing far less frequently than other organizational factors, such as organizational culture, management support, knowledge sharing technologies or organizational structure. The logic reasoning behind such results seems to be grounded in Japanese management systems, such as the senior based system and the lifetime employment system, which both still prevail in many Japanese firms, even today. In other words, the fact that employees will stay for the long-term, and are rewarded according to job tenure, not only seems to prevent workers from seeing knowledge as a source of power, but it also seems to prevent workers from relating knowledge sharing to financial rewards and incentives.

Another observation is that the organizational culture is considered most frequently as an influential organizational factor to knowledge sharing. Of the respondents, 87,3 percent stated that the organizational culture plays a role in the knowledge sharing processes. Although it is hard to state to what extent the organizational culture is influencing the knowledge sharing processes; several participants indicate that the organizational culture is one of the key factors for successful knowledge sharing. If the organizational culture of Japanese firms reflect broader Japanese values, than it is likely that the Japanese are aware of the fact that Japanese values such as familism, group consciousness, social harmony, uncertainty avoidance, and

management practices such as the life-time employment system, and the senior based system, provide for a kind of natural backdrop for the willing and open sharing of knowledge.

Furthermore, 72,7 percent of the respondent firms indicated that management support influences knowledge sharing. As stated in the literature review, Japanese management is generally human-relations focused and participatory in style. The core of the enterprise is not the managerial class, but rather the permanent worker group. In comparison, knowledge in Western firms is as it were owned by managers; who determine its creation, assimilation, accessibility and application. This is not the case in Japan, where practices such as the ringi system, ensure the combination of insights and input from all employees.

In addition, the findings of this study indicate that knowledge sharing processes are also being influenced by knowledge sharing technologies and the organizational structure. The analysis indicates that 69.1 percent of the respondents assumes that knowledge sharing technologies influences knowledge sharing, whereas 61,8 percent of the participants believes that the organizational structure plays a role. In regards to the use of knowledge sharing technologies in Japan, Glisby and Holden (2003) state that the general absence of inter-departmental rivalry, and the tendency of employees not to abuse company information (a culprit would suffer almost unbearable loss of face), allow Japanese firms to store all knowledge and documents in a single integrated database, open to any employee regardless of position. Furthermore, in the hierarchic structure of Japanese firms, the relationship with a senior or superior are regarded as more important than relationships with one's co-worker; whereas, such kind of hierarchic relationships within Western firms not necessarily have to be based on age.

To conclude, knowledge sharing should always be seen in light of its context, and consequently, the findings of this study should be seen in the context of the Japanese business system. In regards to the individual factors, it seems that the respondent firms indicate that motivational factors influence the knowledge sharing processes more frequently than other individual factors, such as the capacity to absorb knowledge, self-efficacy, educational background, or work experience. In addition, it is noteworthy to state that, even though the factors are analyzed here individually; in 11 out of the 55 cases, the respondents indicate that knowledge sharing is a rather complex interaction, and that the individual factors influencing these processes should not be seen independently of each other. Furthermore, the organizational culture, management support, knowledge sharing processes, and organizational structure are all organizational factors which are relatively frequently considered as influential factors in regards to the knowledge sharing processes within the participant Japanese firms. On the contrary, the fact that employees will stay for the long-term (life-time employment system), and are rewarded according to job tenure (seniority based system) prevents workers to a great extent from relating rewards and incentives to knowledge sharing. Next, the synthesis of the best of the knowledge sharing behavior in the East and in the West will be discussed.

5.1.5 Synthesis: The best of East and West

Nonaka & Takeuchi (2004) state the future of knowledge sharing belongs to companies that synthesize the best of the West and the East, and construct a universal model. According to these two authors, the dominant form of knowledge in the West is explicit knowledge, which can be readily transmitted across individuals systematically and formally. Western business practices emphasize explicit knowledge that is created through analytical skills and through concrete forms of visual and oral presentation, such as manuals, documents, and computer databases. The Japanese, on the other hand, see explicit knowledge as just the tip of the iceberg. They view knowledge as primarily tacit, namely, something that is not easily visible and expressible, something that is highly personal and hard to formalize, and something deeply rooted in an individual's action and experience (Nonaka & Takeuchi, 2004). According to Nonaka & Takeuchi (2004), this kind of synthesis between the best of East and West is already taking place, and firms have already succeeded in incorporating 'the best of two worlds' approach to knowledge sharing and creation.

However, it should be noted that there is no consensus in the academic literature as it comes to the view point that firms should construct a universal model. Zhu (2010) states that, despite growing overlaps, heterogeneity among knowledge sharing styles is likely to continue due to differences in cultures, histories, and institutional forces, which make a universal model of knowledge sharing unrealistic, counterproductive and undesirable. Moreover, firms will benefit from strategies for knowledge sharing processes which

facilitate the connection, and sharing of cross-cultural contexts, through which cultural differences and diversity are important sources for competence, rather than obstacles to overcome (Zhu, 2010).

Hence, based on the analysis and discussion on the findings of this study, it is believed here that knowledge sharing should not be seen independently of its context. Yet, even though this thought recognizes that Japanese knowledge sharing methods and techniques fundamentally cannot be copied; the findings here can nevertheless serve as a prism through which Western firms can observe their own practices and learn more about their own knowledge sharing behavior. In other words, rather than copying the methods and techniques which are being used by the senior workers in Japan to share knowledge; Western and other non-Japanese firms should see the results as a kind of mirror, which allows them to reflect on their own knowledge management practices in new ways, that may suggest directions for change. In this sense, the findings can enhance the understanding of their own organizational culture by forcing them to see it from a different point of view.

Thus, firms from Western, Japanese and other developed countries could learn from each other's approach to knowledge sharing. For Western firms, a greater emphasis placed on tacit knowledge should give rise to a whole different view of a firm; not as a machine for processing information, but more as a living organism. Within this context, sharing an understanding of what the firm stands for, where it is headed, what kind of world it wants to live in, and how to make that world a reality becomes more crucial than processing objective information (Nonaka & Takeuchi, 2004). Furthermore, an greater emphasis on tacit knowledge gives rise to a whole new way of thinking about knowledge. Knowledge is not the responsibility of the selected few (specialists), but rather that of everyone in the firm. However, Nonaka & Takeuchi (2004) state that emphasizing tacit knowledge alone can be dangerous. In contrast, Japanese firms should be aware of over-adaptation to past success, since firms could fail to unlearn those experiences within a new and changing environment. Furthermore, Japanese firms should be aware of the information revolution, and need to make better use of advanced information technology, software capabilities, and computerized management systems to accumulate, store, and disseminate explicit knowledge throughout the firm.

To summarize, firms of Western and other developed countries should be aware of the influence of the Japanese context on the findings here. Rather than copying the Japanese methods and techniques for knowledge sharing discussed in this study; they should see the findings here as a prism through which own practices can be observed and reflected upon. Hence, firms of Western and other developed countries can use the Japanese approach to knowledge sharing as a kind of mirror; observing their own practices and learn more about their own knowledge sharing processes. Next, the research limitations of this study, as well as recommendations for further research will be identified.

5.2 Research limitations

Before continuing with the recommendations for future research; the methodological weaknesses of this study will be discussed. There are multiple reasons why the results of this study have to be interpreted with certain wariness. First of all, even though open-questions were used in the questionnaire, the format of the questionnaire design makes it difficult to examine complex issues and opinions. The possibility exist, due to the lack of face-to-face contact, that the depth of answers that the respondents provided tend to be more limited than if other methods of research would have been used (e.g. in-depth interviews).

Another research limitation to the study here is that no scales (e.g. Likert scales) have been used in the internet-mediated questionnaire. As a consequence, it is difficult to state to what extent firms in Japan use knowledge sharing methods and techniques, and to what extent individual and organizational factors influence the knowledge sharing processes within Japanese firms. In addition, the individual and organizational context factors have been discussed in general, and not per method or technique for knowledge sharing. Therefore, one should be cautious generalizing the results of the individual and organizational context factors for all the methods and techniques for knowledge sharing.

Also, in this study, another research limitation is that only 1 person per respondent firm filled out the questionnaire. Therefore, one should be cautious generalizing the results for all firms and institutions in Japan. Furthermore, one should be wary with the social desirable answers of managing directors (74,55%)

and HR managers (10,91%); since the respondents in these positions could provide more desirable answers, instead of more realistic answers.

Lastly, some firms have been excluded from the sample size upfront, since a purposive (or judgemental) sampling technique has been used. Two criteria were used to form a relevant sample size, namely the respondent firms needed to have a limit of at least 5 percent of senior workers (50+), and firms which did not have any knowledge sharing methods or techniques (specifically) in place for their senior workers were excluded. Therefore, one should be cautious with the relatively high level of awareness among Japanese firms about the demographic projections, as well as with the results in regards to the frequencies with which the senior workers use knowledge sharing methods and techniques. Such findings contain the possibility that the findings reflect a rather positive image in comparison to the reality, since only relevant cases have been selected.

5.3 Recommendations for further research

Several recommendations for further research in relation to the topic of this study can be made. First of all, the use of in-depth interviews or a questionnaire with Likert scales is recommended for future research, since it is likely to enrich our understanding of the knowledge sharing methods and techniques being used by the senior workers. Furthermore, the use of multiple perspectives per firm will reduce the extent of social desirable answers, and provide us with a better insights on the methods and techniques being used.

Furthermore, Casher and Lesser (2003) state that little research has been done on which methods and/or which techniques are most appropriate and effective under which circumstances. Further research should be conducted to see if certain patterns or characteristics can be identified that enhance certain methods or techniques; or that the context of the knowledge sharing processes is firm dependent.

Another recommendation for further research is to turn the roles of Western and Japanese firms in a similar study, and to see if Japanese firms could learn something from the methods and techniques that senior workers in Western countries use to share their valuable knowledge. Based on the statement of Nonaka & Takeuchi (2004), who state that the future of knowledge sharing belongs to companies that synthesize the best of the West and the East, and construct a universal model. Therefore, it would be interesting to see what methods and techniques are predominantly being used in Western firms, and if Japanese firm can learn something here from their Western counterparts.

Lastly, Lindbo & Schultz (1998) state that when an individual retires, the fear of knowledge loss could be diminished by giving the retiree the option of returning as a mentor or consultant. However, besides such normative statements, little can be found in the academic literature on giving senior workers a role as an external consultant after retirement. It would be advisable to see if Western firms actually do use similar practices, and if yes, how these arrangements with senior workers differ from the role of senior workers as an external consultant in Japan, in terms of tasks, skills and other characteristics.

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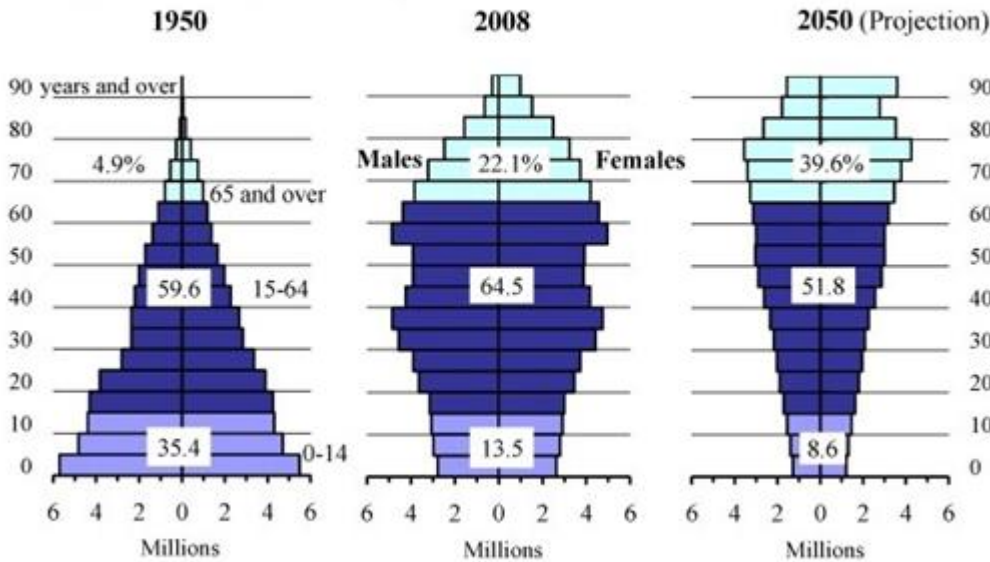
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7 Appendices

7.1 Figures

Figure 1
Changes in the population pyramid of Japan

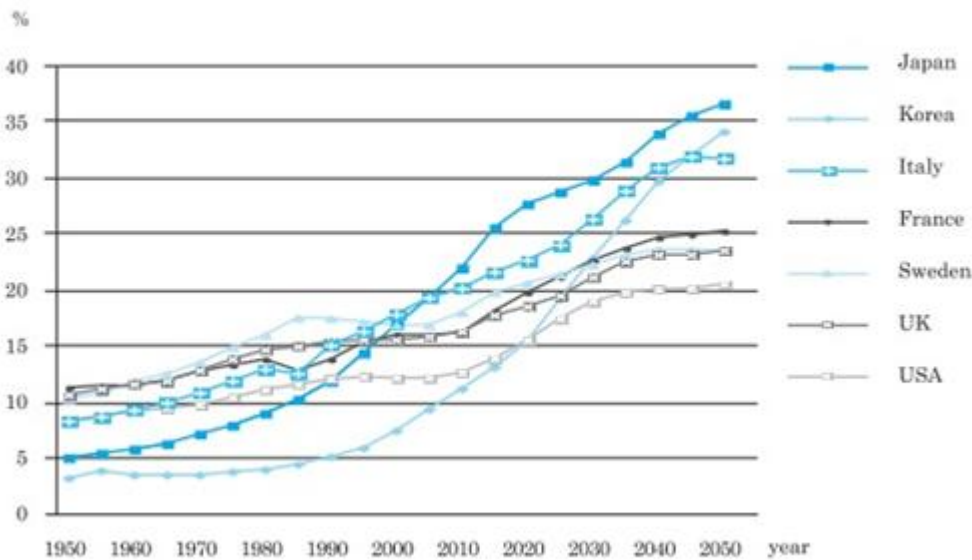
Changes in the Population Pyramid



Source: Statistics Bureau, MIC, 2008; Ministry of Health, Labour and Welfare in Japan, 2008

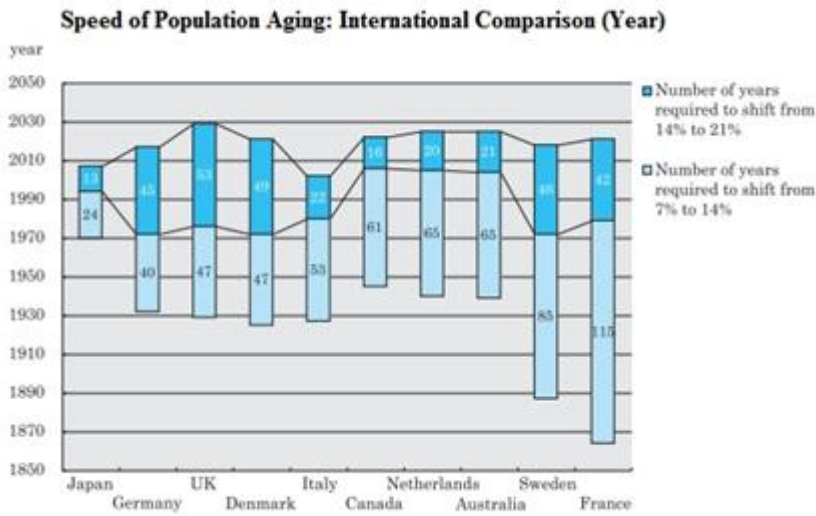
Figure 2
Trends of Population Aging - Population 65 and over - International comparison

Trends of Population Aging - (Population 65 and over)



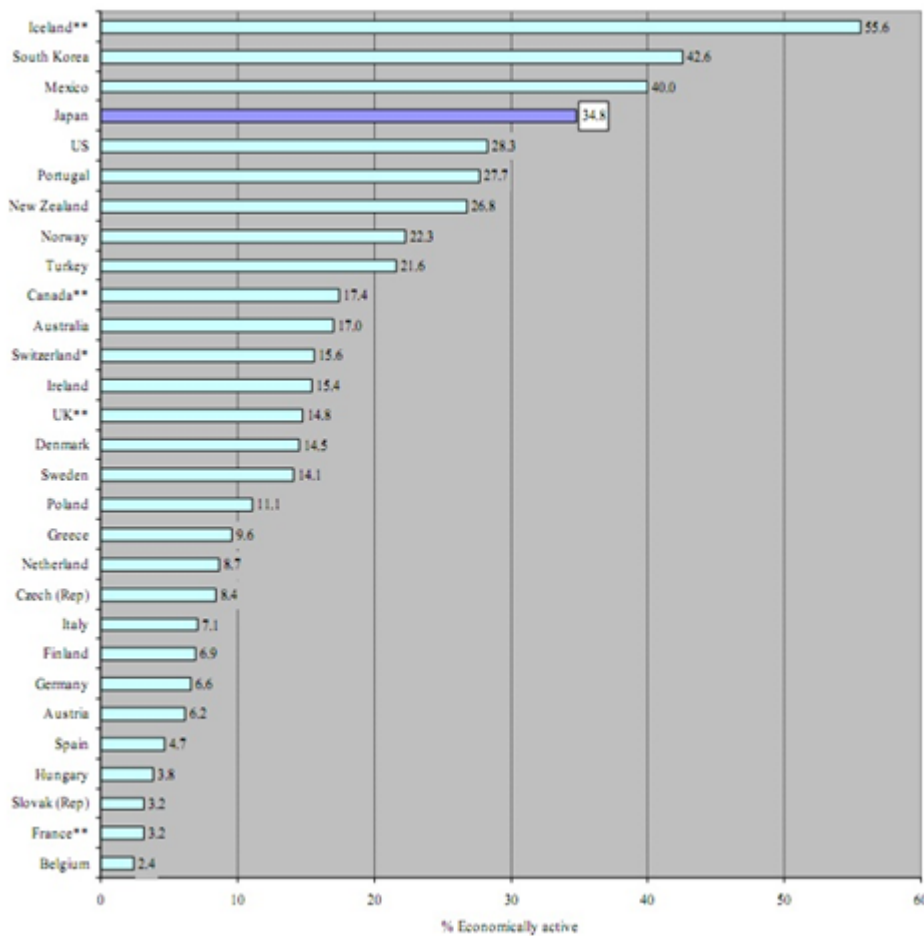
Source: United Nations (UN), 2008

Figure 3
Speed of Population Aging (65 years and over) – International comparison



Source: National Institute of Population and Social Security Research in Japan, 2007

Figure 4
Percent economically active among persons age 60 to 65 in the OECD countries as of 2005



Source: Based on data drawn from International Longevity Center Japan (ILC), 2006

7.2 Tables

Table 6
Knowledge Sharing Methods and Techniques in Small and Medium Firms

Methods and Techniques for		Workforce in General			Senior Workers in Particular (50+)		
		Responses		Percent of Cases	Responses		Percent of Cases
		N out of 23	Percent		N out of 23	Percent	
Small & Medium Firms	Training	18	19,6%	78,3%	6	15,0%	26,1%
	Mentoring	14	15,2%	60,9%	10	25,0%	43,5%
	Storytelling	10	10,9%	43,5%	8	20,0%	34,8%
	Communities of Practice	6	6,5%	26,1%	1	2,5%	4,3%
	Information Systems	18	19,6%	78,3%	2	5,0%	8,7%
	Expert Interviews	2	2,2%	8,7%	1	2,5%	4,3%
	After Action Review	7	7,6%	30,4%	3	7,5%	13,0%
	Orientation Period	7	7,6%	30,4%	1	2,5%	4,3%
	Other	10	10,9%	43,5%	8	20,0%	34,8%
Total		92	100,0%	400,0%	40	100,0%	173,9%

n = 55

Table 7
Knowledge Sharing Methods and Techniques in Large Firms

Methods and Techniques for		Workforce in General			Senior Workers in Particular (50+)		
		Responses		Percent of Cases	Responses		Percent of Cases
		N out of 27	Percent		N out of 27	Percent	
Large Firms	Training	25	21,7%	92,6%	16	25,4%	59,3%
	Mentoring	23	20,0%	85,2%	17	27,0%	63,0%
	Storytelling	14	12,2%	51,9%	12	19,0%	44,4%
	Communities of Practice	8	7,0%	29,6%	2	3,2%	7,4%
	Information Systems	11	9,6%	40,7%	3	4,8%	11,1%
	Expert Interviews	3	2,6%	11,1%	1	1,6%	3,7%
	After Action Review	14	12,2%	51,9%	2	3,2%	7,4%
	Orientation Period	9	7,8%	33,3%	2	3,2%	7,4%
	Other	8	7,0%	29,6%	8	12,7%	29,6%
Total		115	100,0%	425,9%	63	100,0%	233,3%

n = 55

Table 9
Knowledge Sharing Methods and Techniques in the Service Industry

Methods and Techniques for		Workforce in General			Senior Workers in Particular (50+)		
		Responses		Percent of Cases	Responses		Percent of Cases
		N out of 32	Percent		N out of 32	Percent	
Service Industry	Training	25	18,9%	78,1%	12	19,0%	37,5%
	Mentoring	23	17,4%	71,9%	17	27,0%	53,1%
	Storytelling	15	11,4%	46,9%	14	22,2%	43,8%
	Communities of Practice	7	5,3%	21,9%	2	3,2%	6,3%
	Information Systems	21	15,9%	65,6%	2	3,2%	6,3%
	Expert Interviews	4	3,0%	12,5%	1	1,6%	3,1%
	After Action Review	13	9,8%	40,6%	2	3,2%	6,3%
	Orientation Period	10	7,6%	31,3%	1	1,6%	3,1%
	Other	14	10,6%	43,8%	12	19,0%	37,5%
Total		132	100,0%	412,5%	63	100,0%	196,9%

n = 55

Table 10
Knowledge Sharing Methods and Techniques in the Manufacturing Industry

Methods and Techniques for		Workforce in General			Senior Workers in Particular (50+)		
		Responses		Percent of Cases	Responses		Percent of Cases
		N out of 19	Percent		N out of 19	Percent	
Manufacturing and Others	Training	17	19,8%	89,5%	9	20,9%	47,4%
	Mentoring	16	18,6%	84,2%	11	25,6%	57,9%
	Storytelling	10	11,6%	52,6%	9	20,9%	47,4%
	Communities of Practice	6	7,0%	31,6%	1	2,3%	5,3%
	Information Systems	12	14,0%	63,2%	3	7,0%	15,8%
	Expert Interviews	1	1,2%	5,3%	1	2,3%	5,3%
	After Action Review	11	12,8%	57,9%	3	7,0%	15,8%
	Orientation Period	9	10,5%	47,4%	2	4,7%	10,5%
	Other	4	4,7%	21,1%	4	9,3%	21,1%
Total		86	100,0%	452,6%	43	100,0%	226,3%

n = 55

Table 11
Knowledge Sharing Methods and Techniques in the Retail/ Wholesale Industry

Methods and Techniques for		Workforce in General			Senior Workers in Particular (50+)		
		Responses		Percent of Cases	Responses		Percent of Cases
		N out of 4	Percent		N out of 4	Percent	
Retail & Wholesale	Training	4	44,4%	100,0%	4	80,0%	100,0%
	Mentoring	1	11,1%	25,0%	1	20,0%	25,0%
	Storytelling	1	11,1%	25,0%	0	0%	0%
	Communities of Practice	1	11,1%	25,0%	0	0%	0%
	Expert Interviews	1	11,1%	25,0%	0	0%	0%
	Other	1	11,1%	25,0%	0	0%	0%
Total		9	100,0%	225,0%	5	100,0%	125,0%

n = 55

Table 13
Individual Factors influencing Knowledge Sharing Processes

		Responses		Percent of Cases
		N out of 55	Percent	
Individual Factors	Motivational Factors	44	33,6%	80,0%
	Education and Work Experience	28	21,4%	50,9%
	Self-efficacy	31	23,7%	56,4%
	Capacity to Absorb Knowledge	25	19,1%	45,5%
	Other	3	2,3%	5,5%
Total		131	100,0%	238,2%

n = 55

Table 15
Organizational Factors influencing Knowledge Sharing Processes

		Responses		Percent of Cases
		N out of 55	Percent	
Organizational Factors	Organizational Culture	48	25,0%	87,3%
	Management Support	40	20,8%	72,7%
	Organizational Structure	34	17,7%	61,8%
	Rewards and Incentives	11	5,7%	20,0%
	Organizational Demographics	19	9,9%	34,5%
	Knowledge Sharing Technologies	38	19,8%	69,1%
	Other	2	1,0%	3,6%
Total		192	100,0%	349,1%

n = 55

7.3 Semi-structured questionnaire

Dear Sir or Madam,

My name is Johannes Woelders, and I study Business Administration at the University of Twente in the Netherlands. At the moment, I am conducting research in Japan about the knowledge sharing behavior of employees who are aged 50 years and older. First of all, with the questions I am hoping to get a better understanding of the methods and techniques being used for knowledge sharing in your firm in general. Continuously, I would like to see if organizations in Japan have any methods or techniques specifically in place which allow their older employees (50+) to share knowledge. Therefore, I would like to ask you kindly to fill in a questionnaire.

オランダのツェンテ大学で経営管理を勉強しているヨハネス・ウールダースと申します。現在、日本で50歳以上の従業員の知識共有行動について研究を行っております。このアンケートのご記入をお願いしたいと思います。

Confidentiality regarding your name as well as the name of your organization is assured, and the information provided will not be used for purposes other than this research. Afterwards, you will have the possibility to receive a summary of the findings of the research, which will not only show an overview of the knowledge sharing techniques being used within other organizations, but also their level of popularity among other organizations.

秘密を守ってあなたと貴社の情報を取り扱い、この研究以外の目的で一切利用されません。研究後、ほかの企業で使われている知識共有方法とほかの企業での人気を示す研究結果の概観を差し上げることが可能です。よろしくお願いたします。

Feel free to answer the questions in Japanese or English, although I would prefer the questions to be answered in English if this is possible. Don't hesitate to contact me if you have any questions.

Thank you very much for your help and support!

ご協力ありがとうございました。

Best regards,

Johannes Woelders

ヨハネス・ウールダース

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1. How many employees are currently employed within your organization (or Japanese branch)?

貴社の会社では、何人の雇用がありますか？

2. How many of them are aged 50 and over?

その内、何名が50歳を超えていますか？

3. Which methods and techniques are being used for sharing valuable knowledge in your organization?

貴社では、重要な知識はどのように共有されていますか？

- | | |
|--|--------------------------------|
| - Training | - トレーニング |
| - Mentoring (Mentorship) | - 指導 |
| - Storytelling (Telling stories) | - 話をする |
| - Communities of practice (Group of volunteers who share knowledge on regular basis) | - 実践共同体
(定期的に知識共有を行うボランティア) |
| - Information/expert systems | - 情報/専門家制度 |
| - Expert interviews | - インタビュー (面接) |
| - After-action review | - 行為後のレビュー |
| - Orientation period | - 方位期間 |
| - Other, namely: | - その他: |

Please describe in more detail below:

どのように、そしてどの程度まで？詳しく説明してください：

4. In particular, which methods and techniques are being used by older employees (50+) to share knowledge with their younger colleagues/successors?

特に、先輩は後輩と後継者とどのように知識を共有していますか？

5. In order to preserve the valuable knowledge of the older employees, are there in your organization any methods or techniques specifically in place to allow an older employee to share knowledge in the period (1 or 2 years or so) before he/she retires or leaves?

If yes, please describe in more detail below:

どのように、そしてどの程度まで？詳しく説明してください：

6. Which of the following organizational factors influence the knowledge sharing processes in your organization?

下記組織因子の中から、貴社で知識共有に影響を与えるのはどれですか？

- | | |
|---|---------------------------------------|
| - Culture of the organization | - 企業文化 |
| - Management support | - マネジメント・サポート |
| - Structure of the organization | - 企業構造 |
| - Rewards and incentives | - 報酬とインセンティブ |
| - Organizational demographics
(e.g. size) | - 企業人口
(例えばサイズ) |
| - Technologies
(e.g. electronic and computer-aided
systems) | - 技術
(例えば電子システムとコンピューター
援用システム) |
| - Other, namely: | - その他： |

Please describe in more detail below:

どのように、そしてどの程度まで？詳しく説明してください：

7. In your organization, which of the following factors influence the knowledge sharing processes of individuals?

下記要因の中から、貴社で個人知識共有に影響を与えるのはどれですか？

- | | |
|---|-----------------------------|
| - Motivational factors (e.g. trust; perceived benefits and costs; beliefs of knowledge ownership; etc.) | - 動機的要因（例えば信頼、メリットとコスト、その他） |
| - Education and work experience | - 教育と職歴 |
| - Self-efficacy (the personal competence and confidence of a person) | - 自己効力感 |
| - Capability to absorb knowledge | - 知識吸収能力 |
| - Other, namely: | - その他： |

Please describe in more detail below:

どのように、そしてどの程度まで？詳しく説明してください：

8. Please write down your contact details if you would like to receive a summary of the findings:

よろしければ調査結果を要約したものをお送りさせていただきますので、送付先をお教えくださいませ：

Company -会社名: -
 Name -氏名: -
 Position -職種: -
 E-mail -メールアドレス: -

Thank you very much for your support!

ご協力ありがとうございました。

Johannes Woelders

ヨハネス・ウールダース

7.4 Follow-up e-mail

Dear Sir or Madam,

Thank you once more for your support. I appreciate your answers, and I believe they are very valuable for my research. I am analyzing the results at the moment, and I am sorry to bother you again, but after reading your answers I still have one follow-up questions. I hope that you can help me out with this question:

As you might know, the Japanese workforce is projected to age and shrink rapidly in the coming decades. Is your firm aware of these processes, and is your firm anticipating the projected aging and shrinking of the Japanese workforce in one way or another?

I would appreciate it very much if you could provide me with this additional information, and I will be happy to send you a summary of the results once I finished the report. I am looking forward to your response, and thank you in advance.

Kind regards,

Johannes Woelders

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