# Knowledge retention in organizations

*A literature review and case study exploring how organizations can transfer and retain knowledge to mitigate knowledge loss when older employees retire*

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# Abstract

Knowledge has become one of the greatest success factors for organizations in today's competitive and knowledge driven landscape. But what happens when knowledge leaves? As cohorts of baby-boomers, the generation born in the post-war period, are facing retirement, the field of knowledge retention is emerging. The question to be asked is clear: What can an organization do to retain knowledge in the organization, if and when facing these possibly troubled times?

This study has aimed to illuminate the phenomenon of knowledge retention and knowledge transfer between generations. By conducting a structured literature review and a qualitative case study of Statoil, the study has sought to shed light on this theme from different angles. Statoil is a highly knowledge-intensive company, and the industry they with a workforce, as well as the industry as a whole, is approaching a significant generational shift. That made it a relevant and interesting case to draw experiences from.

The main findings indicate that awareness is an important starting point for all retention and transfer activities. Strategies and practices that enhance continuous knowledge transfer and retention is found to be a key for mitigating knowledge loss in the long run, as are a repertoire of flexible knowledge transfer methods. The study finds that mutual exchange of knowledge should be applied as a model in knowledge transfer initiatives. Findings point to how translation competence can play a significant role in the knowledge transfer process. In addition, it has come to light that leadership with deliberate direction and encouragement for knowledge retention seems to be of much importance for how knowledge retention and knowledge transfer between generations can happen.

An understanding of how knowledge retention can happen may be vital for organizations that wants to stay competitive. This research has been a contribute to illuminating this topic additionally, and can thus be used for learning in organizations with similar challenges.

*«We cannot say, on the day of retirement, 'this is critical'. That must have been identified long before that time comes»* (Informant in Statoil)

# Preface

This thesis marks the end of a long journey. And as all journeys, it has to come to an end. The road towards a final product has been fun, challenging, at times frustrating, but most of all educational beyond any prior expectations; the learning curve has at times been steeper than a straight, vertical line. I have a lot of people to thank as I sit here today with the final product in my hands:

First of all, I want to thank Karen in Statoil for taking me in, for being positive and supportive at all times and for all the interesting conversations we have engaged in. Your involvement and interest in my project has been truly enriching. To all of my informants in Statoil; thank you for your time, enthusiasm, welcoming attitude and interest in my subject. This thesis could not have been done without you. To my supervisor, Kjell Arne Røvik, thank you for guiding me through this unknown territory with a steady hand and patience. Your belief in me has enabled me to reach longer than I thought possible, for which I am truly grateful. To my parents for always supporting me, letting me stay with you as often as I have needed, for making coffee in the morning and for peeling my oranges; a thousand times thank you. Dearest Aurora; thank you for being my solid rock and friend during two years of studying in Stavanger. Now we can do other things together! To Siri, who inspired me to write about this topic, and inspire me in so many other ways: thank you for being you. To Karoline, for being so caring and lifting my spirit in the toughest of times: thank you, there is no one like you. A special thanks to Gro, who proof read my work and gave me priceless input and encouragement towards the end. Last but not least, thank you Anders, for always believing in me, even when I at times lost belief in myself.

«And what, Socrates, is the food of the soul? Surely, I said, knowledge is the food of the soul»

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# 1 Introduction

## 1.1 Introduction

Picture a senior worker that has been employed in an organization for 30 years. In a couple of years, he will be retiring, and his life will consist of hobbies and spending time with his grandchildren. Over his years in the organization he has stumbled, learned, experienced and seen a lot of different things. He has an extensive network, knows who does what, who to ask in different situations and exactly how the company's very important client like his coffee. This knowledge that has accumulated over all these years will soon be forgotten and stowed away. The senior will take his mental backpack with him, as he takes his last workplace-breath, gathers his family photos and crosses the organizations threshold with his new life in front of him. His successor starts with an empty backpack, and have to spend years filling it with experience from his own trials and errors.

The picture created above is put somewhat extremely, but one cannot fail to see the point. When older and highly experienced workers leave an organization, there can become a void that can become costly. Possibly, there are ways of mitigating such an individual risk. But what if it is more than one senior? The concept of «baby boomers» are well known in today's society, referring to the generation born after World War II (DeLong, 2004). In Norway, the biggest birth rate in history was in 1946, and this baby boomer period lasted longer than in many other countries (Hagemann, 2015). This will necessarily mean that there are cohorts of workers that today are facing retirement, that will leave their organization and take their knowledge-filled backpack with them. This situation can become a bit riskier for organizations. The question becomes apparent: what can an organization do to retain this knowledge in the organization, if and when facing these possibly troubled times?

## 1.2 Theme

The overarching theme for this thesis is knowledge retention, which can be said to be an emerging concept as a sub-discipline of knowledge management (Levy, 2011). The definitions of this concept vary, but the core activities can be defined as *acquisition*, *storage* and *retrieval* (Walsh & Ungson, 1991). According to DeLong (2004, pp. 23-24) these activities means that knowledge first has to be translated and shaped into a state where it can

be kept for future use, the facilities that are used to keep knowledge and information until it is needed and the processes that are being used to access the stored knowledge in new situation.[1]

After some preliminary exploration, it quickly became clear that knowledge transfer is a vital part of any knowledge retention efforts. In relation to the definition in previous paragraph, this process can be described as acquisition, hence «moving knowledge into a state where it is kept available for future use» (DeLong, 2004, p. 23). Consequently, knowledge transfer had to become a central part of this study. The question of how knowledge transfer can happen between people, in this context between generations, was thus evaluated to be important to shed light on. Since knowledge transfer in the context of retention means that the knowledge will have to be translated into a new state to be retained, the theoretical contribution of instrumentalized translation theory will be used in the discussion of findings. Translation is according to Holden and Von Kortzfleisch (2004) a relevant analogy of knowledge transfer, which can contribute to exploring its nature. The analogy is accordingly drawing attention to the following aspects: knowledge transfer as a sense-making activity, a concern with personal cognition, and lastly, the effect on transferability meaning the extent to which knowledge can be transmitted to others (Holden & Von Kortzfleisch, 2004, p. 133).

### 1.2.1 Research problem and research questions

The aim of this thesis is to make a contribution to the research on knowledge retention, specifically by studying how knowledge retention can happen in knowledge-intensive organizations. Because the topic is fairly emergent, I will approach this by conducting two independent methods to illuminate the phenomenon in question from different angles. I have conducted a structured literature review, to shed light on what the literature suggests as methods for retaining knowledge. In addition, I have done a qualitative case study in Statoil, which is a highly knowledge-intensive company, with the aim of characterizing how they approach and conceive knowledge retention. The goal is to collocate the findings from the two methods and mirror them against each other to see how the practices for knowledge retention from the literature and the findings in the case study are different or similar. Further, knowledge transfer methods from the review and the case study will be discussed in relation

[1] The literature review (chapter 4) of this thesis is introduced by addressing the theme of knowledge retention in depth, and it will therefore be redundant to outline further in this chapter.

to translation theory, with an ambition to illuminate how the transfer processes are acts of translation. By meeting this goal, this study will provide a more profound insight into the practices and methods for knowledge retention, and shine light on the retention process from different angles. The following research problem is to be answered in this study: *How can knowledge retention and knowledge transfer between generations happen in organizations?*

To answer this problem in accordance to the goals of this study, two research questions were asked: (1) *What can be identified from the literature as good and transferrable strategies and practices for knowledge retention and knowledge transfer?* (2) *What characterizes ideas and organizing of knowledge retention and knowledge transfer in Statoil?*

## 1.3 Statoil as a case study

The organization that is being studied in this thesis is Statoil. Statoil is today the largest company in both Norway and in the Nordic region, and also the world's biggest offshore operator (Statoil, 2017a). As an international energy company, they today employ over 20.000 people in over 30 countries around the world (Statoil, 2017d), and consists of eight business areas, ranging from the oil and gas value chain to new energy solutions. Statoil operate and maintain a large and highly diverse portfolio of assets, upstream and midstream, onshore and offshore, globally. The workforce in Statoil, as well as the industry as a whole, is approaching a significant generational shift. In the coming years, a significant portion of the operations and maintenance workforce Statoil in Norway is due to retire (Statoil, 2016). This is where this study is focused. Such events will cause a company to think ahead, and prepare, as this can bring both challenges and opportunities for the future. Statoil is interesting in the context of this thesis, as they are facing some of the challenges described in the initial paragraph, as well as being a forward leaning company that is occupied by thinking ahead. Thus, it will be interesting to do a case study of Statoil to outline the characteristics of such a big and knowledgeable company in light of the theme of this thesis.

## 1.4 Relevance

The importance of knowledge retention is not understated in the literature. DeLong (2004) claims that intellectual capital is considered as important as financial capital in many organizations. The accessibility of knowledge is likewise argued to be one of the most important factors of success in organizations, for securing competitive advantage (Argote,

2013). When an organization face extensive loss in their workforce due to aging and retirement, they have a lesser control over potential knowledge loss, unlike situations where they can influence the worker to remain in the organization. Accordingly, this spells trouble for organizations that depend on their experienced professionals to create value (DeLong, 2004). Harvey (2012) calls this phenomenon a «danger for corporate amnesia», and further claims that a knowledge retention process involving locating the expert knowledge and target it with the right tools, is the only mean to mitigate such potential damages. Further, he points to the fact that examples of successful strategies in the field of knowledge retention, are scarce (Harvey, 2012). This is underlined by other researchers as well. Burmeister and Deller (2016) claim that the nature and antecedents of the knowledge retention process are not yet well understood, and the need for additional research is pressing. Based on this, there are little doubt about the fact that this theme is of relevance for further research.

Knowledge is a complex and varied area, and the need for exploration is constantly evolving as the knowledge concepts and challenges evolves. The theme and the research problem for this thesis is relevant, especially in light of the mentioned baby-boomer generation, that will be relevant both in Norway and in a global perspective in the future. To understand how knowledge retention can happen may be vital for organizations that wants to stay competitive. This research will contribute to illuminating the topic additionally, thus be of use for learning in organizations who faces such challenges.

## 1.5 Disposition

In chapter 2 I will present the theoretical contribution for this thesis. I will be presenting instrumental translation theory (Røvik, 2009, 2016) and describe how it will be used to discuss the findings of this study. Chapter 3 will present my methodological approaches. I will start by describing how the structured literature review was conducted, and move on to describing the case study design and the choices that has been made in relation to the qualitative interviews. In this chapter I will also discuss the validity and reliability of this study. Chapter 4 will be presenting the literature review. The review starts with looking at some general definitions and concepts of knowledge retention. The emphasis in this review will be on the explicit methods and strategies for knowledge retention, which will seek to answer research question 1. Chapter 5 will present the empirical findings, that also will answer research question 2. The chapter will be presented based on the two analytical terms

from the research question, *ideas* and *organizing*. Chapter six will present the discussion, where I first will start by mirroring the review and the empirical findings against each other, and then move on to analyzing methods for knowledge transfer, using the present theoretical contribution. In chapter 7, which is the last chapter, I will summarize the findings from this study and answer the research problem and associated research questions. I will conclude the last chapter by pointing at implications for organizations, and implications for further research.

# 2 Theory

## 2.1 Introduction

The theoretical perspective of this study will be used to discuss and analyze the knowledge transfer practices and methods from the empirical findings and from the results of the literature review. This chapter will describe the theory used for this purpose, namely translation theory. I will start by briefly presenting the origin and development of translation theory, and the theory´s key message. Moving on, I will outline the features of which Røvik´s (2016) instrumentalized version of translation theory is developed from. Further I will explain the main categories in translation theory, i.e. de-contextualization, contextualization and translation competence.

The perspective of translation that is applied in this chapter is based on the arguments about how knowledge can be transferred between source and recipient organizational units. These principles are generic and will therefore be suitable also when analyzing knowledge transfer between people, hereunder between generations. Consequently, in addition to presenting the theory I will discuss and outline how I relate it to the theme of my thesis, namely how the theory can be a suitable for looking at knowledge transfer between individual. In addition, the theory will also contribute in the literature review, as I will be inspired from the categories for translatability to study how the practices that appear in the review can be transferrable to other organizations in relation to research question 2.

## 2.2 Translation theory

Origins of translation theory can in short be said to be Scandinavian and French, hereunder stemming from the Actor Network Theory, which later inspired the Scandinavian neo-institutional tradition (Røvik, 2016). Within organizational theory, researchers have been exploring translation theory from different points of view, which in terms gives this it a mark of emergence (Wæraas & Nielsen, 2016). The primary idea of translation theory in the context of organizational theory is claimed by Czarniawska and Sevón (reproduced by Wæraas & Nielsen, 2016, p. 236) to be that «to set something in a new place is to construct it anew». In that context, Røvik (2016) argues that knowledge often is looked upon as a physical «thing», with the property of an object that can be taken from one place and put into another. This is a challenging view, because it can hinder the understanding of the outcomes

of a knowledge transfer process, be it a successful or unsuccessful one. Translation theory allows us to look at what is being transferred as pure representations and ideas, hence something that is much more convertible than physical objects can be (Røvik, 2009). In the extension, translation theory have the conception that ideas are transformed in the translation process (Røvik, 2016). Thus, translation theory focuses on the process where knowledge seeks to be transferred, not on the cultural, cognitive and structural barriers for transfer that often can be found in the literature (Røvik, 2016). An interesting take on the importance of translation theory, is that the understanding how things can get «lost in translation» accordingly can give us the advantage of being at the forefront in identifying possible communicative collapses before they happen (Holden & Von Kortzfleisch, 2004). The notion of how knowledge transfer can be seen as a translation process can in turns makes translation theory a good fit for outlining how knowledge transfer with aims of retention can occur in organizations.

Holden and Von Kortzfleisch (2004, pp. 128-129) argues that translation shares strong similarities with knowledge transfer, as translation in short is a practice that with deliberation converts knowledge from one place to another. Contributions to this field of study has aimed to «demonstrate how managerial models, ideas and practices are translated rather than just simply adopted» (Lamb, Örtenblad, & Hsu, 2016, p. 351). Researchers have applied translation to different domains and fields of study, among them in cross-cultural knowledge transfer (Holden & Von Kortzfleisch, 2004). This underlines the emergence of this field. Translation theory has more perspectives and aspects than this brief presentation can accommodate, but summarized and as a starting point for looking closer at Røviks (2009, 2016) perspective of translation; the key message in translation theory is to study what happens when knowledge moves from one place to another.

### 2.2.1 The instrumentalized version of translation theory

Røviks study of translation theory is inspired by the discipline of translation studies (Røvik, 2016). In short, this discipline limited itself to how one could make written texts understandable in another language than it was originally written in, but went through a development, especially from the early 80´s onwards (Røvik, 2009). This development concerned different actors within different research environments, consequently giving the content different attributes (Røvik, 2009). One of them was the emergence of «the manipulation school» which was grounded in the fact that the translator of texts should grant

himself a certain degree of freedom to *change* what is translated, for the purpose of adapting it to the language and the culture on the receiving end; a bicultural approach in addition to the bilingual (Røvik, 2009). This and other new direction marked a cultural shift that has affected translation studies to be concerned with translation in a wider context, including ideas about *what* may be the subject of translation (Røvik, 2009).

Røvik (2016, p. 4) bases his studies on three features from translation studies to develop the instrumentalized version of translation: (1) the notion that translation is based on communication between source and target recipient, (2) the notion of translation as a rule-based activity and (3) the discourse of how the translator's skills and use of translation rules can affect the translation process. By drawing on these insights, he develops the theory in the following two directions: seeking to expand translation theory into including translations from source units, and further seek out the potential translation theory has to «guide deliberate interventions in knowledge-transfer processes» (Røvik, 2016, pp. 1-2).

Based on this theoretical direction, I will in the following outline how knowledge transfer can be conceptualized as acts of translation. This involves two critical phases which will be addressed separately, namely de-contextualization and contextualization.

## 2.3 De-contextualization

Translation of a practice or idea from a specific organization will in this translation theoretical perspective involve turning the idea into a representation that is tangible (Røvik, 2016). The challenge is to make sure that the practice is represented properly, meaning that all the relevant aspects are included to be able to understand how the practice or idea is functioning in the context of the source that the practice is extracted from (Røvik, 2016). This axiomatic understanding of the importance of context is underlined by Holden and Von Kortzfleisch (2004) as they claim that misinterpretation of a situation always will exist if the contextual factors are not fully understood. In relation to knowledge transfer between individuals, it will mean that the knowledge aiming to be transferred needs to be verbalized, and reported with all the important circumstantial factors attached, so that the knowledge is not detached from the necessary contextual factors. This is not done without challenge, and will be dependent on how translatable the practice is (Røvik, 2016), or how translatable the knowledge that needs to be transferred to be retained is. Being able to express something that a receiver can make

sense of, is as challenging as it is vital (Holden & Von Kortzfleisch, 2004), and the degree of success will accordingly be based on how translatable something is. Røvik (2016) has identified three variables that can explain the translatability of a desired practice or idea. The three variables are *complexity*, *embeddedness* and *explicitness* and will be explained more thoroughly in the following paragraph.

### 2.3.1 Translatability variables

**Complexity**

According to translation theory, there are two aspects which will determine the complexity of a practice or idea. The first one is the relationship between technology and the people who execute the practice (Røvik, 2016). Substantially, this will mean that a practice which is mainly based on technology to function in an organization will be more translatable than a practice that is anchored within the people that perform it (Røvik, 2016). In the same way will knowledge be translatable to different degrees, depending on if the knowledge is deeply tacit within the mind of the expert. Tacit knowledge can be explained as a subconscious understanding and application of knowledge that is accumulated through experience and practice, and is seldom easy to articulate (Zack, 1999). The complexity will thus be reduced if the knowledge is concerned with doing something technological that more easily can be taught and shown to another person, thus easier to grab hold of.

The second aspect of complexity is causal ambiguity, which also can influence translatability. The effort of translating knowledge is often, if not always, triggered by an observation of success or results that are superior (Røvik, 2016), and the desire to copy this to achieve the same success. The vaguer the observed causal chain is, the more complex the practice will be. That is to what degree one can identify the fundamentals in which makes the practice successful, accordingly, the relationship between the results and the practice (Røvik, 2016). If this relationship is not clear, then the abstract representation will not include the important fundamentals, and will be harder to transfer, thus less successful. In relation to knowledge transfer between individuals, the understanding of what the expert knows to be able to achieve success in his work or be an invaluable asset to the organization, is essential. What part of the expert's knowledge is crucial and will be a critical to transfer to other when he retires? What does he know that enables him to always make the right decisions?

**Embeddedness**

How embedded a practice is in its context, and to what extent the knowledge and capability of this practice is anchored in the organizational context will also determine how translatable it is (Røvik, 2009). Context is the keyword, as the point is to create a comprehensive representation of a practice, which almost always will be embedded in the context-specific web that organizations comprise of (Røvik, 2009). The more embedded a practice is in its context, conditioned on the prerequisites that exist in the particular organizational landscape, the more difficult to translate and transfer it across organizations. In the context of knowledge transfer between individuals, the embeddedness will mean how cemented the knowledge is within the person which holds the knowledge, and how this is reinforced by the context surrounding it. If knowledge is to be transferred between individuals, then the contextual aspects will also have to be taken into account, to make the knowledge transfer at all possible, as knowledge cannot be isolated as a standalone occurrence in an organization.

**Explicitness**

By explicitness, Røvik (2009, p. 263) understands «to which degree the practice is codified and expressed through language, thus visible and communicable». If something has a degree of tacit knowledge in it, the verbalization is even harder to achieve, therefore the dimensions of tacit and explicit knowledge has consequences for the translatability (Røvik, 2016). In relation to translation studies, when translating from one language to another, there exist a significant condition; that there actually is a language to translate from, since the aim in translation and transfer is to verbalize the practice and make it communicable (Røvik, 2009). If a practice or an idea has a significant amount of tacitness to it, thus being less explicit, the task to translate it becomes more complicated (Røvik, 2009). The same will apply for knowledge transfer between individuals. The harder the knowledge is to grasp, verbalize and understand due to a tacit dimension, the harder it will be to transfer it to another individual or group with success. Even if the individual that possess the knowledge is the translator, the tacit knowledge can be hard to verbalize. The reason is that it so embedded in the sources mind. Even though we can articulate, define and discuss what knowledge *is*, it is not always easy to articulate and define the knowledge that you have inside your own mind, even though it seems feasible in theory. In fact, at times one might even not be aware of the knowledge that one actually possess (Rosness, Nesheim, & Tinmannsvik, 2013).

## 2.4 Contextualization

By contextualization, translation theory is referring to the process where the practice has been extracted from a particular context and is attempted introduced in a new organizational setting (Røvik, 2009). There are two concerns that the translator faces in this process, the first one is missing the fundamentals in the practice from the source, and the second is missing the fundamentals in the recipient environment, thus not being able to make the necessary alterations of the practice or idea to make sure it fits in the new context in question (Røvik, 2016). The core of contextualization is based on an understanding of the receiver as already having contents, for example an organization with already established structures, a defined culture and different people which in turn will affect anything new that seeks to find its way into the organization (Røvik, 2016). Thus, this needs to be taken into consideration by the translator when transferring something from one place to another. Also, this significance is present when it comes to knowledge transfer between individuals. It is not only the source of the knowledge that needs to be understood to extract the relevant knowledge, but the receiver must also be considered and evaluated in relation to the specific knowledge. If the knowledge is extracted from one person's mind to another, without making sure that the knowledge can be understood in the intended manner, one can risk that the knowledge will fail to be transferred, hence the entire process will fail. The knowledge must be adapted and formed so it fits the existing knowledge domain of the recipient to be made explicit enough to comprehend (Holden & Von Kortzfleisch, 2004). Thus the compatibility between the new and existing (Røvik, 2016) will be the keyword in this setting. Let us take a closer look at how one can go about translating knowledge, based on the argument that translation of knowledge is a rule based activity, as translation theory proposes.

### 2.4.1 Translation modes and rules

A key argument in translation theory, is that a translator will shape the structure of the knowledge when transferring knowledge between source and recipient contexts (Røvik, 2016, p. 7). Røvik (2016) outlines three modes of translation, hereunder *reproducing*, *modifying* and *radical.* Within the different modes of translation, there are different translation rules, which implies a specific set of guidelines for how to translate the knowledge. The three modes of translation will in turn lead to different levels of transformation ranging from low to medium and high. In this context, I will only be introducing the first two, as these are of most relevance to this study. A radical mode will entail that the knowledge is altered in such a

comprehensive way that a new version of the knowledge is created (Røvik, 2016). When retention of knowledge is the aim, some of the basics will have to be kept to a certain degree. If one alters the knowledge like the radical mode outlines, it is plausible to think that the transfer process has been unsuccessful.

**The reproducing mode**

This mode is referring to replication, and related to organizational ideas, the aim is to replicate best practices to gain competitive advantage (Røvik, 2016). The translation rule connected to this mode is copying. This is to some extent self-evident, having to do with replication of a practice from a source context to the recipient context, by using the same instruments that has been evaluated to create success (Røvik, 2016). Winter & Szulanski, referenced in Røvik (2016, p. 8) claims that if one has a strategy that is built on making copies, it will entail a need for comprehensive evaluations in the initial phase, to make decision about what to copy and how the copied practices should be implemented. This is essential before any such work can come about. It is especially two factors that are important for this mode of translation, specifically features of the practice that is going to be transferred and translated, and the relationship between the contexts where the practices are taken from and implemented into (Røvik, 2009).

Relating this to knowledge transfer between individuals, there are a number of things that will play a part in which translation rules one uses in the process. The translator of knowledge will in many cases be the knowledge holder which the knowledge is being extracted from, as argued in the previous paragraph. The knowledge that is to be copied, will be rationalized by the fact that the knowledge is important for the organizations competitive advantage, thus the wish to copy it to a successor. The same line of reasoning as outlined in the above, can be argued to be of importance when using the replication mode for knowledge transfer between individuals. The more explicit the knowledge is, for example concrete actions documented in a database, the less embedded the knowledge is in the source and the less complex it is (in relation to being more dependent on e.g. technology than individual attributes), the easier it is to copy the knowledge, describe it to a recipient and expect the knowledge to be implemented in the receiver.

**The modifying mode**

This mode is a pragmatic position, that is based on the efforts to be true to the original, e.g. a practice that is seeking to be transferred who should remain as it is represented, while at the same time regarding the fact that the practice has to fit in in its new environment (Røvik, 2009). This indicates that the translator must be able to conduct a certain conversion of the practice that is being translated, within a reasonable limit (Røvik, 2009). There are two translation rules that is connected with this translation mode, hereunder *addition* and *omission*.

*Addition* is about adding elements to the sources version, when translating it onto a recipient context (Røvik, 2016). The variations are explicitation and combination, which is two variants of adding to a sources version (Røvik, 2016). The former is about making implicit information from the source explicit, hence verbalize it, which will expand the original by expressing something that is not already stated (Røvik, 2009). The latter, combination, refers to mixing and combining elements from the recipient context with the new knowledge that is being translated (Røvik, 2016).

*Omission* is about toning down or subtracting elements from the original context, when something is translated and transferred into another context (Røvik, 2009). This translation rule means a reduction in the level of detail, or simply leaving out certain elements from the original version, when implementing it in the new context (Røvik, 2009).

In knowledge transfer efforts between individuals, there will always be the challenge that some of the best expert knowledge is tacit, which will have to be expressed and verbalized to be of value to others than the source of the knowledge. This can be done by using the translation rule, addition, namely the explicitation variant. By doing this, the knowledge will expand to another dimension, and it will be important that the source is active in this process, to make sure that the specific knowledge is extracted in a way that represents the core of the knowledge. As for combination, this is a translation rule which can be used in a bi-directional process of knowledge transfer, making the knowledge fit to the premise of the recipient, adding it to an already existing knowledge base and mixing it together with the recipient's prior contextual understanding.

## 2.5 Translation competence

When translating and transferring knowledge, there will always be people involved. When talking about translation competence, translation theory is referring to how the person responsible for the translation, the translator, has the ability to do this in a way that will achieve the goals which is set for the process (Røvik, 2009).

The translator in the context of knowledge transfer can be the person holding the knowledge to be transferred to a recipient, or it can be a third-party facilitator, e.g. a manager or a consultant. Of great importance is the ability for the translator to hold and combine knowledge of both the source and receiving end of the process, thus to have inside information about both the knowledge that is being transferred, and the context in which the knowledge shall be transferred into (Røvik, 2009). This is emphasized by Davenport and Prusak (1998, p. 98), who states that «people can´t share knowledge if they don't speak a common language». Translation theory teaches us that the translator should also have knowledge of how to establish this knowledge into another context (Røvik, 2009). This is not easy, given the way that knowledge can have degrees of tacitness. Thus, a competent translator of knowledge must have knowledge about the repertoire of translation rules that can be used, and to which situations these rules can be applied (Røvik, 2016). The following table is derived on the basis of Røvik (2016). It presents the three contextual conditions in a knowledge transfer process and is associated with translation rules as presented in paragraph 2.4.1. This table will conclude this chapter, as I move on to describing the methods of this study.

*Table 1: Contextual conditions and translation rules, based on Røvik (2016).*

| **Contextual conditions** | Features of the source | Features of the transferred knowledge | Features of the relationship between source & recipient |
|---|---|---|---|
| **Key variable** | Translatability | Transformability | Similarity |
| **Determining factors** | Degree of explicitness, complexity and embeddedness | Degree of freedom the translator has to interpret and make a new, own version | The greater the difference between source and recipient context, the more challenging knowledge transfer |
| **Range** | High – low translatability | High – low transformability | Different – similar |
| **Translation rules** | Copying if explicit, less complex and less embedded<br><br>Non-explicit calls for more addition | Copying if less transformable<br><br>Medium transformability calls for addition | The more similar context, the greater the chance for success with copying<br><br>Medium similarity calls for addition and or omission |

# 3 Method

## 3.1 Introduction

The purpose of this study is to answer the following research problem: *how can knowledge retention and knowledge transfer between generations happen in organizations?* I chose to approach this problem by conducting two independent methods, namely a structured literature review, and a case study involving an empirical study of an organization. The aim of the literature review was to find out which practices and methods that are proposed for knowledge transfer between generations, when the aim is knowledge retention. Another aim was to look closer at how these methods work in practice, and the practices transferability. The empirical study aimed to look at a concrete, knowledge-intensive organization, to investigate how organizing and ideas for knowledge transfer between generations and retention are applied. The final aim was to discuss the findings from each method and mirror them against each other. Translation theory will be used to analyze knowledge transfer initiatives. This is the overarching theoretical contribution in this thesis.

Two research questions have been derived from the main research problem. These are as follows: (1) *What can be identified from the literature as good and transferrable strategies and practices for knowledge retention?* (2) *What characterizes ideas and organizing of knowledge retention and knowledge transfer between generations in Statoil?*
Research question 1 will be discussed with the results from the structured literature review. Research question 2 will be presented and discussed with help from the case study, namely the empirical study of Statoil.

This chapter will address the methodological considerations that underlie this thesis, and will be divided into two subchapters, since there are two independent methods that have been used in this study. I will start by presenting the process of the structured literature review, hereby explain which considerations and choices that were made when colleting the data. I will further proceed with presenting the research design for the empirical study, which is a qualitative case study. Here I will argue how a case study are appropriate for this study, and outline how the case was chosen. Moving on, I will present how the quantitative data was collected. In the last paragraph, I will discuss the validity and reliability of this thesis, related to both these methods.

## 3.2 Literature review

### 3.2.1 Introduction

Research question 1 specifically turns towards the literature for answers, and it was therefore natural to conduct a structured literature review as a method. A review of the literature is of the essence to make sure you understand a topic, what has been done in the field and gain an insight of the main issues concerning the topic in question (Hart, 1998). Further it is an opportunity to «design and carry out a substantial piece of investigative work in a subject-specific discipline» (Hart, 1998, p. 15). Synthesizing evidence from the literature can among others give a trustworthy answer to a specific research question (Booth, Sutton, & Papaioannou, 2016), which this method aims for as an central part of this study. The review will contribute on different levels. The focus is to answer research question 1, but also to offer insight into the world of knowledge transfer and retention, and give a relevant background of the present discussions that will stretch throughout the study. This is concurrent with the fact that a key objective in all reviews are to provide an overview that comprise of leading concepts that are relevant in regards to the topic of the study (Hart, 1998).

In the following I will present the scope of the review, before I go deeper into the choices that was made in the process of collecting data. For this, I will use Callahan (2014) «six W´s», which is a structured table of components that can be used to explain methods for a literature review. The components are *who*, *when*, *where*, *hoW*, *what* and *why* (Callahan, 2014). I chose to organize this paragraph in this manner, to achieve a clean structure and make sure that all the components are attended to; striving to safeguard the transparency and increase reliability in my thesis.

### 3.2.2 Scope

The starting point for this thesis did in fact not include a literature review. I was interested in knowledge retention as a phenomenon, and more, through an instrumental approach, what concrete practices that can contribute to retaining knowledge in an organization to mitigate knowledge loss. When doing the initial research for this thesis, I started to make myself familiar with the literature, by searching broad in library databases and on google scholar. What I found, was an emerging field of research, which all underlined the need for a structured and planned approach for achieving knowledge retention. What was interesting, was the significant amount of case studies outlining different solutions, and how they all

seemed to underline that the results were not to be generalized to other organizations due to the specific context that surrounded the success of the solution. This led me to believe that there might exist some similarities in the different approaches, that could be synthesized and form some kind of «best practice» for efficiently retaining knowledge in organizations that face demographic challenges. Thus, the first research question was formed and a structured literature review as an independent method in the thesis was added to the agenda for the benefit of the investigation that I would delve into. Since I have not come across any similar work, that being a review of the methods and practices of knowledge retention I will choose to call this a white area, meaning that this had not been studied before. This white area serves as a gap that my review aims to fill.

I wanted to include different types of literature, ranging from journal articles, research articles and contributions from consultants, mainly books proposing best practices. I strived to cover not only the theoretical aspects, but also the specific «how to» literature, that would describe how knowledge retention can be done in an organization, accompanied with evidence of how it works. This does not necessarily include scientific approaches, as the «how to» literature often comes from narratives of success stories in organizations. The point was to identify the literature that describe different practices, thus the practices that are proposed as methods for successful retention of knowledge.

### 3.2.3 Basis for data

#### Who?

I conducted the search for data by myself, but received advice from my supervisor about relevant literature to read early in the process, specifically two books. These books are included in the review.

#### When?

The time frame for collecting the data was from 06.02.2017 - 21.02.2017. In this period, the database search was conducted, the potential contributions were read and their reference list was scanned to find additional literature. Finally, the list was narrowed down to a manageable size.

### Where?

The databases that were used to collect data was mainly emeraldinsight.com and researchgate.net. In addition to this, I scanned reference lists from central contributions, and I also got advice from my supervisor on resources that could benefit my literature, namely two management books (DeLong, 2004; Leonard, Swap, & Barton, 2014). The books appeared to be quite central in the knowledge retention literature, hence they were evaluated to be valuable contributions even though they did not appear in the initial database search.

### How?

The search terms that formed the basis for data collection was the following:

- Knowledge retention
- Knowledge retention AND aging
- Knowledge retention AND action
- Demographic change AND retention
- Intergenerational knowledge
- Knowledge retention AND strategy OR strategies

In addition, the search terms were elaborated, as I used synonyms and other combination to search the databases, and kept doing this until I saw that the same results appeared, and no new results could be found. As mentioned, I also checked reference lists for identifying possible contributions. To ensure that identification of studies are exhausted, one approach is to search the reference lists or bibliography of relevant retrievals from the initial database search (Booth et al., 2016).

### What?

After I had finished the database search, I had identified 40 different literature contributions that fit the purpose for this review. After scanning reference lists, I found additionally 9 contributions. The 49 contributions were mainly selected from reading abstracts. After screening all of the literature through the selection criteria, reading each contribution more thoroughly, I was left with a total of 22 documents and books. In the process of writing the review, additionally three of them fell of and were excluded for being too conceptual. This left me with a total of 19 contributions, which formed the literature review of this thesis. The figure on the next page demonstrates a summary of this process:

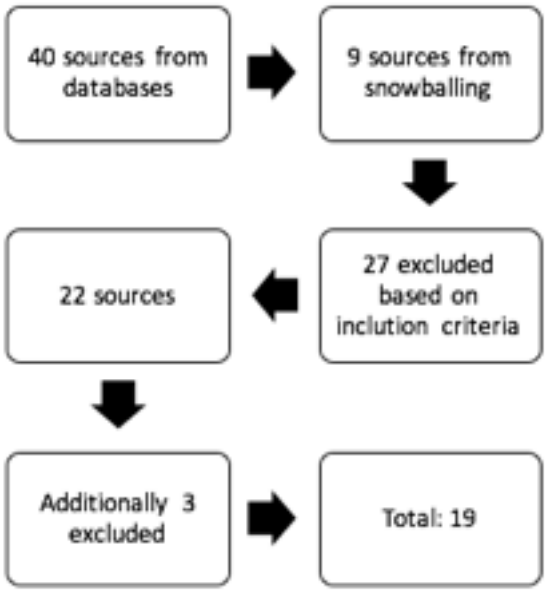


*Figure 1: The selection process*

**Why?**

Since I am the only researcher on this project, and the time frame for this thesis was limited, I had to make criterias to assess which contributions to exclude, and which to include. This would also benefit the quality of the review, making sure that the contributions would allow me to answer the research question. Thus, the criteria´s were made based on the essence of research question 1. The main criteria to look for when assessing the literature was whether the source described practices or processes for knowledge retention. The second criteria helped me assess whether the practices had an overarching aim for retention, and not just transferring knowledge in general. Knowledge transfer, isolated, is a rather wide field and is more researched than knowledge retention. The contributions that mentioned only knowledge transfer initiatives without them being a part of knowledge retention efforts were thus excluded. Third, the last criteria were that defined practices had to be described in relation to a case, or empirically studied in relation to results. The contributions that merely listed different transfer initiatives, or presented solutions without associate them to a case or research was thus rejected. Since knowledge retention is an emerging field, I did not set any limitations in relation to time. Still, I experienced that the literature on this field was rather new, the oldest contribution being from 2001.

### 3.2.4 Feature map

To analyze and map out the content of the different contributions, I used a feature map. This is a tool to help with systematize, produce summaries according to the topic in the study and locate similarities and differences in the studies that is under investigation (Hart, 1998). I found that this type of tool suited the purpose of the review very well. I used the feature map to isolate and focus on specific parts of the literature (Hart, 1998), namely practices for knowledge retention. By focusing on this part, I created an «interview guide», consisting of questions that I wanted to «ask» the literature. For instance, a central question was whether there was a specific practice or process for knowledge retention described, and if so, which one(s). The complete feature map can be found in the appendix, together with an overview of the different contributions (appendix 2). The feature map is divided into two parts; the first part identifying the background information of the literature in question, and the second to delve into the matter that was important for answering the research question. By doing this I got a broader overview of the differences and similarities in the contributions, also enabling an easier synthesizing process because it allowed me to extract only the relevant information for my study. I will now move on to describing the method for answering research question 2; *what characterizes ideas and organizing of knowledge retention and knowledge transfer in Statoil?*

## 3.3 Research design

### 3.3.1 Case study

A case study is an empirical inquiry, which investigates a contemporary phenomenon in depth and within its real world context (Yin, 2014, p. 16). Thus, case study research will be appropriate when you want to understand a real-world case, assuming that the understanding is involving contextual conditions (Yin, 2014). This is in line with this study´s empirical contribution; to investigate both the conceptions of, and practices for knowledge transfer and retention in the unit of analysis, which is the phenomenon. The aim is to describe the phenomenon in its specific context, which is defined by Yin (2014) as a descriptive case study. This will be the overall framework for answering research questions 2.

The case study method has been criticized by many as a less desirable method, and different concerns has been identified; one of them is the inability of generalizing because it often comprises of only one single observation (Yin, 2014). Flyvbjerg (2006) introduces a different

view on conducting case studies; in social science, generating evidence is difficult due to the lack of «hard» theory, but learning from the cases is indeed possible. By proposing a revision of the statement that general knowledge is more valuable than context-dependent knowledge, as the case studies usually are, he explains: «predictive theories and universals cannot be found in the study of human affairs; concrete, context-dependent knowledge is therefore more valuable than the vain search for predictive theories and universals» (Flyvbjerg, 2006, p. 423). This thesis supports this, and I find that the pursuit for knowledge and learning is stronger than aiming for generalization. Even though the literature is somewhat agreed on the fact that a case study cannot be generalized, Flyvbjerg (2006) here points to the importance of learning within a specific context, after all, this is what we have to deal with in real-life. We can seldom isolate a phenomenon from the context when studying organizational life and endeavors. The intention with this study is therefore not to generalize, but to study a real-life organization in its real-life context, and mirror this to the literature of knowledge retention and transfer. Still, I am ambitious that this study will provide insights that will be valuable, in terms of learning how organizations both can and will approach the risk of knowledge loss. In that manner, the exploratory dimension that lies within the research questions will contribute to this. I find myself agreeing to the fact that «we gain better understanding of the whole, by focusing on a key part» (Gerring, 2007, p. 1).

The main research problem for this thesis supports the need for doing a study of contemporary events which we saw earlier was the central pivot point for a case study. «How» questions are more exploratory, and they are more likely to lead to a case study (Yin, 2014). Inspired by Gerring (2007), I have created a table overviewing the case study research design for this particular study:

| Study | Subjects | Cases | Sample | Analysis |
|---|---|---|---|---|
| Ideas and organizing of knowledge transfer and retention in Statoil | Employees | 1 | 14 | Qualitative |

*Figure 2: Case study research design*

### 3.3.2 Choice of case

The case that is chosen for this study is Statoil, a single-case study. In this context, you cannot get around mentioning the existence of skepticism concerning doing just one case study. Criticism about doing single-case studies is about the uniqueness of the single case, hence the

possibilities of doing empirical work is weakened (Yin, 2014). Still, as mentioned in the previous paragraph, the focus is turned towards learning through exploring the case in question with the aim that these insights will be a valuable contribution to this field of research.

When doing research for this thesis initially, Statoil became relevant for several reasons. First, it had to do with the industry they operate within. The oil and gas industry is rather new from an industrial perspective. When oil was discovered in Norway, the learning curve was steep, and the growth was tremendous. Statoil was established in 1972, and has since been growing in step with the development of the oil and gas industry. The industry is highly knowledge-intensive, depending on their worker's competence and knowledge for creating value and competitiveness. «It is our people who enable us to meet our challenges and deliver on our promises» (Statoil, 2017b). Secondly, knowledge intensity combined with a low turnover rate in Statoil throughout the years of operating led me to believe that the workers that has been part of this Norwegian oil adventure from the very beginning, is now stretching towards their retirement age. If this notion is true, then years and years of competence and knowledge accumulated from scratch will be on the verge, and cohorts of older workers will be on the threshold. The third reason for choosing Statoil was media related. Given the significance and size of the company, Statoil can be characterized as a «big brother» in the industry, and are always under close scrutiny in the media. After the merger with Hydro in 2007, there was a lot of criticism connected to the early retirement packages given out. From Statoil's point of view this was a necessary mean to stay competitive, after all, they were left with a double set of competences, so to say. Thus, they offered comfortable compensation to those who wanted to retire early, and used this as a voluntary instrument for letting people go. This specific occurrence falls outside the scope of this thesis and will not be focused further, but is still interesting mentioning it as a precursor; by being under this pressure in the media, and already having experienced cohorts of highly competence older workers leaving the organization, has this experience affected the view and awareness of knowledge retention in the organization? These were questions I asked myself initially, increasing the interest in Statoil as a possible case for this study. Together, these reasons participated in choosing a case organization which I believe is highly fitting for this research.

### 3.3.3 Focusing the case

I contacted Statoil in the autumn of 2016, and was referred to Karen[2]. Her formal role in Statoil is leader in the network called «people and leadership», with responsibility for developing the new competence strategy for Operations and Maintenance (O&M). The competence strategy also highlights the generational shifts that are pending in Statoil and the challenges that this will entail. Additionally, it confirmed some of my initial assumptions, that the demography in Statoil, thus the O&M network, is indeed leaning towards a generational shift (Statoil, 2016). Since the competence strategy was to be developed for the O&M network, the case was naturally focused on this area of business. Statoil is an international company, but this case only examines Statoil in Norway.

## 3.4 Interviews

### 3.4.1 Introduction

What method you choose, will depend on what you are trying to achieve (Silverman, 2011), and in this case I want to achieve in-depth knowledge about Statoil and how they approach knowledge retention efforts. To be able to collect data, with no prior knowledge of how knowledge is managed in Statoil, and more, *if* there existed practices for knowledge retention in Statoil, the choice fell on interviews. Other methods that were considered for this study was a quantitative survey. A questionnaire could give wider insight into more people's experiences and understandings, and would cover a bigger part of the population in the chosen case unit. Still it would not enable me to go into detail, neither give me the possibility to consider the notions of the topic within the organization. On the basis of this, and considering the exploratory format, not knowing what I would find prior to this study, interviews were assessed to be the best tool for collecting data in this context. Interviews will give access to observations and insights that surveys don't necessarily capture (Andersen, 2006).

The study comprised of 14 semi-structured interviews that together with the results from the literature review formed the basis for data. I was interested in capturing how ideas and organizing of knowledge transfer and retention initiatives can be characterized in Statoil. To this purpose, interviews are well suited. «The idea of active interviewing is built on the

[2] Since Karen was not interviewed and only had the role of being my contact person and facilitator for the project, the need to anonymize is not present. This has also been approved by Karen.

assumption that we can understand social reality by listening to and interpret what is being said» (Andersen, 2006, p. 295). This is to a large extent concurrent with what this study seeks to achieve. The method allows the researcher to look at the different aspects of the interviewee´s unique insight into situations and contexts which are not distributed and available in other ways (Andersen, 2006).

### 3.4.2 Selections

As mentioned, I didn't have any association with the case unit from before. My contact person in Statoil did the selection of informants after initially having discussed the rational and criteria for candidates together. The selection of participants for the interviews was done by a non-probability sampling, hereunder selection by discretion. This type of selection is not randomized, but done by choosing participants that are considered suitable for the study in question (Hellevik, 2002). All of the respondents were considered being key informants, thus people with particular insight and a good overview of the topics of which I aimed to illuminate (Andersen, 2006). Because of the nature of the research question and the complexity of the case unit, we also strived to cover different dimensions in the organization, by choosing informants from different areas, and with different roles. The emphasis was put on selecting employees from different organizational «corners», and within different fields of expertise. The list of informants can be found in appendix 3. For anonymity purposes the roles have been generalized.

### 3.4.3 Semi-structured interviews

> *«In the one-to-one interview you start level in the unconfidence, in not knowing where you are going... You do it in your own way. You experiment. You try this, you try that. With one person one´s best, with another person another. Stay loose, stay flexible»* (Parker, 1996, p. 123)

Because the purpose of the interviews was to explore and shine light on the characteristics of knowledge transfer and retention in Statoil, a semi-structured interview form was considered the best approach. This form can be placed in the middle of the structured interview and the open-ended interview (Silverman, 2011), allowing the interviewer to create a tentative structure prior to the meeting that doesn't necessarily have to be followed. Semi-structured interviews are regarded as the «workhorse» of qualitative research, and can often be defined as an interview form that allows the researcher to be more flexible, not striving to follow a structured order of questions (Packer, 2011). Because I would not know whether practices for knowledge transfer and retention was an expressed and manifested part of Statoil today, I could not seek answers through my knowledge in advance, but by building up the

understanding together with the interviewees. By being active in the interview situation, as is inevitable, given the interactional nature of an interview, both the interviewer and the interviewee partake in making sense together (Silverman, 2011). By conducting the interviews following a semi-structured form, I had the advantage of giving the interviewees freedom in how they chose to answer, what matters they wanted to discuss and the length of their responses (Packer, 2011). This enabled me to receive factual responses of the topic, the phenomenon, and hear how they reflected in their own words. This is accordingly the aim of such an interview form (Packer, 2011).

Whether you use the interview guide or not, it is useful to bring along some key words or questions (Rapley, 2007), to prevent the interview from stagnating. My interview guide was basically structured according to topics; concrete practices for knowledge transfer and retention, what types of knowledge that the participants saw as critical knowledge for their company´s objectives and what they pictured as important in the future regarding transfer and retention of knowledge in the organization. I experienced that by introducing broad topics, the respondents talked freely about what they considered to be important, which protected the core characteristic of the semi-structured interview. By doing this, their answers became the main topics for the rest of the interview (Rapley, 2007). I still brought an interview guide to each interview, which was flexible, and adjusted according to the different interviewees (Rapley, 2007). The adjustments were based on information I had given beforehand about the participants role and prior experience.

I will now move on to describing how the interviews were executed, namely what the data collection process looked like before, during and after the interviews.

### Initial phase

After the interviews was booked, a pre-read was sent to all the participants. This also included a consent form. Firstly, this was a formal invitation to participate in the study, presenting myself and explaining what participation would entail for the individual contributor. Secondly it sketched the topic, temporary research questions and the themes to be pursued in the interviews, to give them the opportunity to prepare themselves prior to the meeting. The choice to give the participants a pre-read was also important for the transparency, to be honest about the purpose of the study. In Norway, being open is formulated as an ethical requirement

when doing research, which entails that the participants are informed about the purpose and agree to participate in advance (Hellevik, 2002). This can however be problematic, because it may affect the results (Hellevik, 2002). An example would be if the participants say somethings because they think that the researcher would want to hear it. They can also be affected in other ways that can make the study unsatisfactory. Nevertheless, this is particularly visible in research that study delicate and sensitive topics (Hellevik, 2002), which does not apply to my study.

The participants had all read the pre-read beforehand, and many had written down keywords and reflections based on the information given. In my opinion, the openness in relation to this pre-read created a safe environment, which I believe gave the participants the opportunity to come prepared. To make sure that there were no misunderstandings connected to the pre-read, I also prepared an introduction that I presented orally at the beginning of each interview, summing up the main points from the pre-read and formulated the core of the study in my own words. This was done to make sure that the starting point was the same, for both me and the interviewee.

The first interview was a test-interview. The results are nonetheless included in the data material. I wanted to test the format and the topics, thus gave the first interviewee the task of evaluating and giving feedback after the interview was done. The evaluation enabled me to do some minor adjustments, but ultimately the feedback was positive.

### Executing phase

All the interviews were done face-to face in conference rooms at Statoil, some of them in a physical presence and some in a digital presence. Participating in each interview was myself, the interviewee, and Karen. She offered to join the interviews based on her interest in the subject, and prior experience with interviewing. The rationale behind this decision was twofold; firstly, she would help listen and take notes, so that I could focus on the interviewee and follow up on important details, and secondly it increases the reliability as we were able to discuss the output in the aftermath of the interviews, as I will come back to later in this chapter.

The interviews were all introduced by clarifying the roles. We always told the interviewee that Karen would not be asking questions, but could jump in in the end if she wanted to follow up on something she though was important. She told the informants that I would «control the show» and by doing this she gave me an authority that was reinforcing. I got the impression that the participants trusted me as a researcher and I experienced that they felt safe and that I was to be trusted with the information they gave me. According to Andersen (2006) it is of the utter importance that the researcher can establish himself as a competent and credible person.

By explaining the background for the research to the informants, and making a point of why it is important to Statoil as an organization to put this topic on the agenda, I wanted them to feel like an important part of my project, which they indeed were. Even though they had been given the information beforehand stating that the interviews would be recorded, I asked them again to make sure that no one was uncomfortable with this. All the informants confirmed the use of a recorder. Considerations that is described in the above, can work as drivers for giving the interviewee the role of being of importance to the study, and the feeling that what they have to say is important (Rapley, 2007), which I believe benefitted the outcome of the interviews.

The extent of previous knowledge the researcher possesses about the phenomenon that will be studied will play a part in the interview situation, and therefore seems important to reflect on when presenting my methods. As already admitted, I had little knowledge of the activities in Statoil prior to the interviews. Some will say that this was positive, because you will be avoiding asking questions based on preconceptions (Andersen, 2006), but position yourself as neutral. On the other hand, this can open for more misunderstandings, because the lack of knowledge gives a lesser understanding and control over the interview (Andersen, 2006). By including Karen in all the interviews, this was more under control. I asked the questions, which was not based on any preconceptions. By discussing each interview after they were completed, we could synchronize our observations, and clarify any misunderstandings, something that gave the output from the interviews a stronger reliability.

### Closing phase

After each of the interviews was conducted, Karen and I immediately sat down together and talked through the interviews, taking notes using a template. This enabled me to write down the main takeaways according to the topics that were addressed in the interviews as they were still fresh in our minds. Later, I transcribed the interviews one by one, by using the recordings. When the analysis of the data material was conducted, I sent each interviewee a document including quotes and excerpts from the transcription that was considered to be the main findings from that particular interview. Because the interviews were completed in Norwegian, I had to translate the transcribed quotes and excerpts into English in addition to interpret them. I therefore felt the need to give the respondents the opportunity to read through the quotes, and give me feedback. For the sake of transparency, I also included the original quote and excerpt in Norwegian from the original transcription. I encouraged the participants to send me adjusted quotes, if they felt that there were any quotes that did not bring out the point properly in terms of their intentions. All of the respondents approved the document, only a minor adjustment was made, to better bring out the intended point in a statement.

## 3.5 Validity and reliability

When writing up a report that is based on research, it is important to include the necessary information that will give the reader a precise picture of how the research has been conducted (Hellevik, 2002). The outcome shall not be determined by the person who carries out the research, hence other researchers should be able to replicate the research and find the same answers, if looking at the same research problems (Hellevik, 2002). It is therefore essential to explain and discuss the methods openly. The information should give someone else the possibility of evaluating how trustworthy the methods that has been used to study the phenomenon in question are. In the previous paragraph of this chapter I have disclosed the methods and choices I have made in relation to this study, striving for transparency. In the following paragraph, I will discuss the validity and reliability of this study, both in the literature review and the case study, thus the qualitative interviews. I will divide validity and reliability into separate paragraphs.

### 3.5.1 Validity

Validity can be defined as whether the data that is collected represents the phenomenon that is being studied, and to what degree it is valid (Johannessen, Christoffersen, & Tufte, 2011). In

short, validity is about whether we measure what we have set out to measure, in other words that what we investigate actually is what we aim to investigate (Patel & Davidson, 1995).

### Literature review

Internal validity will be important for a structured literature review. In this thesis, the review is based on a research question, hence it is important for validity that the documents are suitable contributors to answer the research question. The inclusion and exclusion criteria's which was explained earlier contribute to this, and the feature map is also an approach for making sure that the conclusions are valid. By presenting guidelines for how the different contributions should be selected and analyzed, the process is both more transparent and will give direction for me as a researcher, allowing me to keep my focus on the research question at all times. The inclusion and exclusion criteria's is also an instrument to avoid possible bias in relation to selection.

A weakness with this method, is related to time. The time available did not allow me to read all of possible documents and books in depth, but had to settle with reading the abstracts in order to assess if the contributions would contribute to answering my research question or not. I acknowledge that reading the documents and books more carefully, could have influenced the selection in another direction. Still, the abstracts are supposed to give the reader the main points of the present work, and should give the right information to form a fairly adequate picture. As described, three of the contributions fell off after reading them in more depth, which points to how the abstract reading might have excluded some important works from my review.

When interpreting the data, the feature map was a tool to help me (1) interpret the data consistently and (2) make sure that all the contributions were equally weighted and assessed. In social science, where interpretation of data is underlying the method there will always be different interpretations. By using a feature map, which can be defined as the interview guide, there are a bigger transparency to how the different documents have been interpreted, which will enable other researchers to replicate the study.

## Case study and interviews

«Information from several independent sources will give a valid description of the phenomenon» (Jacobsen, 2015, p. 231). This does not necessarily mean that the sources have to be convergent in their descriptions (Jacobsen, 2015). As mentioned, the selection of participants for this study was from the beginning focused with covering different areas of the organization, and in extension of this, the participants would to a large extent be independent of each other. The focus was also on choosing people that were assessed to have insights and information about the topic, hence the main group of respondents came from HR. This is also something that is important for validity, to make sure that the respondents had closeness to the phenomenon in question. There can be limitation when you give up control of selecting candidates for your own interviews, and leave it up to someone on the inside of the organization in question. This can mean that the person responsible for selections chooses people that she or he knows will give the «right» answers, or be good representatives for the organization so that they will be presented positively. Nevertheless, the nature of the study is exploratory, hence one cannot know what responses you will get in advance. Since the study was not exploring sensitive information, this was assessed to unproblematic. In addition, we discussed criteria for the respondents prior to the selection, which enabled me to affect how the selection was drawn.

A researcher can never tell if an informant is telling the truth or not, and the context might threaten this additionally (Jacobsen, 2015). It can be discussed if having a company representative present during the interviews affected what the informant told me. On one side, the informants could have been afraid of being too honest about what they felt. I experienced all the respondents as loyal to their employer, which can support a desire not to express negative thoughts. On the other hand, Karen´s presence could have made the respondents more assured about me as a researcher and my agenda, if they perceived her to trust me. Eventually, I did not get the impression that the informants covered up things that they were afraid to talk about, although I can never be sure of this. Even if this is the case, I still feel that I got the information that I needed to answer my questions and was able to present the characteristics I was looking for from the data the informants provided.

As explained in the previous paragraph, I introduced topics for the respondents, to let them talk freely and choose what they wanted to emphasize. I still had an interview guide for support. According to Jacobsen (2015), information given without directions from the

researcher can be more valid. I also asked the interviewees the closing question «is there anything I should have asked you that I have not?», which gave some interesting conversations at the end, giving the participants a good chance of giving me additional information in relation to the topics without me having to ask them about it specifically. Unsolicited data from a source should be emphasized (Jacobsen, 2015), and in this case, most of the data is based on voluntary reflections of the topic, naturally based on some conditions and guidance.

External validity is about two things, namely if the study can be generalized and to what degree it is relevant to transfer the result to other areas or situations (Johannessen et al., 2011, p. 462) Generalizability is already mentioned, as it is hard to achieve with a case study, in specific, a single-case study. Since this was not the intention of the study, I see this as unproblematic in relation to the validity of my work. Even though 14 interviews provide a lot of material from which one can draw valid observations, it is important to state that in a large company like Statoil with close to 20 000 employees, there is bound to be variations to the observations summarized in this thesis. That said I still believe the observations have relevance for large parts of the company.

An interesting food for thought worth mentioning in this context, is that this case might not be all that unique; it is possible that the described situation is quite typical for other companies as well, that operate within the oil and gas industry. Then, external validity is more probable for this case study. I would still be careful to assert that this case can be generalized in the correct sense of the word. Nevertheless, other companies in the industry which is as knowledge-intensive as Statoil, can and will probably experience a similar demographic change and associated challenges, due to the industry's historical background, among others. If this is the case, it will make the learning outcomes from this case study even more relevant.

Construct validity is important making sure that the data which is collected are good representations the phenomenon that is being studied (Patel & Davidson, 1995). In my case, I will argue that the content validity is adequately taken care of, as the operationalization of the research question helped me categorize the findings in the aftermath, enabling me to categorize the findings into the operationalized categories. This logical analysis of construct validity is recommended by Patel and Davidson (1995) to be determined by someone other than the researcher, because the researcher probably will be convinced that his or her methods

are correct, and have trouble seeing his or her own mistakes. I have not had someone do this, but my supervisor has been helpful in the process of operationalizing the research question, giving me feedback so this would be as correct as possible and enable me to analyze the output in a way that would provide valid conclusions. Thus, being concerned with having an instrument that would enable me to measure what I intended to measure, having tested it and adjusted it according to feedback from my supervisor, can be a good indicator of how adequate the construct validity of this study is.

By pre-testing the interview, I got feedback from the test-person that was helpful, and reassured me that the format of the interview and the progression, topics and questions worked both for me and for the interviewee. I specifically asked to get feedback in relation to the topic and the questions, whether they were understandable or if they needed adjustments. This was important, to make sure that there were no misunderstandings that would lower the validity of the outcome.

### 3.5.2 Reliability

There is a relation between validity and reliability. Reliability is about whether you can trust the data that has been collected, that they are reliable and factual in the context of the study (Jacobsen, 2015). A keyword is bias; has the study created the present results? The research design, collection of data and the analysis of data can all affect the results in different ways (Jacobsen, 2015). Reliability is also connected to how the research strategies are transparently described. They should be described in a manner that will allow another researcher to replicate the study, and achieve the same results (Silverman, 2011). The study and its results should not be victim of accidently circumstances that can affect the outcome (Jacobsen, 2015).

### Literature review

Most importantly, when a review of documents is the chosen method, it is important to make sure that not only material supporting the researchers own ideas is chosen (Patel & Davidson, 1995). I have managed to avoid this by using the search words and combinations that are listed. In addition, I did not have any prior expectations to what I would find, which will make it hard to search for anything in particular. If the researcher selects certain facts to illuminate, there both can and will become bias, and create a fake picture of the phenomenon (Patel & Davidson, 1995). I have strived to be objective, and be aware of this bias at all times. By

being aware, I will argue that I have been able to be objective and consistent in choosing the contributions for the review, hence avoided such bias.

### Case study and interviews

When interviewing is the method in question, there are several ways of achieving reliability, although there have been discussions whether reliability is of relevance when doing qualitative research (Silverman, 2011). I still find it worth reflecting on, as presenting the choices I have made also will help me reflect on *why* the specific choices were made, raising my own awareness of the methodology to a higher degree.

A threat against reliability is that the researcher has been too little attentive and done a bad job with registration and analyzing the data material (Jacobsen, 2015). As mentioned, I used a recorder to tape each interview, that enabled me to listen to the interviews and transcribe them in the aftermath. I experienced that the one-pagers created after the interviews was a good support for the consistency in the data analysis, because I could compare these immediate notes to the transcription that was made later. All over, they were for the most part coherent. The transcribed material became the basis for categorizing the findings from the study. When analyzing the interviews, I went through each interview and color coded the different findings into the categories of analysis. This provided a good overview of the data material, and made the presentation of empirical findings easier.

Related to reliability when doing interviews as a method, is low-inference descriptors, which has to do with the reporting of the outcome (Silverman, 2011). To satisfy these needs, Silverman (2011) points to three important actions; tape-recording all interactions, carefully transcribing the tapes according to the needs of reliable analysis, and presenting long extracts of data in the research report, including the questions that provoked the answer (Silverman, 2011, p. 365). This study includes these actions, increasing the reliability as described.

On the basis on these reflections of the choices that has been made through the period of time the study was ongoing, and the transparent descriptions of my methods, I consider the validity and reliability of the study to be sufficient.

# 4 Literature review

## 4.1 Introduction

This chapter will present the literature review that has been conducted. The review has two purposes. Firstly, it is conducted to get an overview of previous research and literature on the topic of knowledge retention, thus gain insight of what we know this far, what the discussions are about and which results the research has yielded. Secondly it is conducted as a method for answering the first research question of this thesis, namely *what can be identified from the literature as good and transferrable strategies and practices for knowledge retention and knowledge transfer?* Through a structured literature review, a total of 19 contributions will be identified, analyzed and studied. The intention is to study the practices for successful retention that has made themselves relevant in the reviewed contributions, hence the effects and results from the different research the literature presents, in regard to how knowledge retention should be approached when older people leave an organization, to mitigate losing important, intellectual capital.

### 4.1.2 Disposition and approach

Initially I had an expectation that this review could find something resembling a best practice on the field of knowledge retention. I had the hypothesis that the best practice tools and processes for successful retention would be common within the knowledge management discipline. They are, to a certain extent. But there is no joint consensus about what the best ways for securing knowledge assets in an organization is. Most of the contributions in this review recognize the organic aspect of an organization in terms of underlining the need for customizing the tools, practices and strategies to the context and people within the organization in question. Two of the most cited and recognized researchers within the knowledge retention field put it this way; «the answer will have to come from inside your organization» (DeLong, 2004), and «one size probably does not fit all» (Liebowitz, 2009). Bearing in mind this need for calibration and the fact that the literature to some extent is found to be ambiguous, there are still some tools and practices for knowledge retention that are similar, or recurring in the literature. Therefore, this review will focus on the methods that are discussed broadly in the different contribution, thus not every mentioned method and tool will be discussed.

The identified practices transferability will be discussed by adding the translation perspective into the mix; building on Røvik´s (2009, 2016)instrumentalized translation theory, specifically the principles of de-decontextualizing. This will make up the variables for the discussion to discuss the research question. Transferability is built around a conviction that organizational practices e.g. practices for knowledge retention and knowledge transfer are conceptual representations, and not actual material objects (Røvik, 2009). When bringing out a practice from one place and putting it into another; in this case from the literature to an organization, there are three features that are important for how transferable the practice will be, namely how explicit, complex and embedded they are as conceptual representations of practices (Røvik, 2009).

Three categories distinguished themselves as particularly important for successful knowledge retention when older experts leave an organization. These consisted of (1) structured processes and frameworks for the retention process, (2) defined practices for knowledge transfer between leaving experts and successors in an organization, and (3) the inhibitors, preconditions and antecedents for the retention process. The latter will not receive focus in this review because it falls on the outside of the research question. Distinguishing the two first categories, causes difficulties. This is because a process or a framework set up for knowledge retention always must include a knowledge transfer process, as we shall see. Still, I will argue that separating the two will give a better overview into how this can be done, by first focusing on the instrumental strategies and processes that can be implemented, and then zooming in and call attention to the different knowledge transfer methods which ultimately will outline a mainstay in all such strategies.

The emphasis in this review will be on the explicit methods and strategies for knowledge retention, which we saw also includes methods for knowledge transfer. The keyword is «how to». Before I attend to that, I will look at some general definitions and concepts for knowledge retention in organizations; these concepts are represented broadly in the literature of both knowledge management and knowledge retention, and it will give the reader a wider context when reading about how the practices are suggested in the literature.

## 4.2 Knowledge retention concepts and discussions

### 4.2.1 Definitions of knowledge retention

The most common definition of knowledge retention is presented in the classical contribution of Walsh and Ungson (1991), and is more related to the process, thus objective to the reason for knowledge loss: «*knowledge retention consists of three activities – knowledge acquisition, storage, and retrieval».* This definition is also used by the same authors to define organizational memory, accordingly, retaining knowledge enhance building organizational memory (Walsh & Ungson, 1991). Knowledge retention on the other hand, is a more action oriented approach to ensure critical knowledge if it is endangered, in contrast to organizational memory which is a concept describing a phenomenon that exist in every organization, impartial to demographic changes or other risk on knowledge capital (Bairi, Manohar, & Kundu, 2011).

The definition of knowledge retention differs in the literature. One definition is «*…a strategy and/or practice used to identify, capture and retain knowledge, information, skills and relationships that are critical to the current and future performance of an organization*» (Key, Liebowitz, & Tompson, n.d., p. 3). Another definition in the context of an aging workforce; «*…refers to management practices and processes designed to preserve older workers' valuable organizational knowledge before they enter retirement*» (Burmeister & Rooney, 2015, p. 1).

More specific, some researchers on this field specify the timing connected to knowledge retention. According to Levy (2011, p. 583), knowledge retention differs from general long term knowledge management solutions; «*knowledge retention tackles a different situation: in a limited period of time, an expert´s most valuable knowledge has to become an organizational asset».* Another definition of the aim of knowledge retention comes from Massingham (2014a, p. 1083) and is also related to timing; «*the aim is to capture knowledge from these high-risk staff just before they exit the organization*». These definitions regarding timing are interesting; as we shall see in this review, the tools that are proposed for knowledge retention can be both long term methods for transferring knowledge, and also last-minute fire extinguishers for securing endangered knowledge.

### 4.2.2 Knowledge taxonomies and types

Underlying the retention process, is an understanding of what knowledge is, and what implications the different knowledge types will have on the retention process. You can't, and shouldn't transfer all knowledge, just the critical one, and the knowledge in question will influence how one chooses to transfer it (Leonard et al., 2014). It is not just a matter of choosing a retention strategy or tool, the literature is also concerned with identifying and prioritizing types of knowledge before it is transferred (Alavi & Leidner, 2001; Carmel, Pak, & Kapila, 2013; DeLong, 2004; Leonard et al., 2014; Levy, 2011).

According to (Leonard et al., 2014), critical knowledge refers to the experience based, undocumented knowledge stored in an expert employee. Further the authors argue that the critical knowledge does not refer to the know-what that can be taught through education and by reading instructions, as this is something that are available to everyone, hence it is not what makes you competitive in the market you operate within (Leonard et al., 2014). What it does refer to in their point of view, is the know-how, the skills and knowledge the workers have learned to do, accumulated through experience and time (Leonard et al., 2014). This is the tacit dimension of the knowledge. On the other hand, both tacit and explicit dimensions have been identified as types of knowledge older workers possess (Burmeister & Deller, 2016; DeLong, 2004). Between the tacit and explicit dimensions there has also been identified different knowledge types, to explain the dimensions in depth. Antal (2000) identifies five types of knowledge, respectively *declarative, procedural, conditional, axiomatic and relational.* DeLong (2004) claims that the tacit/explicit dimensions is to general, hence they are not useful when trying to decide which of the knowledge transfer processes to choose to be successful. He suggests four types of knowledge classification, ranging from the explicit to the tacit. These are *implicit rule-based knowledge, implicit know-how, tacit know-how* and *deep tacit knowledge* (DeLong, 2004). By proposing these types, he adds another dimension, namely the implicit knowledge, which can only be extracted and articulated by asking the right questions. It differs from explicit knowledge by being unarticulated but still accessible, when explicit knowledge is already articulated, codified and communicated in either symbolic ways or through language (Alavi & Leidner, 2001). In addition to mentioning the declarative, procedural and causal knowledge, Zack (1999) is concerned with knowledge ranging from the general to the specific. This has to do with context, general knowledge is often available to all in an organization and independent of a particular experience, hence easier to exchange and codify (Zack, 1999). The specific knowledge is defined as context-specific, and requires a

description of the knowledge along with an understanding of the context it operates within to be transferred in a meaningful way within the organizations (Zack, 1999). Thus, according to Zack´s study, all knowledge types can be made explicit.

Knowledge taxonomies is of use to knowledge retention, when deciding which transfer methods to use, and by calling attention to the need for different support of different knowledge types (Zack, 1999). Underlining this, Levy (2011, p. 585) claims that «*determining the knowledge to be retained, is one of the most important tasks of knowledge retention projects».* One must identify specific knowledge to be able to find a way to retain that knowledge within the organization (Burmeister & Rooney, 2015; Carmel et al., 2013; DeLong, 2004; Leonard et al., 2014; Levy, 2011) which is broadly agreed upon in the literature of knowledge retention.

Based on the above-mentioned focus on identifying knowledge prior to any retention process, there is little doubt about the importance of doing exactly that, before a retention and transfer process is commenced. The literature has different conceptions of knowledge types, but they all range from the tacit dimension to the explicit dimension, underlining that there is an existence of knowledge within every organization that is more important to target than other types of knowledge, hence prioritizing is key.

### 4.2.3 Knowledge transfer

Knowledge-sharing must necessarily be done through knowledge transfer, where the targeted knowledge is retrieved from the source, and directed and transferred onto the recipient or recipients. This is the crucial stage that will produce the knowledge retention (Levy, 2011). Argote and Ingram (2000, p. 151) defines knowledge transfer in organizations as «*the process through which one unit (group, department, or division) is affected by the experience of another*». The term knowledge transfer can also be applied to transfer between individuals, individuals to groups, between groups and across groups and from individuals to an explicit source (Alavi & Leidner, 2001). For knowledge retention to happen in an organization, Burmeister & Rooney (2015) states that the senior workers and the knowledge receivers need to interact in a social setting, stressing communication and interaction. The literature is divided between two models for knowledge transfer and the nature of the transfer process, namely the source-recipient model and the mutual-exchange model (Burmeister & Deller,

2016). The source-recipient model sees the older experienced worker as the source for knowledge, and the younger less experienced worker as a recipient of that knowledge (Burmeister & Rooney, 2015). In contrast, the mutual-exchange model argues that knowledge transfer is a bidirectional process where the process is dynamic and interactive (Burmeister & Rooney, 2015), aiming for the individuals in the process to learn from each other rather than focusing on a one-way communication. Proclaiming this bi-directional knowledge flow, Key et al. (n.d.) is pinpointing the fact that learning from each other is a mainstay in any organization, and underlines the need for a strategy that will enhance that process. Harvey´s (2012) study of the two models additionally shows that through the informal face-to-face interaction the participant built stronger relationships to each other, which finally made the potential for knowledge transfer stronger. Burmeister & Rooney (2015) argues that the type of knowledge that aims to be transferred should play a part in choosing either model for knowledge transfer, meaning that both models can be accurate representations, depending on the taxonomy of the targeted knowledge and context. If the knowledge is highly tacit, the need for a more intimate interaction is higher than if the knowledge is explicit and can be documented in a written form, hence the need for social interaction will not be as important (Burmeister & Rooney, 2015). Further, the authors conclude that the most relevant model necessarily must be the mutual-exchange model, emphasizing that there is a high degree of tacitness in high-valued knowledge (Burmeister & Rooney, 2015).

### 4.2.4 Managing knowledge

Two basic strategies for managing knowledge that is commonly known and rather dominating within the knowledge management discourse is the personalization and codification strategies (Oluikpe, 2012). Codification refers to the capture and storage of explicit knowledge, in a way that aligns with the organizations objectives. Personalization on the other hand, refers to aggregating the knowledge flow in an organization through social networks and interacting across the organization (Oluikpe, 2012). Hansen, Nohria, and Tierney (1999) defines these strategies in the same manner, but more specifically describes the codification as a computer centered approach, where knowledge is codified and stored in a database, to act like a repository of knowledge for other to access and use unlimited. The personalization strategy is defined as the context where the knowledge is tied to a specific person and their experiences, and the sharing mainly happens between person-to-person contact (Hansen et al., 1999). The recommendations concerning the division of these two strategies are rather controversial. In

their broadly cited article they warn against combining these two strategies when choosing a strategy for managing knowledge. Accordingly, organizations that has been known to use knowledge effectively pursue one of the mentioned strategies primarily, and use the second strategy to support the dominant one (Hansen et al., 1999). Their view on this, namely the projected benefits of what they call an 80/20-split between these strategies and the suggested failure if the strategies are being implemented as equally important, has been criticized by Koenig (2001) among others for being too simplistic and misleading. According to his studies on pharmaceutical companies, the companies that had a knowledge management strategy with this 80/20 split were the least successful companies, thus the companies that followed a 50/50 strategy split between codification and personalization were more successful (Koenig, 2001). He further argues that the balance will have to be defined by the business operations and goals of the organization, and that the strategy can be implemented differently within the different units and functions of the organizations (Koenig, 2001). This is more in line with the statements regarding knowledge retention mentioned initially in this report, namely that the adjustment and customization of strategies and tools is important for success (DeLong, 2004; Liebowitz, 2009). Nevertheless, it can be said that these two strategies will be important to bear in mind when setting a knowledge retention strategy in motion, but one should primarily focus on identifying the knowledge that is essential to the company to capture, and adjust the strategies accordingly. Hence, you need to know *what* you know before you can make a move.

After having looked at the overarching context, setting the stage for the current knowledge retention landscape, I will now turn to the more specific part of the review, namely what the literature suggests as methods for mitigating knowledge loss and how to do this in practice.

## 4.3 Processes and frameworks for knowledge retention

This paragraph will present the strategies and frameworks for knowledge retention that the contributions in this review suggest. The different strategies will be given a brief introduction of the most important aspects, but will not be reproduced in full. The report will also identify the differences and similarities between the approaches, and conclude with inspiration from the different features of the translation theory.

Four of the contributions present their own developed processes and frameworks that is proposed to serve as a conceptual structure around a knowledge retention strategy or process

in organizations. Two of the frameworks suggest a structured process, where processes are initiated and completed in a linear fashion (Haarmann, Kahlert, Langenberg, & Müller-Prothmann, 2008; Levy, 2011), whereas the other two suggest more of an strategic framework that should be an integrated part of an organizations knowledge management systems at all times for a continuous focus on knowledge retention (DeLong, 2004; Liebowitz, 2009). Interestingly, they all have similarities, but they also have differences as to what they see as important stages and conditions for successful knowledge retention. An important difference is related to time, as the structured processes suggest a progression when knowledge loss has been identified, whereas the frameworks intention is to enable continuous knowledge retention to mitigate such risk.

### 4.3.1 Structured processes

«The *stages to be carried out in order to achieve knowledge retention»* is according to Levy (2011, p. 592); scope, transfer and integration. Prior to the process is a preliminary stage, that should focus on initiating the project on an organizational level (Levy, 2011). The stages after the preliminary stage can be summarized as; deciding what knowledge to be retained and what not to retain, transfer the prioritized knowledge from retiree into the organization, and last, integrate the transferred knowledge into organizations existing processes (Levy, 2011). This framework was validated and tested over a three-year period in seven case studies where the issue of one or more leaving experts was present (Levy, 2011). In the literature review that is a part of her research, she aims her critique at the emphasis that are put on the evaluation stage, hereunder analyzing the organizational situation *before* concrete actions are put in place for retention (Levy, 2011). According to her case study, there is no need to spend time doing an analysis, if you already know that a cohort of older workers will be retiring from the organization within a few years. Her research shows that companies that spend time and money on this initial process just to get reports on what they already know, will not have the funding to initiate action, hence they are not able to mitigate the risk of knowledge loss (Levy, 2011). Therefore, she dismisses the execution of the initial analytical work, proposing that the process is initiated with the scoping stage. Her research further stresses a need to adjust the framework to the organization where it is going to be implemented, to make sure the contextual and organizational specific elements are attended to (Levy, 2011).

A more detailed and systematic process that are being proposed in the literature, is called *K.Exchange* (Haarmann et al., 2008) The framework consists of two networks and five stages;

identification of knowledge, kick-off meeting, analysis and making an action plan for transfer, implementation of the action plan and finally, evaluation (Haarmann et al., 2008). A transfer network is in charge of the identification, and should consist of HR-representatives, management representatives and knowledge management representatives (Haarmann et al., 2008). The transfer cell is central, and is considered to be an important part in the success of the process, consisting of the knowledge provider and receiver, the direct superior and the process facilitator, which all have different responsibilities and are involved in different stages (Haarmann et al., 2008). K.Exchange is built on a research-based approach, and has been tested and documented with success in over 100 organizations, among them Airbus (Haarmann et al., 2008). The intended knowledge was successfully transferred and kept within the organization, the results based on evaluation done in retrospect (Haarmann et al., 2008). However, the process is more focused on the knowledge transfer from one person to another, not emphasizing that the knowledge should be implemented into the rest of the organization as e.g. Levy´s (2011) framework does in the last stage «implementation». With that said, the process is claimed to be flexible, thus it can be adapted to other specific situations as well (Haarmann et al., 2008).

Both of these processes are tested and validated in different organizations, and the success of the processes are documented through case studies and retrospective feedback from the different participating organizations. The processes consist of some of the same elements, namely the preliminary stage, analyzing and prioritizing the knowledge to be retained and conducting a transfer process. The K.Exchange is more detailed and described, but both processes are acknowledging the need for adjustment to different situations, as long as the different stages are attended to in the specified order. The main difference between these processes, are the transfer network and transfer cell proposed in the K.Exchange, that are important success factors. Also, the K.Exchange contains an evaluation stage to conclude the process.

### Transferability

In regard to how explicit the processes are, they are both structured and easy to grasp. Still, the processes demand a certain understanding of knowledge management and transfer to be conducted, the practices are not specific enough that one can implement the structured process without being familiar with e.g. how one should identify and prioritize critical knowledge in

an organization. The complexity is visible in the K.Exchange, relating to the transfer network and transfer cell; this demands that you have resources available to conduct the method, if not in-house that you have the funding to get help from outside knowledge management consultants. Levy (2011) framework is rather straight-forward, but management should still have the necessary competence in place to engage in the process. The practices are exemplified by looking at different case studies where the process has been conducted and adjusted according to context. It is thereby closely connected to the specific organizational context and it will therefore be necessary to adjust the processes and the content of the stages which is what both Levy (2011) and Haarmann et al. (2008) suggest.

### 4.3.2 Knowledge retention frameworks

DeLong (2004) proposes a framework in his frequently cited book about «lost knowledge». This framework specifies the mechanisms that need to be in place to achieve a good strategy for knowledge retention; «a strategic framework for action» (DeLong, 2004). Still, he underlines that it is not a formula, but is meant as guidance towards a process to implement and create a strategy and approach for retention. His framework involves four areas that should form a knowledge retention strategy, and has a bigger focus on knowledge retention as a continuity working within the organization at all times. The focus is on all of the areas to play a part in a retention strategy, and unlike the above mentioned structured processes it does not contain steps to be followed in a given order.

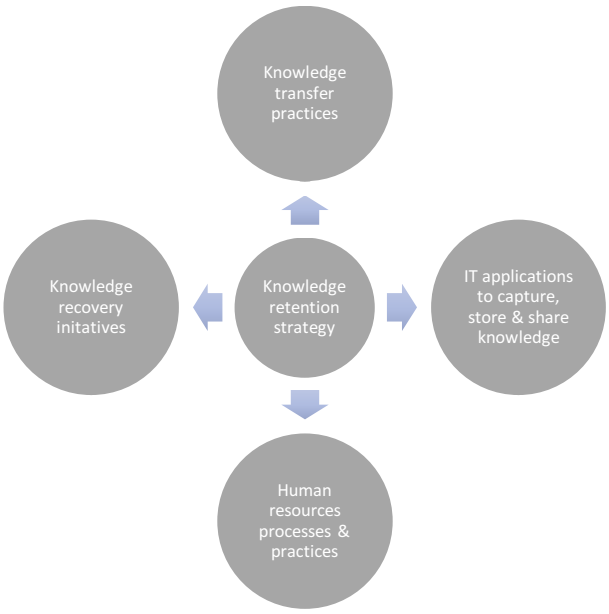


*Figure 3: DeLong's (2004) strategic framework for action*

Human resources processes and practices represents one of the areas, and covers five different important activities that will create an organizational infrastructure for knowledge retention. It has to do with having processes for tracking what knowledge that is critical and endangered in the organization, career development and succession planning, initiate phased retirement programs, and think smart about recruitment processes (DeLong, 2004). The HR-dimension also has the responsibility of fostering the culture for learning in the organization in general (DeLong, 2004). The second area of the strategy is the knowledge transfer practices which is about the practices that need to be carried out to realize the knowledge transfer, and the need for adaption to purpose, organization and people are underlined (DeLong, 2004). The third area is concerning the use of IT-tools for storing and sharing knowledge. It is emphasized that one should not think that technology is the solution for knowledge retention, it is namely the instruments that should aid the process and enable it (DeLong, 2004). A lot of examples are used to explain this IT-dimension, including how Northrop Grumman uses a database to collect and store experience-based technical knowledge that is linked to historical problems with one of their aircrafts (DeLong, 2004). The fourth area describes how there should be a knowledge recovery initiative in place, if the need to be reactive should show itself. One example of this is bringing the experienced retired workers back into the organizations to work part time or function as consultants (DeLong, 2004).

Another proposed framework for a knowledge retention strategy, are Liebowitz (2009) four pillars for retention, and the wording is a bit different than DeLong´s strategy, as this framework according to the author are a mainstay for organizations who intend to apply a model for accomplishing knowledge retention (Liebowitz, 2009). The pillars are; (1) recognition and reward structure (2) bidirectional knowledge flow (3) personalization and codification and (4) bringing back the golden talent.

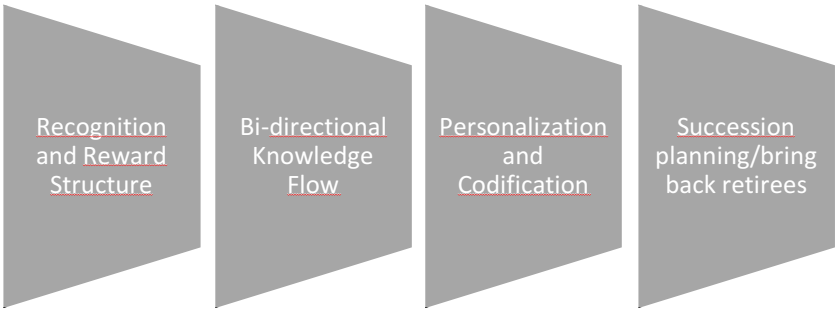


*Figure 4: Liebowitz four key pillars for knowledge retention*

The first pillar is about creating a culture for knowledge retention in the organization, and motivation is fundamental. The key is to know what motivates employees in the company in question, and apply motivational rewards for those who engage in knowledge retention activities. This could be done by rewarding those who share knowledge either by giving monetary rewards or by acknowledging their work in the organization or measure such activities in performance reviews. Knowledge retention should be a part of the organizations everyday life to succeed (Liebowitz, 2009), of which this pillar should support. Specifying the second pillar, Liebowitz (2009) suggest a two-way communication flow between the older and younger workers to transfer the knowledge, not unlike the mutual-exchange model mentioned earlier. This pillar will support a continuous learning culture (Liebowitz, 2009). The third pillar, personalization and codification, refers to these strategies as important techniques for capturing and transferring knowledge and further argues that both strategies should be used, though one of the strategies may take dominance. The fourth pillar is proposed as «the golden gem»; bringing back retirees to the organization to have them work as consultant, or use a formal phased retirement program (Liebowitz, 2009). According to Key et al. (n.d.) the phased retirement is more and more prevalent in many organizations efforts to capture knowledge before it walks out the door. An example of this is American Express´ phased retirement program, where the older and experienced workers gradually is freed from their responsibilities, spending their time mentoring their successors instead (Liebowitz, 2009).

The two frameworks mentioned above are corresponding to a certain degree. DeLong (2004) knowledge recovery initiative have the same focus as the golden gem described as one of Liebowitz (2009) pillars, and they both underline the need to have a reactive strategy on hand, in case the knowledge is already gone when you identify the need for and value of it. Transfer of knowledge is described as important dimensions in both frameworks, but only Liebowitz (2009) emphasize that the knowledge flow should be bi-directional. DeLong (2004) describe IT-tools as important for storing knowledge in the organization, as do Liebowitz (2009) when referring to a codification strategy. What is distinctive, is that while DeLong (2004) among others focuses on HR as being a support for management in identifying critical knowledge, Liebowitz (2009) highlights a reward structure as a basis for knowledge retention becoming a part of the everyday life in the organization. Contrasting both Haarmann et al. (2008); (Levy, 2011) and DeLong (2004), these pillars don’t include identification of critical knowledge as an important part of a knowledge retention process or strategy.

## Transferability

Since these two frameworks are conceptual, meaning that they only provide and explain the different *areas* that should be covered to facilitate a retention strategy, the need for customizing when applying them to an organizational context are self-explanatory. The structures are explicit, describing the overarching and important parts that such a strategy should contain, but it is not a structure that can be copied into another organization without doing a lot of «filling in» and adjustment to the organizational context in question. Hence, the frameworks are rather complex, but still comprehensible because of the freedom a conceptual framework provides. Both frameworks are explained in depth in the management books that provide them (DeLong 2004; Liebowitz 2009) with a more detailed explanation of how to implement them in practice, which give directions for managers seeking to implement knowledge retention in an organization, with respect to both culture and structure.

All of the above mentioned processes and frameworks emphasize the strategy and structure surrounding the retention process, thus lifting the perspective by offering adaptable frameworks that can be used broadly in a wide range of organizations, either as an integrated part of the organizations knowledge management (DeLong, 2004; Liebowitz, 2009), or as a structured process for targeting and capturing knowledge before it walks out the door (Haarmann et al., 2008; Levy, 2011). To sum up these instrumental theoretical contributions, the table on the next page will provide an overview:

*Table 2: Summary of processes and frameworks for retention*

| | Step by step processes | | Frameworks | |
|---|---|---|---|---|
| | K.Exchange (Haarmann et al, 2008). | Levy´s 3-step model (2011) | A strategic framework for action (DeLong 2004) | 4 key pillars for a retention strategy (Liebowitz 2008) |
| Key points | • Transfer cell<br>• Transfer network<br>• Identification of knowledge<br>• Kick-off meeting<br>• Analysis and making an Action plan for transfer<br>• Implementation of the action plan<br>• Evaluation | • Scope<br>• Transfer<br>• Integration | • Knowledge transfer practices<br>• HR processes and practices<br>• IT application to share and store knowledge<br>• Knowledge recovery initiatives | • Recognition and reward structure<br>• Bi-directional knowledge flow<br>• Personalization and codification<br>• Succession planning/recovery |
| Field of application | Enable and support continuous knowledge transfer from experienced people across generations | Short term intermediate state of knowledge retention | Long term and continuous knowledge retention | Long term and continuous knowledge retention |

## 4.4 Tools and methods for knowledge transfer

The frameworks, and the suggested processes for knowledge retention will only get you this far. As we saw in the previous paragraph, transfer of knowledge is identified to be a core activity of any knowledge retention process. It has been stated that «the heart of any knowledge retention strategy is its knowledge-sharing practices» (DeLong & Davenport, 2003, p. 53). This paragraph will address the tools and practices for transferring knowledge between individuals and in groups. The knowledge transfer practices that are selected for discussion are the ones that (1) are discussed in two or more literary contributions, in regard to being a successful method for transfer and retention of knowledge (2) discuss the methods by referring to research or case studies that demonstrates success with the method in question.

The practices that will be presented are; mentoring, exit interviews, storytelling, communities of practice and after-action reviews, in this order. They will be addressed in separate paragraph. All of the practices are different approaches for transferring knowledge between

people in different settings, be it from one person to another like the mentoring approach is suitable for, or more general transfer and sharing of knowledge between people in groups, in which communities of practice and after-action reviews will be a better fit for purpose. Mentoring has been given a fairly large space, do to the fact that nearly half of the contributions in this review, highlights this method. The following figure provides an overview of how the transfer methods are distributed in the reviewed literature:

*Table 3:Distribution of knowledge transfer methods in percentage.*

| Mentoring | Exit interviews | Storytelling | Communities of practice | After-action reviews |
|---|---|---|---|---|
| 9/19<br>47,37% | 5/19<br>26,32% | 4/19<br>21,05% | 5/19<br>26,32% | 3/19<br>15,79% |

### 4.4.1 Mentoring

Mentoring is as mentioned a highly widespread tool in the literature for transferring knowledge, both in the conceptual studies and in the case studies that has been reviewed (Bratianu & Leon, 2015; DeLong, 2004; DeLong & Davenport, 2003; Harvey, 2012; Leonard et al., 2014; Liebowitz, 2009; Massingham, 2014a, 2014b; McNichols, 2010; Ropes, 2015; Swap, Leonard, Shields, & Abrams, 2001). The principles of mentoring are one of the most basic forms for learning that we know of today (Swap et al., 2001). Reported in CEB´s mapping of learning and development innovations in 18 organizations world-wide, they found that mentoring and coaching are well embedded and adopted by organizations (CEB, 2014). Their findings also show that one-on-one mentoring creates a substantial impact on learning and development, and on employee performance, whereas wider team practices still are in the experimental phase, hence not adopted to the same degree as the one-on-one approach. Even though the report doesn't evaluate the method in relation to knowledge retention, it still gives a pointer to what methods are being used in organizations today, and to what extent they are seen as effective or not.

A mentor is characterized in the literature as a person who draws on a deep base of knowledge to teach and guide others (Swap et al., 2001), hence it can be considered as a personalization strategy where the sharing mainly happen between two people, and are seldom documented and made available to others. The characterization of a mentor can be interpreted as a process where a superior expert in a specific field is transferring his knowledge onto a recipient, not unlike a school teacher, a parent or a journeyman, in line with the source-recipient model discussed earlier. Still, the literature is shifting to be concerned

with an expanded concept for mentoring (Swap et al., 2001), for instance *reversed mentoring* (Harvey, 2012), *reciprocal mentoring* (Mullen & Noe, 1999) and *intergenerational mentoring* (Bratianu & Leon, 2015). The mutual-exchange model is a representation of these, where both parties share their knowledge on an equal footing through a reciprocal process.

### A cognitive approach

Swap et al. (2001) has conducted a rather broad research, which involves both a literature review with contributions from management and cognitive psychology literature. Their field study included mentors in start-up companies in the US and in Asia (Swap et al., 2001). They argue that because of the tacit dimension of knowledge assets, the transfer is difficult and often unsuccessful. This is underlined in other studies as well, e.g. (Harvey, 2012) who states that tacitness hinders knowledge transfer activities. Mentoring is still claimed to be a mechanism that promote the transfer of tacit knowledge more than other methods, and can relatively easy be implemented into an organization (Harvey, 2012). The literature review conducted by Swap et al. (2001) concludes that there is not much evidence that there is a correspondence between mentoring and performance in an organization, but that it still plays a part in transferring skills, including the tacit dimension (Swap et al., 2001). Unlike others (Massingham, 2014a; Ropes, 2015), Swap et al. (2001) sees mentoring as an informal process that should not be implemented mechanically, but through an understanding of why and how people learn informally (Swap et al., 2001). Further, they suggest that rather than just implementing a formal mentoring program into the organization, mentoring should be governed by a light hand, e.g. understanding the possible knowledge gaps between an expert and an apprentice, and using the learners proximal zone of development to ensure that the learning is in fact yielding results (Swap et al., 2001).

### Time and resources

DeLong and Davenport (2003) agrees that mentoring seems to be a logical approach for transferring knowledge from older experienced workers, but acknowledges the fact that in practice, this method is difficult to endure due to the time required to conduct this adequately. They point to the essential variable time and resources; companies in today's organizational landscape are often resource-constrained, hence finding the time for proper mentoring is hard (DeLong & Davenport, 2003). They also ask the question whether it is realistic to pass on up to 30 years of experience in a limited timeframe in the first place (DeLong & Davenport,

2003). Swap et al. (2001) also addresses this issue, their research shows that mentoring not only takes time, but also require continuity. The time pressure in organizations can according to them, militate against the transfer of expertise (Swap et al., 2001). Hence, it can be argued that the mentoring is a tool and mechanism that works best if being a natural, constant part of an organization, and not as a risk mitigation when facing knowledge loss.

### Management literature

Mentoring can happen either formally through instructed and established frameworks, or it can be an informal process, happening naturally in the organizational environment (Noe, 1988). In a formal mentoring program, the apprentice is assigned to a mentor, unlike the informal, uninfluenced mentoring relationships that can be initiated on the basis of e.g. shared interest or admiration (Noe, 1988). In this review, three management books contributed, written by researchers who also have background as consultants in the field of knowledge management (DeLong, 2004; Leonard et al., 2014; Liebowitz, 2009). These books are written mainly for managers who wants to learn more about knowledge retention and receive guidance on how to manage potential knowledge loss their organization. It is interesting to see how they all propose a formal, structured approach to mentoring. Liebowitz (2009) writes about mentoring in the chapter called «easy-to-accomplish knowledge retention techniques». According to his case studies, formal mentoring programs are popular for sharing, transferring and retaining knowledge in organizations (Liebowitz, 2009). This is substantiated by referring to NASA and John Hopkins University´s mentoring programs which is described in the book. DeLong (2004) supports this and claims that mentoring is likely to be the most effective way to conduct a direct transfer of knowledge, both tacit and other work related explicit knowledge. He argues that this method can not only transfer the know-how related to the specific job, but also go beyond this by enabling transfer of network and cultural knowledge in the organization, such as values and norms of behavior (DeLong, 2004). He also acknowledges that there are barriers to implementing formal mentoring programs in organizations, and also suggest how to overcome them. These barriers are linked to time, resources, the mentor's ability to transfer experiences and having an effective infrastructure for supporting mentoring (DeLong, 2004).

Leonard et al. (2014) has created their own formalized mentoring program, hereunder OPPTY *(Observation, Practice, Partnering & joint problem solving* and *Taking responsibility)*. This

is a program where a senior works with one or more junior colleagues to train them in the context of business they operate within and teach them specific skills (Leonard et al., 2014). The program differs from the classical mentoring in a number of ways, but involves the same principles – a senior worker transferring his or her expertise to a junior worker. The key to success in this program, is according to the authors, setting learning goals, and develop guided mini experiences that will help reach those goals together with the senior expert (Leonard et al., 2014). This process is by the authors considered to be the «gold standard» for transferring tacit knowledge from one source to another, and it also enables the bi-directional learning by having the participants work so closely together over a period of time.

According to the authors and innovators of the OPPTY-program, there are a number of advantages of doing mentoring within this structure (Leonard et al., 2014). Firstly, it is organized with regard to efficiency, secondly it is made to help experts share their knowledge in a much higher degree. Third, it makes the learner more actively engaged in his or her own learning than by traditional mentoring programs (Leonard et al., 2014). Most importantly is the principle that tacit knowledge only can be taught through experience, and that experiences can be created mindfully and be tailored to a learning process that can be monitored and evaluated (Leonard et al., 2014). Like Liebowitz (2009) and DeLong (2004), Leonard et al. (2014) also support their methods by referring to success stories from large organizations, e.g. Baker Hughes who uses the OPPTY method.

## Effects

Mentoring is fairly straight-forward as a method for transferring knowledge, but there still has been developed «how-to-recipes» for mentoring. One of them identified in this review, is part of the *intergenerational learning toolkit*, and is presented in a feature article by Ropes (2015). The toolkit is a result of the EU project SILVER, and was designed to help knowledge-intensive organizations deal with older employees and the demographic changes that are approaching (Ropes, 2015). The focus in this study in relation to mentoring is on the intergenerational aspect of learning, or reversed mentoring; the learning should be bi-directional, familiar to the mutual-exchange model mentioned in earlier paragraphs. What is striking, is the amount of documents and steps this toolkit offers to each of the methods. The invested time is proposed to be 16 hours over a period of several months (Ropes, 2015). In this period of time, the mentoring should be conducted and concluded, though observation,

interviewing and conversations (Ropes, 2015), with the aim of transferring relevant knowledge between the two employees in question. The question is, however, as DeLong and Davenport (2003) among other highlights, if the limited time and effort is enough to pass on the experience that has accumulated in the older expert through time. This was accordingly the reason why the results were difficult to measure in the study; specific outcomes were hard to catch, in the short time frame of the study (Ropes, 2015). The results of the evaluation concluded with the fact that the toolkit built awareness around knowledge retention for both management and employees, but the specific methods that the toolkit contained was not evaluated individually in terms of effectiveness and learning outcomes.

One of the few longitude studies on the effects on knowledge retention tools that to my knowledge exist today, have been conducted by Massingham (2014a, 2014b). This case study involved a knowledge-intensive organization with an aging workforce in Australia, and the entire population of engineers and technical staff was included in the study. Toolkits for knowledge management were tested over a time period of five years, including a toolkit for knowledge retention. The approach to this study was introducing the different tools to the organization in workshops and later evaluating the outcome against a designed framework (Massingham, 2014a). The research and the results from it provide practical outcomes in terms of measuring the effectiveness of knowledge management when tools are introduced to an organization. The knowledge retention toolkit was designed to make the participants share their valuable tacit knowledge, targeting the retiring employees and the people that was leaving due to a planned resignation (Massingham, 2014a). Also, the people who fell outside of these criterions was included, if they were considered to have valuable and unique knowledge (Massingham, 2014a). Efficiency, staff morale and productivity was the independent variables that measured the effect of the knowledge retention toolkit (Massingham, 2014a). One of the tools tested for knowledge retention in the research was mentoring. Mentoring was already a part of the organization on an informal, unstructured basis, and an interesting discovery was that the mentoring actually yielded higher results when the employee identified as an expert did not leave the organization, but moved on to another section in the organizations, so that he could mentor the apprentice after the person in question had started in his or her new position (Massingham, 2014a). What is more interesting, was that when the organization was introduced to structure and formality in relation to mentoring, the tool struggled, and participants found it to be inflexible and restrictive (Massingham, 2014a). The research does not elaborate on how they chose to

proceed with the mentoring program that was planned for the case study. It does not say anything about whether they skipped the structured approach and let them continue to do the informal mentoring that was embedded in the organization, or if they pushed for it to be implemented during the research period. Therefore, the results and ratings of the tool is difficult to interpret, in terms of evaluating how the mentoring method contributed to the overall gain for the organization and the practical outcomes.

## Transferability

Mentoring as presented in the literature can be done in a number of ways, but is still an explicit practice, based on simple principles that people are familiar with in one way or another. Therefore, it will be highly transferrable to an organization; either if one chooses to follow structured process or let mentoring unfold as an informal process. It is not a complex practice, thinking of how mentoring usually is comprised of only two people. What can make the practice more complex, is the time and effort that is needed to make the transfer process a success. Structured formalized methods like for example the OPPTY-method will demand more planning and effort than just pairing up an approaching retiree and his successor, expecting them to interact and learn from each other. Specific examples from the literature that are embedded into the case studies can be difficult to copy directly into another organization, because of the intimate relationship and other preconditions that has to be taken into consideration when implementing mentoring as a transfer mechanism. Therefore, it will have to be adjusted according to the capabilities, resources and knowledge within the specific organization that are considering mentoring as a solution for knowledge transfer.

## Concluding remarks

The considerable weight that is being put on mentoring in the contributions to this review, gives an indication of it being a method for knowledge transfer that are widely used, much researched and evaluated as effective. However, there exists an inconsistency in the literature, and the research has different areas of focus. Still, there are little empirical evidence to be found in regard to the effect it has on knowledge transfer and retention when older experts leave an organization. Nevertheless, the method is being claimed to contribute to transfer tacit knowledge, and to guide learning according to cognitive principles e.g. proximal zone of development. The literature discusses that mentoring has seen a shift from source-recipient to mutual exchange, the latter being proved to be a better method for transferring tacit

knowledge, thus saying that mentoring with a mutual-exchange model as the foundation will be successful. Time and continuity are keywords for mentoring, which has a consistent voice in the literature. Therefore, these parameters should be taken into consideration when deciding what transfer practices to use in an organization. The literature argues whether mentoring should be a formalized or informal part of an organizations knowledge transfer portfolio, but as we have seen, guiding knowledge retention actions with structure, purpose and meaning is indisputable. Structured mentoring practices should include the learner to be exposed to actual situations as well as being tutored by a superior, which also complies with cognitive principles.

### 4.4.2 Exit interviews

When facing knowledge loss, companies are usually in one of two different situations when it comes to timing (DeLong & Davenport, 2003). Either have they recognized that the demography in their organization will be an issue within the next two to ten years, or they have been surprised by sudden knowledge loss and need to act immediately (DeLong & Davenport, 2003). Exit interviews is often the only thing to do, when key employees are on the organizations threshold(DeLong & Davenport, 2003), as a fire extinguisher to gather and retain the knowledge as quick as possible. This method for knowledge transfer is also widely mentioned in the literature, but is also criticized by many. Research shows that organizations who try to capture knowledge within a small time frame on their expert's departure, are highly unsuccessful, because they can only provide a snapshot of the knowledge that has accumulates through time (Liebowitz, 2009). The method has also been discussed in regard to the distribution of knowledge to the organization, first of all because of the amount of time to codify and transcribe the interviews afterwards to make sure the knowledge worth sharing is identified (Liebowitz, 2009). A codification strategy in combination with this kind of interviewing can with this in mind perhaps cost more than it tastes. DeLong (2004) underlines this, and claims that managers don't see how difficult it is to interpret and convert the data from the interviews into knowledge that can be useful for the remaining employees. His experience is that organizations spend enormous amounts of money on interviewing retiring experts, only to find that the information is not being used by successors or others that would benefit from this learning (DeLong, 2004).

Nevertheless, DeLong (2004) describe two organizations where successful knowledge retention by exit interviews has been done. In one of the case studies of the World Bank, the interviews were always videotaped, and a team edited the videos down to a series of small video clips, where the essential knowledge was captured and made available to other through the World Bank´s intranet (DeLong, 2004). In the other case at ATV, the organization focused the interviews with the departing expert on the operational knowledge, and dealt with it immediately by building the knowledge into training, upgrading procedures and processes and so on (DeLong, 2004). Thus, the knowledge was not distributed directly to the remaining employees, but it was still captured and maintained in the organization through improved productivity and training. Liebowitz (2009) stresses the need for having a knowledge retention plan in place from the day the employee arrive, and make sure that knowledge is retained throughout his or her entire career. Interviews can according to him be a good way to follow up and retain knowledge during the life span of an employee, making sure that there is no knowledge that are being «forgotten» by the expert along the way (Liebowitz, 2009).

(Leonard et al., 2014) provides a technique they call «smart questioning», which is a method for doing interviews with a deeper knowledge elicitation than what is stated to be the typical approach. Unlike DeLong (2004) and Liebowitz (2009), the authors actually suggest this method when time is of the essence (Leonard et al., 2014), contrasting the criticism of the method as a fire extinguisher. Nevertheless, the interviewing as a method are stressed to be situational, hence prior evaluation of time and resources available and what kind of knowledge that is being targeted is important (Leonard et al., 2014). Successful interviews are dependent on the questions that are being asked, and the skills of the interviewer (Leonard et al., 2014). To underline this, they exemplify a best practice identified by a chief scientist in a consulting company, that included the following three questions:

1. What are the three things you have learned that you wish you had known when you started the job?
2. What is the biggest challenge your replacement will face? What advice would you give them?
3. What are the two initiatives/knowledge products you are most proud of? What made/makes them effective?
   (Leonard et al., 2014, p. 79).

Both the time available and whether the knowledge is tacit or explicit, will be factors to consider when deciding if you can conduct the interview with resources internally in the organization, or if you need to seek help from an outside consultant (Leonard et al., 2014). Conducting interviews with little time available, hence not being able to seek help from the

outside, the authors (2014) propose using template for knowledge elicitation from leaving experts, with predetermined categories that can be shaped to the context of the organization in question. These templates have been successful for both capturing knowledge in pressing situations, but also as a structured way to help learners gather knowledge over time. This is substantiated by referring to the authors own experiences and from presenting examples from interviews with managers which have used the method with success (Leonard et al., 2014).

In Massingham (2014a, 2014b) longitude study of tools for managing knowledge, the exit interviews were carried out and videotaped. The structured approach that surrounded the interviewing made the participants bring forward memories about the organization that was drawn from a depth, that would not have been reached just by asking them to talk about their jobs, and the information was assessed to be valuable to others in the organization (Massingham, 2014a). The successors that were given the outcomes of the interview was also pleased, considering their feedback in the study (Massingham, 2014a). However, when the participants were set up to interview each other, the research shows that the lack of confidence and experience limited the employees to such a degree that the method failed (Massingham, 2014a). This is in line with what Leonard et al. (2014) point out, that the value of the exit interviews will be a reflection of the skills the interviewers have. On the note, interviews should preferably be conducted by successors to the expert, for allowing direct transfer of knowledge (DeLong, 2004). Yet, the successors have often not been appointed when an expert leaves an organization, thus ending up with leaving the responsibility for the interview to a third-party facilitator who might not know much about the area of expertise the expert possess (DeLong, 2004), and lack of contextual knowledge from this third party can indeed be a barrier for asking the right questions. Another interesting discovery from this study was that interviewing did not have much impact as an isolated tool for knowledge transfer, and that the method had to be combined with e.g. observation and repeated interactions between older and younger worker, to capture the tacit knowledge (Massingham, 2014a). In regard to videotaping the interviews, which is a method adopted by DeLong (2004) ideas about what worked in the World Bank (exemplified in previous paragraph), the method was unsuccessful because of the reluctance of the participants to be taped when responding to questions (Massingham, 2014a). Since this research only was carried out in one organization, it is however hard to say if this can be generalized to other organizations, or if it is a context specific barrier for that particular organization, e.g. a culture of taking themselves too seriously.

**Transferability**

Similar to mentoring, the practice of interviewing is well known, and does not need much explaining, hence it is an explicit practice. Since the interviewer's level of skills is important for success, the method is considered to be quite complex, as for the work that is demanded in the aftermath of the interview. This complexity can be solved with using templates or other structured approaches, but as the research has shown; people without experience and abilities in interviewing will most likely fail to extract the important knowledge from the retiring employees, hence outside help can become necessary. Keeping in mind these conditions for success, the method is still assessed to be transferrable, because of its high degree of explicitness.

### Concluding remarks

The discussion about this method for knowledge transfer include whether the method can capture knowledge in a limited period of time, since this is what this practice often is used for. It has been suggested that it is better to retain knowledge through interviews as a continuous effort rather than doing it as a last-minute effort for retention. The literature has also expressed skepticism regarding distribution of the knowledge after the interviews have been completed, due to the complexity and effort that is connected with codifying and extracting the important knowledge from an interview to retain it in the organization. Conditions for succeeding with this method is dependent on the experience and skills of the interviewer, and that the questions are appropriate in relation to the knowledge that are being extracted.

## 4.4.3 Storytelling

An approach for transferring knowledge that is less detailed, but nonetheless mentioned frequently in the knowledge retention literature is the storytelling method. The method is fairly straightforward; oral stories describing episodes in a narrative presentation (Liebowitz, 2009). NASA is used rather often to exemplify this method, referring to their development of «the oral history project» that was meant to secure the knowledge from former astronaut's space expeditions to the moon (Liebowitz, 2009). Storytelling is referred to as a preferred method for building institutional memory and enhance the historical knowledge base in an organization (Liebowitz, 2009). DeLong (2004) calls into question whether the tool is supporting knowledge retention, but still acknowledge the fact that stories can transfer both implicit and tacit knowledge, especially organizational values and history (DeLong, 2004). Though, findings show that stories are not useful to transfer knowledge about how to

accomplish a specific task, namely the explicit dimension. DeLong (2004) also looks to NASA for support of the effectiveness of the method. The author mentions four critical factors that must be tended to if storytelling is going to create value; have a clear purpose with the story, have regularity in the practice of telling stories, make sure the audience have enough context to interpret the lessons from the story, and finally, pay attention to how the stories are distributed if they are not told face-to-face (DeLong, 2004). Unlike Liebowitz (2009) who in his chapter about storytelling leaves out the discussion of what the method can and cannot achieve, other management books stresses that storytelling should be a formalized tool if knowledge retention is the objective, which requires that managers create a context with the right foundation where the method of storytelling can thrive (DeLong, 2004). This is underlined by Linde (2001) who distinguish social knowledge as an important part of the tacit dimension, claiming that the story is one of the best ways to transfer social knowledge in an organization. She focuses on how the storytelling can be implemented in the organization on a cultural and social level, by providing arenas for telling stories instead of codifying the input and place them in a repository (Linde, 2001). This is an interesting view, and tells us that storytelling is more of a general collective process for sharing social knowledge in an organization, rather than using it as a mean for retaining knowledge. It is possible more meaningful to create a culture for telling stories to share important experiences, than extracting one or more stories from experts before they leave, and distribute them to others in the organization.

Stories are more memorable, engaging and vivid than rules or other instructions (Swap et al., 2001). They emphasize the stories ability to guide behavior in an organization, referring to cognitive science research which shows us that memorable information is more likely to be acted upon (Swap et al., 2001). The authors are skeptical to the methods ability to transfer the deep knowledge within a specific domain, and state that they don't know any event were stories were used to transfer critical skills. However, it is a good method for learning and remembering, if they are provided in a clear way that enables the listener to have a vicarious experience, allowing it to be encoded in the memory (Swap et al., 2001). Still, Swap et al. (2001) contradict DeLong´s (2004) structured approached to storytelling suggesting that the practice should not be manipulated and *created* by management, but rather *influenced* to benefit the organization; constructed stories will accordingly be less effective than the true ones (DeLong, 2004).

**Transferability**

Storytelling is explicit in terms of being an understandable practice, however, it is not clear how the storytelling method should be influenced by management, or how the method can be managed to enhance knowledge retention in regard to making the process structured. The only explicit proposal is creating arenas for discussions and storytelling in the organization. Hence, it is hard to evaluate the complexity of storytelling in general. The examples of successful storytelling for knowledge retention are embedded in the specifics, e.g. NASA´s storytelling program, therefore being so context-sensitive that copying it would be difficult. With that said, there are probably numerous literature on using narratives in an organization, that can give more depth and knowledge if the practice were to be carried out in another organization when aiming for knowledge transfer and retention.

## Concluding remarks

It is evident that storytelling is a method that will enable the learner to remember, and in that context, being a knowledge transfer method that works. However, the limitations are clear when looking closer to what knowledge this method can transfer between an expert and a learner, hence not being able to transfer skills but rather the social and historical knowledge in an organization. Nevertheless, this might be of value, because it will contribute to retaining the organizational memory. The literature does not mention how an expert's knowledge should be extracted and created into a story that can create value, if management chooses to govern the storytelling and use it for knowledge retention. What the literature does, is discuss whether it *should* be governed, or just influences as a method for knowledge sharing and transfer. In the latter case, it is a natural conclusion that the storytelling method will have to be combined with other knowledge transfer practices if the aim is to keep expert knowledge within the organization, because you cannot control if the valuable knowledge will be a part of the narrative, and if it is transferred to the right people.

### 4.4.4 Communities of practice

Originally, communities of practice are an academic orientation derived from social learning, and is concerned with how people that work together learn. Initially, the theory´s main contribution is not in relation to knowledge transfer, and does not describe the «how to» when it comes to organizing and assembling groups to enhance knowledge sharing and maximize the effects. Communities of practice can be traced back in history, but was first presented as a

theoretical orientation by Lave and Wenger. In their research, they deviate from the traditional perception that learning occurs through transfer of information to a person, and by focusing on the social nature of learning they investigates; how people learn and develop in natural or composite communities (Wenger, 1998).

Still, this method can be found in the literature, as a proposal for how to transfer knowledge and retain it in the organization. Unlike transfer methods like mentoring and exit interviews, this is a method to be incorporated as an integrated part of the organizations that aims for continuous knowledge transfer and retention, hence it requires long-term commitment (DeLong, 2004; DeLong & Davenport, 2003). The method usually involves creating groups, or networks of employees within the same area of expertise, that share the same problems and issues, hence a method that is useful when needing to retain knowledge from specific functions or types of people in the organization (DeLong, 2004). Conditions for the success of CoPs have been identified by Saint-Onge & Wallace, and is being rendered by DeLong (2004). These conditions are namely; *Conversations*; questions and discussions are key to learning, *collaboration*; the method support problem solving and sharing of knowledge among peers, *commitment*; the beliefs of the participants that communities are important and that the time they invest in it are worthwhile, *connectivity*; in terms of having an infrastructure that make connecting easy and facilitate meetings and forums, and *capabilities*; building and sustaining skills, knowledge, values etc. that are of value to the organizations (DeLong, 2004). Also, is not only a method for knowledge transfer among the people in the community, but CoPs in the reviewed literature also encourages making the knowledge available to organizational members outside the community through codification and sharing of the knowledge subsequently (DeLong, 2004)).

Communities of practice was also evaluated by Massingham (2014b), as a part of the toolkit that supported knowledge sharing. The method was positively accepted by the participants, and it was documented to overcome barriers for knowledge sharing (Massingham, 2014b). The problematic part of the method was the fact that it was voluntary, and caused participants to avoid the communities because it was not mandated and required by management (Massingham, 2014b). The method need not be voluntarily, and the framework for the CoPs as presented in the reviewed literature can be adjusted to the specific organization, e.g. made into a mandatory part of the job with specific rules and expectation of outcome. DeLong (2004) acknowledge the fact that all the nuances that CoPs comprise of, is not possible to fit

into a book, hence visualizing how the tool can exist in endless ways. Underlining this, Liebowitz (2009) present the case of The Aerospace Corporation, which involves just the opposite of the tool Massingham (2014b) tested; a formal process for the community of practice to unfold within, with mandated roles. The formal roles play a part in the quality of knowledge sharing (Liebowitz, 2009), and are not voluntary, but mandated from management. In this program, the community develop knowledge that are not only present within the community, but also shared with the rest of the organization by designing best practices, lessons learned and other guidance (Liebowitz, 2009). Because the Aerospace has recognized the community to have an influential voice, and on the basis of the governed structure of the CoPs, Aerospace has according to the case study increased value through the community position (Liebowitz, 2009). There are documentation requirements, and management are guiding the scope of the knowledge creation with a steady hand; input must also come from all members in the community to be accepted as «wisdom», that later will be codified into a formal report type and distributed to the organization (Liebowitz, 2009). This is a whole other way of facilitating CoPs than what Massingham (2014b) is describing, leaving as little as possible to chance or choice, and target issues with both purpose and meaning to drive transfer of knowledge.

There are other approaches for transferring knowledge between older and younger workers that are similar in the literature, often called mixed age teams (Ropes, 2015) or intergenerational teams (Bratianu & Leon, 2015). The difference between them are that the CoPs are stressing that the groups should be put together according to their specific area of expertise, be it within the same specialized field, or facing the same problems and challenges in a work situation. Mixed aged teams focus on connecting people with different age and experience, ranging from younger to older employees, to perform tasks together and learning from each other (Ropes, 2015). CoPs has according to the literature a lot of potential for supporting knowledge retention in the long term, and there are a lot of different ways to assemble the networks and communities that can be effective (DeLong, 2004). This aligns with what we have learned throughout this literature review, the necessity for adjusting the different practices for retention and transfer to their specific purpose, context and people.

## Concluding remarks and translatability

Communities of practice seems to be a good method for knowledge transfer when aiming for retention in a long run. There are no «right way» of doing this method, because the

communities can be assembled in different ways, with different degrees of instructions, depending on what the organization wants to achieve. This makes the method less explicit, and more challenging to implement, but it also has upsides as to being a flexible method that can be adjusted to meet the specific organizations strategy and goals. It will require solid structures and expectations from management to be successful, and commitment is a keyword in this context. It can be said that the small degree of explicitness, will make the complexity dependent on how management or other superiors choose to govern the practice. Since the communities should be made up of specific fields of expertise, and these fields will differ significantly from organization to organization, it would most likely be less efficient to benchmark another organization for instructions, unless it involves the exact same challenges and disciplines.

### 4.4.5 After action reviews

After action reviews (AARs) have a potential for transferring and creating knowledge within groups, unlike mentoring and storytelling which can be better for transferring already existing knowledge from one person to another (DeLong, 2004). Like CoPs, the method is better as an integrated part of operations in an organization, and will not be an effective tool for knowledge retention if the critical knowledge is leaving within a short period of time. The method focuses on «on-the-job learning» in terms of having an action plan for learning during and after activities, promoting reflection, capturing of knowledge and integrating the knowledge back into activities (DeLong, 2004). The process is based on four questions; (1) what was supposed to happen, (2) what actually happened (3) why where there differences? (4) What can we learn from this and do differently next time? (DeLong, 2004, p. 112). The process is brief, and can be conducted without assistance from management; it is self-explanatory in terms of providing questions that don't need an explanation to answer. The process was firstly used by the U.S. Army over two decades ago, and since then it has been and transferred to a wide range of organizations (DeLong, 2004; Liebowitz, 2009). In terms of knowledge retention this method will accordingly enhance sharing of knowledge as a natural part of organizations life but is probably not effective when targeting specific knowledge, because you never know the outcome of a project, task or activity before it is conducted, hence one cannot know whether the «right» knowledge will be transferred. Still, there is a major positive element in this method in regard to retention, namely the possibility to identify what the group need to learn, and through this process accelerate the transfer

between younger and older workers because you can apply expertise directly to a relevant issue (DeLong, 2004). Liebowitz (2009) acknowledge the benefits of reflections and better understanding of why different tasks are a success or a failure, hence being a mechanism that encourage knowledge retention and transfer of knowledge in groups. The AARs are examples of lessons learned, that also can be found in the literature on knowledge retention practices and tools (DeLong, 2004; Liebowitz, 2009; Massingham, 2014b), often referring to databases that store lessons learned for future utilization of knowledge (DeLong, 2004). The AARs come in different forms, but is always a linear process of questions to be answered that can be modified when needed (Liebowitz, 2009). In contrast, Massingham (2014b) claims that the aim of this method is to learn *during* a new task or project, and further stresses that the tool is in the middle of the learning process. If the project or task is taking a wrong turn, the AARs can help recognize the problem, and correct or adjust performance (Massingham, 2014b). This is uncharacteristic, as the method is so embedded and inspired by large well-known organizations as a tool for reviewing a process *after* action. The method was thus implemented as a method for reflection and knowledge sharing during a project in Massingham´s (2014a, 2014b) studies, and time was identified to be the biggest barrier (Massingham, 2014b). This was also the issue when it came to documenting the lessons learned to spread it through the organization; that the participants felt they were too busy to do this (Massingham, 2014b). Nevertheless, the participants were positive about the specified steps and consistency of the method, and the tool was rated to be the most successful in regard to knowledge usage, in the results of the evaluating framework that substantiates the study (Massingham, 2014b).

**Transferability**

The practice is very explicit, with reference to the questions that make up the basis for the method. Hence, it will not be problematic to transfer it to any organization, copying or adjusting the method according to organizational specifics. It is not a particularly complex method, hence does not require much training and managing if the method is implemented in an organization. When it comes to how embedded it is, this method is strongly rooted within the organizations that exemplify the use of it, e.g. U.S. Army. It is clarified through templates and clear guidelines, and created to meet the specific needs of the army. The same can be said for the other examples in the literature. The method is embedded, but still not hard to grasp and understand. It will be possible to draw upon the experience of others and adjust the AARs into a method that comply with specific organizations goals in the organization in question.

### Concluding remarks

After action reviews have been found to be of great success in a number of organizations, and the case studies from DeLong (2004) and Liebowitz (2009) point to the U.S. Army among others for substantiating how the method is good for knowledge retention, as the knowledge and learning outcomes are so clear. However, it is meant to be a rooted practice in an organization, and not meant for short time frames and stressful situations where possible knowledge loss is identified.

## 4.5 Summary

As we have seen in this review, there are a lot of «how to» tools and practices for both retaining knowledge in an organization and transferring knowledge between generations. The tools and practices seems to be concerned with either being a tool for action when risk of losing knowledge is identified and the need to act fast is present, or being an overall practice that will ensure continuous knowledge transfer and retention to mitigate such risk in the long run. The frameworks for a retention strategy are examples of the latter, while the step-by-step processes are recipe's for how to effectively make sure that knowledge that are on its way out is being kept within the organizations walls. The same can be said about the tools for knowledge transfer, which we saw constituted the essence of any strategy aiming for retention. Some of the tools are effective for knowledge transfer when the aim is to target and retain expert knowledge before it leaves, like mentoring or exit interviews. Others are more concerned with the structure for continuous learning and knowledge sharing between employees, like communities of practice and after-action reviews.

The different approaches that has been presented in this review, have in various ways achieved success in relation to knowledge transfer and retention. On the basis of that, it may seem that they are all good methods for achieving a goal of mitigating risk of knowledge loss in an organization; either if time is of the essence, or if the need to implement a broader strategy that will enhance knowledge retention in the long run is present. Still, there are a constant that keeps appearing throughout the entire review; the need for adjustment and aligning the strategies and methods to the context that they will be implemented into. Thus, I will argue that an organization aiming for an implementation of methods for knowledge

transfer and retention, can use the described practices for inspiration, but will eventually need to use make alterations to make the methods fit for the specific purpose.

I have in this chapter presented and reviewed the practices and strategies that is presented in the literature as effective for knowledge retention. I have also discussed how these different approaches is expected to enhance knowledge transfer and retention, how they are expected to work, and how they have been researched to reach the conclusion of their effects. Finally, I have discussed to what degree the practices are translatable, which will be a necessary prerequisite if they are to be implemented into another context. I will now turn to the next chapter, to present the empirical findings from the qualitative method conducted, to answer the next research question of this thesis.

# 5 Empirical findings

## 5.1 Introduction

In this chapter, the empirical findings are presented. The purpose is to answer the second research question of this study; *what characterizes ideas and organizing of knowledge retention and knowledge transfer in Statoil?* This question is asked as an integrated part of investigating the main research problem of this thesis; *How can knowledge retention and knowledge transfer between generations happen in organizations?*

### 5.1.1 Operationalization of research questions

The categories that will be presented below are based on the two analytical terms from the research question, namely *ideas* and *organizing*. Because the main research problem is asking how knowledge retention can happen in organizations, it is equally interesting to look at the ideas and notions about this in the case study, as it is interesting to delve into the more concrete organizing of transfer and retention efforts. As indicated in the introductory chapter, and in the review, knowledge transfer efforts are a vital part of any knowledge retention approaches. I chose to operationalize the two concepts, to clarify what I am aiming to illuminate from the case in question. This was also done to make sure that the indicators don't just cover a narrow aspect of the concept, but wide coverage of the concept in question, which in terms will increase the content validity (Ringdal, 2013). More, it was also an important part of making the research question researchable.

With that said, Statoil is an enormous organization. When working with an organization of this size, it is important to admit one's limitations. Although I would very much like to include, present and discuss all of the little details and nuances from the interviews, both the time, scope of the thesis and the resources available will not allow that. Therefore, I have strived to give a presentation of the data that will give such an accurate picture that is possible, but acknowledge that there might be existing aspects of the topic that this chapter does not cover. This delimitation will come naturally by having a focused look at the research question at all times, presenting *characteristics* in the true sense of the word, accordingly the typical hallmarks.

*Ideas* refer to the prevailing conceptualizations and notions that exist in the sample of respondents[3] in Statoil, about knowledge transfer between generations and retention of knowledge. What I want to illuminate is the ideas and notions about the following: (a) whether knowledge transfer between generations is at all an important topic, (b) how knowledge transfer between generations can happen and the variables that will promote or may impede this work, (c) what type of knowledge that is important to preserve in the company.

*Organizing* is rather straightforward in meaning how efforts for knowledge transfer are organized and formalized. That is, the formal structures and procedures which can be recognized that are put in place to support knowledge retention. In this, I want to include and shed light on to what extent and how leadership plays a role and have an impact on knowledge transfer initiatives in Statoil, as leaders both set expectations and drive the activities in the organization.

The data will in the following be presented by outlining the main findings within each category, and by presenting quotes from the interviewees that underline the findings.

## 5.2 Ideas

The ideas and notions the respondents will have about knowledge transfer and retention can be influenced by different aspects. Both what function they have in the organization and what prior experience they have in relation to the topic. These are variables that can affect how the prevailing notions are shaped to be. By looking at how ideas for knowledge retention and transfer between generations are expressed by the respondents, I seek to illuminate this variable from different angles. These angles will be outlined by first looking at how the informants perceive the importance of retaining knowledge in their organization. Further I will present what the respondents convey as important promotors of knowledge transfer, and thus what inhibitors that can affect knowledge transfer. Lastly, I will present what knowledge that are identified by the respondents as especially important to retain in the organization.

[3] For the purpose of a natural flow in the text, the interviewees will be referred to as both interviewees, respondents, informants and participants. These will all describe the same selection.

### 5.2.1 Importance

The informants clearly convey knowledge transfer and retention as important. They seem to be quite conscious about the topic, but there are nuances to be found. Not all the informants mention the importance explicitly, but most are quite convinced about the risk that is involved with a passive approach to knowledge retention: «We cannot say, on the day of retirement, 'this is critical'. That must have been identified long before that time comes». Another respondent also points to the importance of transferring and retaining knowledge, but is humble about the fact that it is hard to grasp exactly what it is that is important to retain: «No doubt that we have to secure the experience that is worth to bring along, secure what is in people's heads, but the question is, what is that?»

Several of the informants point to the importance of identifying when and where they might lose their knowledge assets. That is, *before* they potentially see a drain of people walking out the door. It is looked upon as important to acknowledge and identify the knowledge that experienced workers have, and retain it before it is too late. Hence, gain insight into what they possess that might be lost if one does not act:

> «*We must not let these people go, we must realize the possible issues it may cause that they leave and what we might lose. We lose a value and we need to look at how we safeguard that value*».[4]

Even though there seems to be a prevailing notion about the importance of knowledge retention and transfer between generations, there are as mentioned, nuances. One informant expressed how benefits could exist in relation to older workers retiring from their positions. Still, the possibility of difficulties was underlined:

> «*I'm calm about that. I have seen many examples that people with a strong role have left, then others grow and flourish and get opportunities, and we still manage. But, of course when people leave, there can become some voids*».

Another interesting perspective, comes from one of the informants that highlights that knowledge transfer is important *across* generations, not only as a one-directional transfer process, but also with an attention to knowledge transfer from younger generations, to the older. The way this informant reflects, shows that conceptions of knowledge transfer and the importance of it, does not necessarily limit itself to the older workers that are facing

[4] The quotes have been translated from Norwegian to English. The respondents have verified all the quotes that have been used in this study by confirming that they are representative for their points of view. See 3.4.3 under «closing phase» where this is further described.

retirement. This is noteworthy when looking at how the informants position themselves in relation to the importance of engaging in knowledge retention activities.

> «*One could mainly think that it is the young people who would benefit from it, but there is no doubt that the experienced get…. technology development is moving forward in a tremendous pace. It is important to ensure that those who have been in the company for a while do not deteriorate in relation to knowledge*».

One of the informant also highlights the importance of a transfer process across generations, but talks about it as important in terms of efficiency. This respondent underlines that a younger worker can benefit from the experience a senior might hold, but the senior can also benefit, by for example being brought up to speed on digital tools that can make his or her work easier and more efficient.

### 5.2.2 Promoters and inhibitors for knowledge transfer

The variable *ideas* also consist of considering what the respondents see as promotors and inhibitors for knowledge transfer. Several of the respondents advised me to study PSA´s (Petroleum Safety Authority Norway) book about learning (2013), and specifically referred to a chapter about promoters and inhibitors for learning. This booklet was published as a part of the project «culture and system for learning» which is an interdisciplinary project in collaboration with SINTEF (Ptil.no, 2017). This demonstrates that this is something that occupies the respondents, namely how learning can occur in organizations and what might prohibit it from happening.

**Curiosity**

One of the promotor which is being highlighted in relation to knowledge transfer is curiosity, and is mentioned by several informants. The notion is that each individual's curiosity for and dedication in relation to his or her own learning and development is an important promoter of knowledge transfer. Conversely, lacking curiosity is an inhibitor. This is something that many informants see as a prerequisite for learning. Receptivity for both new experiences and input from peers and leaders is seen as essential to be able to manage development and learning. Here is one response from an interviewee that was asked what reasons for knowledge loss that could be found in Statoil:

> «*First of all, it's a long process before you acknowledge that you have a loss of knowledge, that it becomes visible. It's a slow process, so that when you first realize it, you're too far*

*gone. If you combine this with a weak interest in seeking out the collective knowledge. A lack of curiosity. Because if you are to stimulate knowledge sharing, you must stimulate curiosity*».

**Culture for learning and sharing**

To have a culture for learning and sharing is stated by many respondents as an important promotor for development of learning between generations. In this context, culture for learning and sharing will mean that the people in the organization is willing to share their knowledge with each other, and find that it adds value. The opposite might accordingly become an inhibitor for knowledge transfer, if a culture is characterized by low willingness to share. Rosness et al. (2013) state that knowledge development and learning in an organization are connected with, among others, culture for knowledge sharing. What is interesting about the selection that was interviewed in Statoil is that they have different perceptions of the current culture for knowledge sharing, defined by the extremities:

«*It's like, I do not know if it's a matter of being Norwegian, or Statoil specifically, but it's terrible little culture to share such things. In general, to share how an engineer works, we do not have much culture for that*».

This is an interesting view. When the respondent was asked to elaborate on the challenges related to knowledge sharing, the following statement was made: «Knowledge is power. You notice that. I think that's some of the reason why many people do not want to share». On another side, some respondents perceive the prevailing culture as more willing to learn and share: «So, we have a culture for learning. That is clear. We have that in all our plants». One of the respondents does not mention culture for sharing unsolicited, but when asked about it directly, answered the following:

*«I have not thought about it, but when you ask that question, it's not a theme, everyone wants to share. And all new ones are being met in a very good way by their colleagues, indeed. I have never registered any situations around that»*.

**Collaboration and variation**

One thing that is recurring as an especially important promotor of knowledge transfer and retention, is having diversity in the teams and collaboration between the team members. Collaborative is also one of Statoil's values. It was stated by the informants that leadership in Statoil «strongly encourage collaboration», and that it «has a lot to do with how you put together groupings to get it right ». In contrast, teams with low diversity and with little emphasis and prerequisites for collaborating can be an inhibitor for learning and transferring knowledge. In addition to mentioning this kind of team composition as something that will

promote knowledge transfer, one respondent is highly concerned that leadership in Statoil must see and be aware of the advantage this will give. There are varying degrees of flexibility in how teams are assembled and how and where competence is deployed.

> «*It's also a question... how clear is management about this? There are many who do not want to switch the experienced around. People have been working together with their colleagues since 1923, go on holidays together four times a year, then things go wrong, right. But we need to take that room*».

This emphasis is also saying something about leadership as a promotor of knowledge transfer and retention, how their ways of driving teams together and focusing on collaboration will enhance a process of transfer. One of the leaders told me that; «I'm extremely concerned with collaboration, I force people together to the bitter end. A lot of the solution to our problems lies in cooperation». This reinforces the idea that management is an important factor in such a process.

**User friendly systems**

Something that occupies most of the respondents in relation to promotors and inhibitors of knowledge transfer and retention, are documentation, specifically their documented work processes. There is an overall agreement that documented work processes is a big part of the knowledge that the company holds. The documented work processes can be found in the management system, where all the information you need to ensure that a task is being done correct is documented. You can learn from a system that is filled with experiences, as Statoil build their documented knowledge on experiences, and document their best practices in their management systems.

> *«When you talk about transfer of knowledge, you have personal transfer, and then you have transfer through governing documentation [...] These are two approaches and we have chosen the latter version. We have made that knowledge available»*.

There is a strong agreement between the respondents that having a system with the right amount of information that are user friendly and easy to access can promote knowledge transfer and retention. This becomes a repository of knowledge for the company where knowledge and information can be extracted by those who need to access it. Therefore, some point to the potential for improvement, to make sure that the systems are promoting transfer and knowledge retention:

> *«I think, if you look at the management system isolated, then it's a framework that tells you how things are connected. Some important requirements, the choices we have made in the company in relation to how we do things, perform work processes, and so on. So, the third important perspective is the user perspective that you have access to that information and can use it in a safe and efficient way in your work. This is where I see we have the greatest potential in terms of exploiting the solutions we have, making it useful, I do not know if I can call that knowledge, but the information contained in the management system, we can utilize it better».*

Statoil, as well as the industry as a whole, is in the midst of a transformation to ensure sustained competitiveness. Simplification, standardization and a culture of continuous improvement are key elements in this journey. This is brought up by many informants. To reduce complexity, it is important to also simplify work processes. Some informants highlight the importance of striking the right balance, simplifying without watering out important experiences built up over time. An interesting view from one respondent, is that if the work processes are too detailed, then the person executing the process will stop thinking, and just busy him or herself with checking a list of tasks and operations. There must accordingly be a balance, which will enable the workers to think for themselves.

### 5.2.3 Knowledge types

This subcategory presents how the respondents look at knowledge in Statoil, and what they see as important to transfer and retain in the organization. As seen in the literature review, the importance of identifying the knowledge that needs to be transferred and retained before it retires from the organization is key. The prevailing conceptions of knowledge transfer and retention, can to some extent come from how the respondents perceive knowledge and have reflected on what knowledge that are critical for Statoil. Of course, all knowledge together is important, seen holistically, but some knowledge will be more important, and can also be difficult to hire from the outside. One of the leaders express it like this: «I see that I strongly agree that we are unable to employ experience».

The quote above is quite descriptive of the knowledge that is seen as important for Statoil as a company. Experience is vital, but is also something that needs time to build. Several examples are mentioned, that point to the importance of the tacit knowledge that lies within the experience that is built through exposure to different events and scenarios. Some examples shared, point to visible consequences of lost experience where reduced efficiency and longer production interruptions can be costly to the company.

> «*We saw this in the recent shutdown last autumn. A direct consequence of expertise that has gone out the gates, which took something with them in their backpack, which you cannot document. It's the tacit knowledge that they just have. They have participated in starting up these facilities numerous times before, and found out what to do when a specific error occurred. And when you do similar exercises in 2016, there is no doubt that some of the challenges we encountered would not have existed if you had still had the experts with the long experience present*».

Knowing a plant and its equipment and having seen similar issues means being able to act fast and make the right and most efficient choices in addition to balancing risk in different situations. The informants talk about how exposure to different situations enhance this, and enables people to draw on other experiences, and develop a better understanding of how different equipment respond in different situations. Such experience is in some way linked to the historical knowledge of a plant, as experience is a product of time.

It is problematized that the type of scenarios that build experience through exposure, do not occur regularly. One example is a shutdown, either planned or unexpected, which does not happen often. The same can be said for accidents or events. The probability of experiencing an event is described as rather low, fortunately. For an individual offshore employee, the probability is even lower as they work in shifts and is therefore at the installation two out of six weeks. In a learning context, this is looked upon as problematic, because it will take a lot of time before someone has experienced all the different scenarios that can occur. Scenarios that will enable someone to be prepared and know what to do in pressing situations.

> «*Now we are left with some younger people, they have not been exposed to this. And they must actually figure it out on their own. So, I think we should acknowledge that there is something with the experience and the tacit knowledge that is difficult to transfer, very difficult to transfer*».

Another important issue one of the interviewed leaders are proposing, is the knowledge and experience that organizations and individuals that have been exposed to incidents possess, more specific the historical knowledge. The respondent talked about how major accidents happen in the oil industry, but seldom occur for the specific companies in the sector. The respondent pointed to the fact that this can lead to loss of attentiveness in both the individual worker's memory and the company's memory over time, given the rarity of major accidents. This perspective can be set in the context of how experience gives employees a whole different knowledge and expertise, that makes them more prepared if something similar should occur. When we talked about this during the interview, the respondent described a type

of knowledge that is deeply anchored in experience that can be seen as something truly important for a company operating in the risky business of oil and gas;

> «*We have thirty manned installations on the Norwegian continental shelf. I have seen them all ten times. Some of them have incidents with major accident potential. There you can find a culture in the walls that do not exist on those installations that have not been exposed to anything like that. And then the question is, how much replacement should occur before that culture is gone? I'm just as excited every time I see them*».

This historical knowledge is also something that is underlined by another informant, which point to how knowledge transfer and learning from each other is important for the historical knowledge and for the culture:

> *«It's a great way to train engineers, to put them together with the older generation. Both to give them the history of the oil industry, that is also something that is inside their minds, more than those who are 26 years of age today. So there is knowledge in that too, of course. It is both culture and knowledge».*

Nevertheless, there are respondents that don't feel that a single person's knowledge is so vital that it will pose a threat to the company if lost. This is an interesting view, differing from most other responses. The respondent stressed a belief that all his employees are able to deliver on their tasks, also the younger ones with less experience. For some it would just demand some more time. In addition, the respondent has strong beliefs that the company will do fine, even when and if knowledge loss occurs:

> *«There are a lot of clever people, but no one is absolutely indispensable. Everyone feels a bit indispensable, it's a great feeling. But if you look a little objective, yes, we will be very sorry when we lose someone, either through termination, retirement or other means, but I have never seen that we have not been able to operate the business because of it. We must be humble about the skills people have, but don't exaggerate it. It is not make it or break it for the company, for Statoil. And we have many possible alternative solutions to find the competence we need. And we do that every day».*

### 5.2.4 Summary

Characteristics of ideas in relation to this topic are many. The respondents seem to have an overall view of knowledge transfer and retention as important for the company, but there are also nuanced reflections to this. In addition, bi-directional knowledge transfer is pointed to, and is to some perceived equally important as the knowledge transfer from retiring personnel to potential successors. Promotors for knowledge transfer that are mentioned explicitly is among others curiosity and dedication to learning, thus meaning that learning is driven by an interest in learning and developing for the individual. An important part of this is having a culture for sharing, a need for having people in the organization that both are willing to share,

and that are receptive to new knowledge. There are various observations of how the culture amplify learning and knowledge sharing today. In an extension of this, a promotor of knowledge transfer that is looked upon as important are collaborative and diverse teams, meaning that how the company's organization form should support this. User friendly systems with available and right knowledge is also mentioned as a promotor for knowledge transfer and retention, and is seen as especially important for Statoil. The respondents have the opinion of the documentation- and management system to be both a promoter and an inhibitor for knowledge transfer and retention, referring specifically to lacking accessibility as a possible inhibitor.

The respondents are occupied with retaining and transferring tacit knowledge, especially the knowledge that relates to experience. Knowledge about the facilities and the equipment that has been gained through much exposure is looked upon as important. Also, the historical knowledge about incidents and the culture that comes with these experiences is seen as important to transfer to those who have not experienced these types of occurrences. Their ideas are characterized by being affected by personal experiences, and reflections of how a lot of their experts holds knowledge which is intuitive and base upon experience and exposure to different situations. This can accordingly be defined as knowledge that is important for downside risk aversion and efficiency in the company.

## 5.3 Organizing

«*I would dare to claim that we as a company don't have a formal system for this*»

Statoil does not have a formal, embodied and stated strategy or organized plan for knowledge retention. Neither do they have a stated plan for exactly how to transfer knowledge. The overall impression is not that they don't have a system for this, but that this is related to the argument that the review returned to repeatedly. The fact that each situation will be unique, and the need for adjustment according to knowledge types and context is key will also apply in Statoil. The statement that they don't have a formal strategy for knowledge retention is seen in comparison with the approaches that the literature review presents where frameworks and strategies for knowledge retention and transfer are regarded almost as a recipe that must be implemented in the organization in order to succeed. Nevertheless, the company has a lot of different tools and organized practices that will enhance knowledge sharing and continuous retention of knowledge.

To characterize Statoil in relation to how they organize knowledge transfer and retention initiatives, I will be looking at the formal structures, procedures and routines in the company. There are three things that have stood out in this context: (a) the organizing of practices that support knowledge transfer (b) the formal structures that increase the general robustness of the company in terms of continuous learning and development and (c) the importance of leadership to succeed with knowledge retention. I will in the following present these aspects and point to how they contribute to characterizing Statoil in relation to knowledge retention.

### 5.3.1 Knowledge transfer between generations

Statoil has different organized practices that among others contribute to transferring knowledge between generations. These initiatives are professional groups and networks, diverse teams, mentoring and on-the-job learning. These formalized structures and routines do not only cover transfer from older generations to the younger, but have an additional focus on having a structure to enhance knowledge transfer and learning in general. In the following, these practices will be presented, on the basis of the interviewees responses.

**Professional groups and networks**

The most prominent organizing of initiatives that contribute to knowledge sharing and retention are what is being referred to as professional groups, networks. There are two different groups that have been specifically mentioned. One is a resource pool where e.g. engineers are organized centrally according to specific disciplines and are allocated to tasks where needed. Two respondents talk about how they use smaller thematic subgroups to address the topic of knowledge transfer and retention in the resource pools. The groups have weekly meetings, with a current competence plan as an underlying basis for the fixed agenda and the topics that are relevant to address in each meeting. The other is a professional network where resources are organized locally, and gather regularly in their network.

The professional groups the respondents are describing are small and more governed. The groups are tightly organized and given structure and routines that makes it clear what is expected of each individual. Some call it a «regime», with humor. The purpose with these groups are presented differently, but similar is the intent to share knowledge with peers, share experiences and discuss current issues. One of the respondents that have organized such

groups, mention that the main intention is to «make each other good», another is more concerned with giving each individual in the group something of value:

> *«We have to give each individual the energy. They are supposed to feel in a group meeting that they provide a lot, but they also have to get the feeling that they gain a lot. That is why we do it. It should not be a place to drain the batteries, they should fill the batteries».*

The professional groups have as mentioned a tightly organized and predictable structure, but how they are organized differ somewhat. One leader talks about how he gives a written mandate to senior staff, often a senior that only has a couple of years left in the organization before retirement. That person will be in charge of leading the groups. This is in the recognition of the heavy knowledge base a senior possess:

> «*It is often the case that senior staff have worked out some methods, acquired knowledge and, not least, system understanding, that we can benefit from. And all those things are transferable».*

Further, this leader explains how the written mandate is describing what deliveries is expected of the person in charge of the groups. This is a clearly communicated expectation from the leader to the employee. In Statoil, how you deliver is as important as what you deliver (Statoil, 2017c). The members of such groups are also being measured according to how and what they deliver in these groups. The groups have regular meetings. The time for the meetings are the same every time, which is not random. A goal is that similar groups in the future can be facilitated across the country at the same time, so that if a topic that someone in another city are concerned with is discussed, the different groups can connect via Skype or other forms for long distance communication to participate in the discussion.
The output of these groups is mainly kept within the network, one of the respondents explain the rationale for this, which is keeping it simple:

> *«Yes, it will probably be kept within that network, we try to keep the threshold as low as possible, so that things are discussed, so that everyone can come dragging with their backpack and unpack it to discuss their issue if appropriate».*

**Diverse teams**

Statoil's overall values as set out in the Statoil book (2017c) are a mean to «…help us set direction and they guide our decisions, actions and the way we interact with each other» (Statoil, 2017c, p. 8). One of Statoil's values are *collaborative*. This value contains three important aspects that will ensure collaboration, and the first two are especially interesting;

working together as one team and share knowledge and help each other succeed (Statoil, 2017c, p. 8). This shines through in the interviews as well, as the respondents explains how they have an organized structure for diversity in their work teams and management teams. This is important for collaboration across and knowledge flow between people.

> *«Something that is extremely important, is that you have diversity in the groups you assemble, no matter what disciplines you have. That you do not have unilateral young, unilateral aged, unilateral girls, unilateral boys, unilateral older workers*».

This is something that is underlined as an important way of organizing teams for the knowledge flow between people, and will in addition enhance the knowledge flow between generations. Even though this is not something that is organized with a particular aim for knowledge transfer between generations, the interviewees tell me that the this will enable a knowledge flow at all times, which makes the company less exposed to knowledge loss in the future.

> «*You do this best through building diverse teams, diverse management teams. It is the easiest way to learn. To put one on top of another to learn, six months before that person is leaving, it's an emergency solution when you feel that, woops, the hourglass is turned and it is urgent to learn this and that before this person leaves. It is not a good, sustainable learning model in reference to transfer of knowledge. The good one is to have that mix at all times*».

Diverse teams are also linked to innovation and efficiency. One respondent mentioned this in particular, and was eagerly concerned with how such teams consisting of employees with different skills and backgrounds would benefit the company in different ways. When asked if there are clear differences in the established competence, versus the newer, less experienced one, this informant explained that the experienced workers who understands and knows the plants are needed to find an optimal solution to a problem that is both efficient and safe. But, one should challenge this, by daring to connect that established experience with someone younger with an assumed innovative mindset, that «shoot from the hip and is a little fearless». This points to the gains of having diverse teams, and how established knowledge from older generations combined with a new pair of eyes can be an effective way of organizing teams, and in the extension, transfer and retain knowledge. Thus, it is an organized practice that promotes knowledge transfer between different groups, including between generations.

**Mentoring**

Mentoring is central as a formal routine in Statoil. The respondents talk about this routine in relation to both training of new employees and as a tool for knowledge transfer between

senior and junior employees. All new apprentices are appointed a mentor, that should support the new employee through his or her training period; «what we do is that when we hire new personnel, who may have the formal skills in order, we use mentor programs to a large extent in combination with controlled exposure». When asked if the mentoring continues beyond this limited period of time, this respondent has observed that an informal bond is established between the mentor and the mentee:

> «*It will necessarily be a bit like that, that they will usually have a… they get an informal bond to each other that goes far beyond the mentoring period. The mentoring also covers the non-professional things around the work situation*».

In reference to knowledge transfer, mentoring is also used as a tool to make sure that the knowledge is kept within the organization, if someone is about to leave and their knowledge is evaluated as critical to retain. Then the retiree often becomes the mentor for the successor that eventually will take over the retiring experts job. When people apply for early retirement and the risk of them leaving is evaluated, it can happen that the application is denied because of the risk of them leaving too soon. The senior will then remain in the organization to transfer their knowledge and mentor their successors:

> «*I think we should acknowledge that no matter how well we run such a handover process, we have examples that we have had to plan that resources must stay behind up to 1.5 years to ensure we have trained those who shall take over the specific tasks»*

Following up, asking if they really retained someone that long:

> *«Yes. We even had to stretch it 3 months beyond the period we had pictured because we saw that the competence transfer actually takes a lot longer than we had expected*».

The respondents explain that all employees have access to a mentoring-toolbox. This toolbox is located in Statoil's intranet, Entry. Here you can find specific guidelines for both mentors and mentees, as well as instructions and tips for a mentoring process. Even though this tool exists, there is an admission that leadership should be even more aware about the value that good mentors can create:

> *«We have some experienced workers who are extremely good mentors, they are good at training. And maybe especially in operation, we have a couple of good examples, inside our panels, where they consciously steer them into situations where they get to test themselves a little. But we have a way to go, we could have been even better in enabling the experienced workers to be mentors and trained them a little. We don't have enough awareness of that».*

**On-the-job learning**

It becomes apparent that the respondents have a view on knowledge transfer as something that both could and should be done by exposure to real and simulated situations. That will have the most value to the learner in question, and make sure that important knowledge is retained. The rationale is that people learn when they can see the value of the new knowledge, and train in the same situations where they will get to use it.

> *«I'm quite tired of hearing about sharing experience, sharing experiences is worth nothing before one has gotten to use it. The best starting point you can have to manage the use of experience is to connect it to the person who actually sits with the problem in his lap. Experience sharing is about that the person who is sharing it offers the knowledge, but is also about connecting it to the one who actually needs it. So, we will work a lot with this in the future. I really have faith in that».*

The way to ensures an efficient and valuable knowledge transfer process, is according to the respondents through exposing less experienced people to situations which they can be trained and mentored in. The keyword is on-the-job learning, which is mentioned quite often as a formalized routine. Simulator training is especially mentioned as an important part of this on-the-job learning and is often used in the training period of new employees: «It's super structured, with checklists and checkouts, training on simulators». It was also stated that there is a high focus on how this kind of training can be arranged better, to make sure that they train on the right things.

The more experienced workers should be involved in creating scenarios for the less experienced, and draw on their own established knowledge to extract and prepare situations that are necessary to gain the new experiences. Thus, it is important that the experienced workers provide their knowledge in identifying what situations and scenarios that will be important to train on. In addition, they should participate in the learning process as a mentor available for supporting the less experienced employee.

> *«If have a good mentor that tells you ... 'touch this, this tube, if you take off the glove it's just hot enough that you can manage to hold your hand on it. If it's too hot, something's wrong'. That competence. It is the competence that you cannot write down on a paper, but must be transferred through action and experience sharing».*

The previously mentioned issue of the improbability of being exposed to situations that seldom occur, is also mentioned in this context. It is described as difficult because these critical situations rarely occur and the probability of being on the job when it happens is low.

This is emphasized as fortunate, but it also makes it difficult to prepare and train on the «right things». This can make knowledge transfer difficult, when the need for a specific situation to occur is crucial to achieve on-the-job learning and a transfer of knowledge:

> «*You must have been through troubleshooting, finding the error before you really get it under your hands. If you work in 2-4 shifts then there may be times... mostly the plant will run, they will not fail. And when it fails then it's 1/3 chance, or 2/3 chance you're not at work. And if you take day and night shift as well, then the probability is even lower. So, there is something about learning at work through events, that is, if it does not happen very often there is little chance of it. So, how can you predict what will stop working and what your problem is, and then be proactive in providing training in that area? That issue is demanding. Almost impossible*».

### 5.3.2 Robustness and foundations

In addition to having specific organized practices that contribute to knowledge transfer between generations and employees as we saw in the above, it becomes clear that Statoil have a lot of initiatives that underlies and supports continuous learning and sharing of knowledge. Since this is not initiatives that are specifically targeting knowledge retention, I choose to call it robustness, because it is contiguous to think that this will contribute in making Statoil more robust, for both turnover and generational shifts in the future.

#### Planning

Strategic work force planning, is mentioned by many respondents, as a process for identifying and planning competence needs ahead. This is a process that is used by HR, and runs every autumn. This tool is digital, and is mainly a contribution in analyzing the age structure and the demography within the different disciplines. It also provides a picture of how many employees are approaching retirement and early retirement. By carrying out such an analysis, Statoil gets a map of how many that are leaving in the next few years. It is stated by an HR leader to be *«a good tool for understanding the overall picture».* Since this is done digitally, and at specific times of the year, it is a highly formalized and structured process, that enables Statoil to know whether they are facing knowledge loss, and where that loss may happen. It can also assess other structures in the work force, which has been pointed out as important for knowledge transfer as well:

> «*it's very important to create plans, for how to move in a 3-5-year period, that's the action…that's how early you minimum will need to start to match the challenge. Therefore, we use systematically strategic work force plan, which we do once a year. We go through the entire organization, we look at everything from demographics, to what I mentioned about*

*team compositions, to core subjects that may not be available from the various educational institutions that we have traditionally gone to*».

This system is also a part of early retirement planning. Statoil has to this day avoided termination of their employees, as most of the oil and gas businesses has done as a direct consequence of a decline in the industry. Instead, they have provided the opportunity to apply for early retirement, a voluntarily instrument to naturally reduce the work force to stay competitive. In this process, the informants tell me that the strategic work force planning has been important, to make sure that knowledge is not let go, if it is important to transfer and retain it in the company. Many emphasize how this is a much more controlled and organized process today, than it was some years ago, and stress the need for thorough analysis and plans to make sure that critical knowledge is lost:

«*There are simply some key resources you cannot allow to retire before you have proper control of the competence. And some competencies actually take so many years to replace that in the latest cases in 2014, we could not grant early retirement at all, for the sake of competence*».

**Internal rotation**

Something that is important in Statoil, is internal rotation of employees, which to a large extent is encouraged by management.

*«We begin to realize that it will be tougher in the future, to keep the competence. I have a lot of faith in what we are doing now, to manage internal rotation. […] We wish, on an executive level that people move around. We strongly encourage this. This is to share expertise, build width and being more flexible ... we call it multi-skilled, multi-disciplinary staff. It is a part of seeing that as a company you must be better at moving people around»*

Statoil has a large internally based employment market, which makes it easy for employees to exploit their possibilities. The respondents underline that among others, this contributes to building multi-skilled workers with a unique width. The possibility to gain new insight and experiences in the organization are there for those who wish to expand their knowledge and insight. The respondents talk about this as highly important tool for increasing learning and enhancing robustness in the company in relation to learning which in terms will benefit both the employee and the company.

*«But catching the organizational training, it's no more systematic than that I think you need to have long-term plans, diverse teams, and fast rotation, especially in the early phase of the career, so that many people have a high exposure in the company, gaining a broad understanding. Something I think we do to a large extent in Statoil».*

**Recruiting**

Several respondents share the view that recruiting is an important part of securing knowledge for the future. The labor market is to some extent limited today, because of the general decline in the industry. Therefore, a natural worry about resources is murmuring in Statoil, and probably also in the rest of the industry. Consequently, the respondent's thoughts on this subject is made up of the need to recruit people to be able to have a strong competence base in the company, but also includes thoughts about the access of resources in the future.

It is the general notion that both keeping competence in the company and recruiting new competence is important. Hence, hiring people with the basic competence you get from learning institutions. One of the informant calls this access to potential new employees Statoil's «pipelines», and are deeply concerned with maintaining the pipelines, making sure that they don't «dry out». An example that can be found in several interviews, is the subject of telecommunication, where the formal institutions for studying this subject are few; the access of basic competence seems to fade away. Nevertheless, there is still a need for this competence in the oil industry, and with the approaching retirement of the people that holds this competence, the need to have someone able to take over is important.

> «*But telecommunication... fiscal measurement, its not just analysis, is actually an instrument, a tool. So, then you have to act early enough, before they find that everyone is retiring at the same time, so you have to check where are these learning institutions, how many do we need, when will we start building that competence base, and then we get a transfer of knowledge*».

The respondents are concerned with access in the market, and how one should recruit to make sure that there is a formal competence base in the company to draw on. Without available formalized knowledge accessible to the company, there will be no one to transfer the knowledge to. A holistic and strategic approach to recruitment based on analysis and strategic direction for the company is high on the agenda in Statoil today, as a prerequisite for making knowledge transfer and retention possible.

**IT applications for sharing and keeping knowledge**

«*Statoil, as a company cannot rely on personal knowledge carrying*». As a company, especially in a field like operation and maintenance, Statoil does a lot of repetitive work, and the work processes are documented in their management system through databases. Their system and operational (SO) documentation is said to be crucial to operation. This

documentation describes work processes and Statoil´s plants and installations in detail, and are referred to as knowledge. All of the respondents talk about knowledge transfer in relation to such documentation. «*Governing documentation and follow the work processes, it is an important part of competence retention in a large company»* The necessity of documenting as much knowledge as possible in repositories is clearly an idea of how knowledge should be managed in the organization; through documenting knowledge and make it available to others in the IT-systems. One of the informants expressed it this way:

> «*when you talk about transfer of knowledge, you have personal transfer, and then you have transfer through governing documentation [...] These are two approaches and we have chosen the latter version*».

Another informant expressed it like this:

> «*In relation to our management system, that is a way to retain knowledge. We document the experiences we have made, descriptions where our best professionals say that this is a smart and sensible way to do tasks, that's where we share and learn the organization to apply, when we are going to execute different activities*».

There is an overall agreement that documented work processes is a big part of the knowledge that the company holds, but there are also challenges connected with this. Being able to access this knowledge easily, and having the right amount of information in the systems, to avoid information overload is key. The informants are occupied with making the system of more value to the employees, and have strong beliefs that in the digital future, e.g. with handheld devices, this will become better. There is also an acknowledgement in how the system today should be more designed for the less experiences employees, and it is reasonable to assume that this is high on the agenda:

> *«Our governing documentation is written, and this is important, is written for the experienced user. And so, our dilemma becomes that the experienced user often manages on their own, thus this ends up as a very bad role model for the inexperienced user»*.

There are other IT applications that are created to enhance connectivity and sharing of knowledge in Statoil, one of them is Yammer. This is a digital network, that enables the users to connect to information and people in the organization, and is created for the user to exploit the knowledge in the organization (Yammer, 2017). There are some respondents that see how this digitalization is prohibiting knowledge sharing, and connects it to retention:

*«You are standing in the middle of a crossroad today, those who use yammer and those who do not use yammer. And that is very exciting. You get a discussion, where should you put that knowledge? Where should you put the knowledge and what will you miss? If you simplify it and say that you do not get any contributions from the older generations, what does it mean compared to the skills that are on its way out?»*

**Summary**

The specific characteristics of knowledge transfer efforts in Statoil are professional groups and resource pools, diverse teams to enhance collaborating and knowledge sharing between people, mentoring for knowledge sharing in training and when people leave and on-the-job learning for exposure and making use of the knowledge in appropriate situations. Their approach to this topic is also comprised of tools that make the organization capable and robust for meeting knowledge loss at all times, and can be characterized as solid documentation of knowledge in databases, internal rotation to build width in the company, holistic and strategic approach to recruitment and work force planning as a foundation for planning ahead.

### 5.3.3 Leadership

An important aspect that appeared, is how leadership seems to be an important variable and driver for the success of knowledge retention. This is especially important in relation to initiating and implementing structures, procedures and routines. Statoil's leaders are being trusted with a great space to maneuver. The corporate strategy, values and governance set the overall direction and framework, and within these boundaries leaders are empowered to set and communicate direction and to further empower their teams. They are accountable for results and deliveries, and there are various learning and development toolboxes available to assist the conscious leader to develop their teams (Statoil, 2017c). It is noticeable how the leaders that have a high focus on knowledge seem to have an organized approach for retaining valuable knowledge, and have success with such initiatives. The impression is that these respondents have a high focus on the importance of sharing knowledge and learning, and has gone to great lengths to enable that in their organization:

*«When I started this job last year, I looked around and thought I should do something. Then I folded the entire shop around, and made it the way I wanted it. Fortunately, this is something I can do as leader. I think that is appreciated. To stand alone with problems…to be able to lift and improve things, to make sure that what you say has a professional weight behind it, learning and development»*

The focus is on clearly communicate expectations, and make sure that these expectations are realistic as well as motivating. The following informant exemplifies how he is observant of his senior workers and has reflected on his role as a leader to appreciate their value in the company:

> *«And that's the big question here; How do I as a leader engaged each individual to see that writing their memoirs is surely fun, but you can do that when you are retired. That there is still something to do here. It is both a motivator role, and to explain what I want from them, and to be very clear about it».*

One of the leaders were very occupied with action, in relation to making good structures around learning and knowledge sharing in the organization. This informant had several plans for the future relating to sharing and developing the knowledge base in his unit. When asked what key leadership skills he found important for those who will be managing such processes, the answer was clear:

> *«Ability to communicate it, what's in it for me, that is, the individual employee, and so I think it will be important to be brave enough, as leader, because it will… yes…dare to think it, and actually do it»*

Communicating and setting expectations seems to be an overall key for leaders that want to address these issues and enhance the existing structures in the organization for better knowledge retention. The following quote point to exactly this, and also underlines the need to be creative, dare to be innovative and acknowledge the value of the older employees before they retire from the organization:

> *«In my organization, the senior staff, often with specialist skills, they ... I try to buy them free from everyday tasks, for the benefit of being a libero across. Two of my employees are at the age of 65, and have over the last two years had their work redefined to follow up a single case and pull out, transfer it to someone else while at the same time covering much wider tasks and work as a support for others across various locations and across specific tasks».*

**Summary**

Based on these observations, it seems like clear, focused, expectant and motivational leaders are promotor for knowledge retention in Statoil. These characteristics seem to be of major importance to the force of implementation and outcome both for the established practices for retention, and possible new practices in the future.

## 5.4 Summary of chapter five

*Table 4: Summary of empirical findings*

| **Ideas** | |
|---|---|
| **Importance** | Knowledge retention perceives as important. Important to recognize the value of experiences but also vital to remember that retiring individuals make room for others to grow. Bi-directional knowledge is looked upon as key. |
| **Promotors & Inhibitors** | Curiosity, culture for learning and sharing, collaboration and variation in teams, user friendly systems |
| **Knowledge types** | Experience based knowledge related to knowledge of equipment. Historical knowledge and experience with different situations, events and scenarios is important. |
| **Organizing** | |
| **Knowledge transfer** | Professional groups and resource pools, diverse teams to enhance collaborating and knowledge sharing between people, mentoring for knowledge sharing in training and when individuals retire, on-the-job learning is important for exposure and making use of the knowledge. |
| **Robustness** | Solid documentation of knowledge in databases, digital platforms for interacting across, internal rotation to build breadth in the company, holistic and strategic approach to recruitment, work force planning as a foundation. |
| **Leadership** | Clear, focused, expectant and motivational leaders show how important that is for successful retention processes. |

Through this presentation of the empirical findings, I have investigated what characterize ideas and organizing for knowledge transfer and retention in Statoil today, which was the research question underlying this chapter. The findings will form the basis for the discussion in the next chapter, together with the results from the literature review. By collocating these two individual methods, the empirical study and the literature review, and illuminate findings with the relevant theory I will approach the main research problem of this thesis.

# 6 Analysis and discussion of findings

## 6.1 Introduction

The purpose of this chapter is to discuss the findings from the review and the case study. Both methods have had an overarching aim to look at how knowledge retention and knowledge transfer can happen in organizations as being a part of answering the main research question of this thesis. The two research questions have been answered through the literature review and illuminated in the empirical findings from the case study.

This chapter will be divided into two parts. I will start by discussing the findings from the literature review in relation the findings from the case study, and point to how the practices and strategies for knowledge retention are similar and how they are different. Secondly, I will look at two knowledge transfer initiatives and discuss them in light of instrumentalized translation theory, to debate how this theory can be applied to understand these processes for knowledge transfer between generations.

## 6.2 Models for knowledge transfer

As seen in the review, mutual exchange of knowledge seems to be a good model for knowledge transfer in general. The rationale for this was that this way of transferring knowledge would enhance the possibility of transferring tacit knowledge (Burmeister & Rooney, 2015), and was also based on how learning in organizations could happen *between* individuals, and not just as a one-directional learning situation (Key et al., n.d.) From Harvey´s (2012) research we learned that the model boosted the relationship between employees, which ultimately enhanced the potential of knowledge transfer. This was highlighted in the review in both the discussion about the two models for knowledge transfer (mutual-exchange and source-recipient), and also in the paragraph about mentoring as a tool for knowledge transfer. The findings from the case study shows a high focus that aligns with this finding from the review, thus how learning both should and could happen across generations and between individuals in general. The findings point to how mutual exchange of knowledge both can benefit the organization in the process of retaining knowledge, and how it can be an effective practice for knowledge transfer between generations. This is interesting, as the focus on the «younger knowledge» clearly is looked upon as important to transfer as well as the established knowledge within the older and more experienced workers.

The findings show that mutual exchange as a model for knowledge transfer is an observed practice in Statoil, where the respondents see that both older and younger workers benefit from learning from each other. This is also supported by the promotors of knowledge sharing that the respondents highlight, hereunder collaborating and having variation in their teams, to make sure that there always is a diversity in which knowledge can flow naturally between the members. The organizing of diverse teams supports this, which is an organized form that enable teams to collaborate and work together and draw on each other's diverse knowledge and experiences.

The findings additionally point to how Statoil's knowledge transfer to a large extent happens from retrieving information from their knowledge bases, extracting knowledge and learning from the systems. This is in line with a source-recipient model, where the source is the database and knowledge that lies within and the recipient is the person that actively seeks the information in the systems. This is the more explicit knowledge, as the review showed that the tacit knowledge is hard to transfer without intimate relationships. Thus, the knowledge that are being extracted from the databases in Statoil's systems are explicit knowledge, that does not require social interactions to be learned. It still requires that the individual extracting the knowledge has basic competence that is needed to understand and adopt the knowledge.

## 6.3 Managing knowledge

The literature review entails a discussion of strategies that should be applied, in relation to how knowledge should be managed. These strategies were codification and personalization. Deviations were found in how the codification and personalization strategies should be applied in organizations when it comes to managing knowledge. The discussion was about if the strategies should be equally split, or if one should have dominance over the other. The findings from the case study is clear about how Statoil has chosen a codification strategy for managing their knowledge, hence using databases as a repository for knowledge. Findings from the review outlined that the knowledge that is critical to retain should determine which strategy is the most suitable for a company to pursue. In the case study, the findings point to how some critical knowledge in Statoil relates to experiences, namely tacit knowledge built over time. This will mean that a codification strategy cannot be the only strategy in place when it comes to management of knowledge in the case study organization. As the findings outline, there are practices for personalization, hence knowledge transfer from person-to-

person through for example mentoring and in the professional groups where the output is not put into writing and documented, but remains within the minds of the participants.

## 6.4 Strategies and frameworks

The frameworks and strategies that are proposed are presented almost like recipes for how a knowledge retention strategy should and could look like. DeLong (2004) nuances his framework with underlining the need for adjusting and using it as an inspiration for developing a strategy for retention. Most of the reviewed literature point to how adjustment is necessary to align the strategies and transfer methods with the organizations objective and prerequisites.

The findings from the case study imply that there are many elements from these strategic directions that align with the proposed strategies from the review, even though there seems to be no expressed strategy for retention of knowledge in Statoil. This can mean that the strategies and the elements that such strategies entail is quite common in organizations, at least the ones that sees knowledge retention as important. Further it can point to being a good method for retention of knowledge, as they can be found both in the literature, and in the case study. Still, Statoil is the biggest company in the Nordic region, and the size of the company might play a role to this. The methods can be said to be fairly general, e.g. HR practices in DeLong´s framework which specifies succession planning and career development as an area of the infrastructure of retention. These are probably practices which can be found in an HR department in a fairly large company, regardless of aiming for knowledge retention or not.

DeLong (2004) and Liebowitz (2009) frameworks and pillars for knowledge retention is to a very large extent similar with what has been presented in the case study, as I will discuss in the following, starting with DeLong's (2004) framework for action and the four strategic areas that he suggests should be included in a knowledge retention strategy.

### 6.4.1 The strategic framework for action

**HR processes and practices**

As the review showed, this strategic framework proposes different areas that should create the organizational infrastructure for knowledge retention. In the case study, there are clear HR initiatives that correspond with the proposed areas. It is especially visible through the work

force planning that Statoil does each year, that enable them to track the demography in the company, among others. In addition to looking at the demography in the company, this is a planning tool is also used for looking at how the teams are put together in relation to gender, nationality and other important factors. Development of employees is also a process that is within this area, and is something that is high on the agenda in Statoil. This is visible through the focus on internal rotation, giving the employees possibilities to grow and expand their knowledge bases.

**IT applications to capture, store & share knowledge**

IT-systems are used actively to both capture, store and share knowledge in Statoil. This is observable through the management system, which has the governing documents that is needed to execute a task. This is where knowledge is being kept, where experienced based processes are being entered and updated. In addition, they have community team sites and Yammer, which is a digital network where you can work together across the organization and share information with each other. It is interesting how (DeLong, 2004) emphasize how companies should be careful to view such technological components as a solution to knowledge retention, as the case unit clearly rely on their knowledge repositories for keeping and retaining knowledge. In the industry, there are some statutory requirements which is applicable to all companies who operate within the oil and gas sector, thus these requirements and associated work processes must be documented in a system. Still, these are not the only mechanisms for retention of knowledge to be found in Statoil, as the impression is that they have a holistic approach consisting of different organized practices to support knowledge flow and ability to keep knowledge in their organization. Nevertheless, the need for adjustment is clear in knowledge retention efforts, and it simply could mean that some industries or companies will have to rely on digital systems in a higher degree than others for retention of critical knowledge.

**Knowledge transfer practices**

This area is about having practices in place for conducting knowledge transfer, the methods are not specified, as they will have to be adjusted to the specific context and knowledge that is being transferred, as has been a recurring point throughout the review. As the evidence from the case study shows, there are different knowledge transfer methods in Statoil. Transfer initiatives is especially visible though the professional groups, on-the-job learning and mentoring, which are methods to enable knowledge transfer between people directly. Since I

will be discussing these transfer practices in the next paragraph, I will not elaborate further on these methods for now.

**Knowledge recovery initiatives**

This dimension is equated with the other dimensions, which gives the impression that they all are equally important for the success of continuous knowledge retention in an organization. This is something that deviates from Statoil's practices, as they don't have any customs for bringing back retirees once they have left the organization. In fact, they seem to have a focus on keeping critical knowledge in their organization, until their knowledge is transferred and retained, as we saw was practice when it came to those who applied for early retirement. On one side, it can be seen as a smart strategic move to have such a plan for bringing back retirees in place, as large quantities of knowledge then will be available even when it has left the company. On another hand, it might cause a company to rest on the laurels, in terms of relying on the retirees and their knowledge, when you don't have any guarantee that they will come back to share their knowledge. This is also mentioned by DeLong (2004, p. 53), who acknowledge this «double-edged sword». The focus of the other areas within the proposed strategy in a way contradicts this, as both HR, IT and knowledge transfer initiatives are proactive practices, and this last dimension can be said to be more reactive. The strategic framework proposed by DeLong (2004) should enable an organization to retain knowledge in the organization, but this last initiative is more about bringing knowledge back, contradicting the need to act in advance, before it's too late. It is still a way to address possible knowledge loss, but as being a reactive initiative, it can be imaginable that it will be beyond a company's control whether and to what extent this will be possible. It will be conceivable to think that this will all depend on the motivation and loyalty of each individual to return to the company, as well as the possible compensation that will be given to those who may return.

### 6.4.2 Four pillars for retention

Liebowitz is presenting another framework, consisting of four pillars that should be organized to enable continuous knowledge retention. These four pillars also share similarities to the practices illuminated in the case study, as we shall see in the following.

**Recognition and reward structure**

What this pillar is underlining is that motivating employees is a key to success in a knowledge retention strategy. It specifies that this can be done in a number of ways, which makes sense since motivational factors can vary from organization to organization and from individual to individual. The recommendation is to have both a reward and recognition structure. The findings from the case study are interesting in this setting. The way that the employees in the professional groups are being measured according to how much they share and collaborate, is an example from the case study that is in line with this pillar. Some employees are also being measured on how others perform on the basis of their mentoring and guidance, which again impacts the employees' pay rise. This practice is something that can enable a manager to recognize the employees in relation to how they work for retention and knowledge sharing, as there are placed specific deliverables in connection to knowledge sharing.

**Bi-directional knowledge flow**

This is an important pillar, and other than being a pillar in this framework this has been recurring in the literature as well as in the case study. The pillar is pointing to how the knowledge transfer should be looked at as a mutual exchange of knowledge, to ensure a continuous culture for learning (Liebowitz, 2009). It is proposed as the best way to do knowledge transfer, and this is also something that the respondents in Statoil is concerned with. Liebowitz (2009) mentions this as a pillar that should be complied with in order to succeed with knowledge retention, as he underlines the fact that learning in an organization does not only imply learning from the people that have been there the longest (Liebowitz, 2009).

**Codification and personalization**

This pillar has been mentioned in the paragraph about managing knowledge, as it includes the knowledge management strategies that the literature review discussed initially. The recommendation is that both strategies are used as part of a knowledge retention strategy, but emphasizes that one could take dominance over the other. Statoil clearly uses codification as their preferred way of managing knowledge within operations and maintenance in the company. But as discussed in the earlier paragraph, there are still knowledge that are being transferred from person to person by connecting them to each other, e.g. during training or mentoring, and on-the-job learning. This is in line with a personalization strategy, where the people in the organization are personal carriers of knowledge.

**The golden gem**

The fourth pillar underlines that it is an important mechanism in a knowledge retention strategy to have a structure for bringing seniors back after retirement, like DeLong (2004) suggest in his framework. Another aspect which is covered in this pillar is phased retirement planning. Like the recognition and reward structure, it is underlined that this pillar can be fulfilled in numerous ways. As already pointed to, bringing back retirees is not something that is being done in Statoil. Still, phased retirement is something that is being done, still it does not seem like an organized practice in the company overall. Again, the context seems to decide, hence adjustment is yet again key.

**Summary**

The case study findings show that there are several organized practices to increase the robustness of the company in relation to retaining knowledge in the long run, and they all share similarities with the four pillars, and to some extent DeLongs framework. This may indicate that these frameworks and strategies are key for success with knowledge retention, and that it is the continuous learning that is a good approach in the long run. Still, this study doesn't evaluate the practices and their outcomes. I have not studied or measured whether the practices in the case study actually do lead to knowledge retention. Nonetheless, as the frameworks that are proposed in the literature is also is carried out in the case study in question, this might give a relevant indication of how knowledge retention can happen in an organization.

## 6.5 Knowledge transfer practices

The results from the review explicitly highlight that no knowledge retention process can happen without a knowledge transfer process. I will in the following use Røvik´s (2009, 2016) instrumentalized translation theory to analyze two different knowledge transfer practices, namely mentoring and communities of practice, emphasizing mentoring. These are the two methods for knowledge transfer that the review implied were both the most flexible methods, and also the most common. I will focus on outlining how these practices for knowledge transfer can be said to be acts of translation and how such a process can contribute to knowledge retention.

### 6.5.1 Mentoring

As a method for knowledge transfer, mentoring was found as a widespread tool in the literature of knowledge retention. The findings outline how mentoring is especially suitable for transferring tacit knowledge, but that there were constraints that could be found, which was related to time and the expert's ability to transfer knowledge, among others. As the literature showed, mentors should be concerned with exposing their mentee to different situations and scenarios to gain the most of this method, as the cognitive principles coincides with this. The findings additionally show that Statoil uses mentoring as a tool for knowledge transfer, both in training and in knowledge transfer between generations to mitigate knowledge loss. They have their own mentoring tool-box, where employees can find both guidelines and tips for both the mentor and the mentee.

**Mentoring as a translation process**

Seen as translation, the mentoring process is comprised of a source and a recipient of knowledge. The source will in this context be the senior that holds the critical knowledge to be transferred, and the recipient will be the junior worker that is the subject for learning. Still it must be kept in mind that these roles can be interchangeable, as the findings from this study points to how such processes often can be seen as a bi-directional process. In that case, it is conceivable that these roles will alternate in the process of exchanging knowledge.

The source of the knowledge is the expert, the one who possesses the knowledge. The knowledge the source possesses can be more or less explicit, and the three translatability variables embeddedness, explicitness and complexity (Røvik, 2016) can all be variables in indicating how explicit this knowledge is. It is also variables describing the challenges of knowledge transfer (Røvik, 2016). How explicit the sources knowledge is, will determine the sources importance as a translator in the relationship between source and recipient of knowledge. It can be argued that the more tacit the knowledge of the source is, the more significant and important will the translator be, in order to gain a good outcome. A good outcome can in this context mean that the knowledge is transferred and understood, and that the recipient will have received a version of the knowledge which is a valid representation of the knowledge sought to be transferred.

**De-contextualization**

As translation theory can teach us, de-contextualization of knowledge is about verbalizing and making knowledge explicit (Røvik, 2016). As outlined earlier in this study, the opposition to explicit knowledge is tacit knowledge. Because the tacit knowledge often is a result of experiences, this will demand far more from a source in terms of verbalizing and making such knowledge explicit. The characteristics of tacit knowledge is often that it is highly embedded in the source, complex in terms of being conditioned in the individuals holding the knowledge, and naturally less explicit (Røvik, 2016) That the knowledge is tacit, does not only mean that there can be difficulties in verbalizing it, but it can also mean that the knowledge is «hidden», even for the individual holding the knowledge. The deep and tacit understanding of situations means that the expert no longer needs to rely on rules or maxims, but has an intuitive comprehension of it (Eraut, 1994). This can cause additional challenges in the translation process. We can all relate to the fact that there are some things we just do, without thinking about how we are doing it. Adding this perspective, this could mean that the de-contextualization process is quite complicated in a mentoring relationship. This could underline the significance of a mentor being aware of these issues prior to a mentoring process. It could assumedly indicate that self-reflection will be of importance, digging deep to identify the knowledge and experiences behind the intuitive actions of the mentor. If the knowledge to be transferred is hidden as described, there could be a need for a skilled person, helping to extract the knowledge.

In light of the characteristics of tacit knowledge, and findings in this study, a possible solution to transfer such knowledge is to have a close and dynamic interaction between the source and the recipient, a bi-directional relationship (Harvey, 2012) The principles of mentoring can be a good method to make sure that this happens. In addition, it might be meaningful that the participants in a mentoring process have a familiarity or an awareness of the process of translation, hence knowledge about the translation rules that can be applied and the importance of translation competence (Røvik, 2016) Such insights can in terms make the transfer process easier to both execute and understand. Especially if the process is unsuccessful, the need to understand what went wrong is vital. This can make the next knowledge transfer process more successful, by learning from the previous one.

To make tacit knowledge explicit to the extent that it can be understood and applied by someone else, the source must be able to make the knowledge communicable (Røvik, 2016).

The extent to which a mentor will succeed with this, will be determined by the competence the translator have, to be able to hold and combine knowledge of both the source (the mentor) and the context (the mentee) in which the knowledge is being transferred into (Røvik, 2009). To be able to make a representation that is valid in such a case, the de-contextualization process will have to consider the context and preconditions of the recipient. On that note, it is imaginable that this will demand that the mentor and mentee engage in a relationship and know each other well. It can be discussed if this should be something to consider when appointing a mentor in the first place, namely how knowledgeable the mentor is of the mentee he will interact with. Also, the mentor should be aware of these challenges when entering a mentoring process. Questions like «what does this person know prior to our mentor lesson» or «how much experience does the mentee have with the topic I will describe» may seem to be appropriate questions to ask to make sure that the representation of knowledge that is presented for the mentee fits the knowledge base that he already holds.

**Exposure**

When it comes to de-contextualization of knowledge that is tacit, there is not only language that can enable a mentor to properly present his knowledge for a mentee. The translation rules that is used to de-contextualize will depend on the degree of translatability of the knowledge, whereas a high degree of translatability can call for copying, and a lower degree will call for more addition (Røvik, 2016). A conceivable notion is that adding to the knowledge can be done by exposing the mentee to a situation where the knowledge is relevant. An example from the case study was when a mentor told the recipient of knowledge to take off his glove and touch a tube, and when doing this describing how the temperature should be when everything was in order. This is interesting in the context of translation, which gives an indication of how the translation process can unfold without being dependent on using the language to de-contextualize, but rather using the social sphere that mentoring is allowing, to transfer knowledge. In the well-known works of Nonaka and Takeuchi (1995), we can find interesting resemblances to draw from, in their modes of knowledge conversion. The example above can be a representation of the tacit-to-tacit dimension in this framework, namely the *socialization* process. This process is interesting because it is based on exactly this; how an individual can obtain tacit knowledge directly without having to use language (Nonaka & Takeuchi, 1995, pp. 62-63). Another example is how the respondents in Statoil highlighted experience as the important knowledge to retain, and this principle can help illuminate the process of such knowledge transfer further. According to Nonaka and Takeuchi (1995) the

transfer of information alone will not make much sense for a recipient, when the knowledge is context-specific, as the acquisition of tacit knowledge is claimed to be a product of experiencing. It is an interesting thought in this context, and tells us that there might be more to a de-contextualizing process than just verbalizing knowledge in a way that the recipient can understand. This might be an interesting path to follow for a mentor, and especially an interesting view to understand. The example can still be connected to de-contextualization of knowledge, but with an understanding that such knowledge transfer might call upon some additional activities to be a success. Verbalizing tacit knowledge in addition to using direct action and exposure when it is called for, could conceivably be a good way of exploiting the mentoring process and its principles to the fullest during translation and socialization. On another hand, translation and use of language in a knowledge transfer process is still of important value, as some knowledge is not specifically connected to any direct actions that the recipient can be exposed to.

**Contextualization**

As mentioned initially in this paragraph, the recipient of knowledge is additionally a translator. As the instrumental translation theory describe, the recipient of knowledge will also make use of translation rules, to contextualize the knowledge after it has been transformed into a valid representation (Røvik, 2016). The recipients biggest concern, will according to translation theory be that the fundamentals from the source is missing, which can be said to be a relevant challenge when it comes to tacit knowledge. The risk is that the representation is a less adequate representation of the original knowledge, which can hinder a recipient to reproduce it in its entirety. On that note, the knowledge that is more explicit, for example specific instructions for a work process, will have less of a challenge of missing out on the essentials.

The degree of transformability will be determining how the recipient contextualize the knowledge after it has been made into a representation, thus how free the recipient is to interpret and make his own version of the knowledge (Røvik, 2016). Contextualizing will mean to use translation rules to translate knowledge into a new context. In a mentoring session, the new context that is referred to is the recipient of the knowledge. The very purpose of contextualization is that the receiver is able to internalize the knowledge and by doing that being able to use it in a new situation when it is needed. One of the prerequisites for knowledge retention can be argued to be in line with this. The knowledge must be transferred,

but it must also be implemented and taken into use for it to have further value in the company as the original knowledge source leaves. Simplified, one can say that explicit knowledge will be more likely to be copied by the recipient, and tacit knowledge is more likely to be subject of a transformation, in line with using addition or subtraction. Explicit knowledge could for example be related to rules in the work place that are appointed by the employer, and the recipient will not have a degree of freedom to make an own version of such knowledge. It would neither be necessary given that explicit knowledge should be clear to the recipient and not need any alteration to be understood and applied.

An explicit practice could probably be subject to transformation even if it is easy to grab by the receiver. In a context of a mentoring process between two generations, there might be some barriers in relation to how they see each other's knowledge. It is not unnatural to think that the senior is more skeptical to the knowledge a junior employee can transfer to him, and vice versa; the junior employee can assumedly feel that the senior's knowledge is outdated and less relevant. The translation rule omission can thus be applied, or even alteration, which is the rule of a radical mode, which will mean that the knowledge will be altered into something that is comprehensively transformed (Røvik, 2016) If the junior chooses to do something in his own ways, regardless of what the senior is providing, this might be the case. It is an interesting avenue, exactly this, underlining the benevolence that need to be in place for both source and recipient to be able to establish a working mentoring relationship in the first place. It is likely to think that if an individual intentionally uses alteration or high degrees of omission as a translation rule in the contextualizing phase, that he is reluctant to learn from the mentor. There can be a lot of variables in this relationship between mentor and mentee, still this thesis does not cover such aspects. It could have been both interesting and relevant to study the relationship between younger and older workers, to see if there were any indicators that could help understand the knowledge transfer process better. Another thing that might affect this relationship in general is the culture in the organization where the individuals work. If a mentoring process is going to work, it can be assumed that respect and acknowledgement of other people's knowledge and experiences is vital. If the culture is characterized by an unwillingness to share and lack of interest in other people's knowledge, the transfer process might be inhibited by cultural factors. This was also described by the respondents in the case study as an inhibitor for learning.

**Relationship between source and recipient**

A contextual condition that will be important for a mentoring relationship, is the relationship between the source and recipient. As already pointed to, it can be assumed that the culture for sharing knowledge and be interested in other people's knowledge will be an important factor underlying such a relationship. Still, the source´s and recipient's similarity is also expected to play a part when transferring knowledge. Accordingly, the similarity between the two individuals will be decisive for the outcome of the knowledge transfer, as the theory points to how a great difference between source and recipient context will make the knowledge transfer more challenging (Røvik, 2016). Similarity can be related to many things, e.g. how similar the source and recipient's backgrounds are, similarity in terms of age, that they speak the same language and other contextual factors. A relationship between generations does not imply direct similarities But it can also be likely to think that similarity can refer to how well the source and recipient are able to understand each other, hence understand the knowledge that is being translated and transferred. If they work within the same unit, with the same issues and with the same agenda and organizational goals, it might not play such a big part if they are similar or different in terms of for example age. This is a relevant for the next paragraph that will treat communities of practice and see this in light of translation theory.

### 6.5.2 Communities of practice

The professional groups described in Statoil can be seen as a community of practice. These networks, as we saw, can take many forms, and the impression is that the communities only are a collective term for groups that are assembled formally or informally according to subject specific areas or areas of responsibility. The professional groups that is used in the case study is in line with all of the conditions for success that the review pointed to; conversations, collaboration, commitment, connectivity and capabilities. This is interesting, as the professional groups are not built on the principles of CoPs but still fulfill the descriptions the literature provides to a very large degree. Still, it is conceivable that this is a natural composition of teams in organizations, to put people who share the same issues and subject fields together to work together and share knowledge. Another interesting thing, is that such groups according to the literature review should be designed on the basis of among others collaboration and commitments. This is being highlighted by the informants, as they propose these aspects as important promotors for knowledge sharing in their company. This can indicate that collaboration and commitment are important aspect in a knowledge retention structure, as well as important for methods aimed at knowledge transfer.

**Communities of practice as a translation process**

This knowledge transfer practice is a group activity, and in general it will mean that knowledge transfer in such groups will happen as an act of translation between several sources and recipients. One can imagine that such a process on one hand can be a dialogue between several translators of knowledge, if a problem is discussed and knowledge is transferred between different sources and recipients not unlike what the mutual exchange model outlines. One the other hand it can be seen as knowledge transfer between one source and several recipients. The same processes of de-contextualization and contextualization that was outlined in the previous paragraph will apply, as the principles of a source and recipient of knowledge is likely to be the same. Still, there are an interesting aspect to this, which I would like to highlight, namely how the source must de-contextualize the knowledge to make it into a representation that can fit several different individuals, that most likely have very different starting points. The translation competence of the source can possibly be the biggest factor in such a process, especially if the knowledge to be transferred has a low degree of translatability. The recipients will probably make different local adaptions in the contextualization process, as they all have a different starting point for receiving the knowledge, for example in regard to how long they have worked in the organization, and how much experience they have. The exception will be if there is a low degree of transformability to the sources representation of the knowledge, which will have to call upon copying as a rule for translation. On the other hand, there is a contextual condition that point to the features between the source and the recipient. As also pointed to in the previous paragraph, the similarity between source and recipient context can be determining the outcome of the translation process. One of the characteristics in such groups is defined by the literature as made up of employees that share the same area of expertise and with the same problems and issues in relation to their area of work. Hence, the employees in these communities will share some similarity which can affect the translation process, in a positive manner. The more similar the context, the greater chance that copying as a rule of translation will be a success (Røvik, 2016). Thus, it can be argued that the similarity of the members in the form that they are divided by discipline, can make the translation process less challenging, thus a successful knowledge transfer process. Still, an interesting thought is that the similarities can only stretch so far, and even though there are similarities in the group as such, there will still be a wide range of different attributes in connection with each participant that can call for more addition or omission in the contextualizing phase.

If the translation process is successful, then the knowledge has been implemented in the recipient for further use, and the knowledge can be said to be retained in the organization. The instrumental take on translation theory that has been presented in this thesis can be an additional resource when studying how knowledge transfer and conversely knowledge retention can happen in organization. Drawing from these insights, the different transfer processes both can and should be updated in an organization with inspiration from translation theory, as it is an instrumental theory. This could help drive knowledge transfer forward and could enable knowledge retention to a higher degree.

# 7 Summary and conclusion

## 7.1 Summary

The aim of this thesis has been to study how organizations can transfer and retain knowledge to mitigate knowledge loss when older employees retire. By conducting a structured literature review and a case study of a knowledge-intensive organization I have looked at this from different angles. What this study illuminate is both how such processes are recommended in the literature and employed in an organization. By collocating these findings, as well as using translation theory to explore how knowledge transfer can be acts of translation, I have had an ambition to expand the understanding of how organizations both can retain and transfer knowledge between generations. In this final chapter, I will conclude by first answering the two research problems of this thesis: (1) *What can be identified from the literature as good and transferrable strategies and practices for knowledge retention and knowledge transfer?* and *(2) What characterizes ideas and organizing of knowledge retention and knowledge transfer between generations in Statoil?*

These questions will form the base that will be used to answer the main research problem of this study: *How can knowledge retention and knowledge transfer between generations happen in organizations?*

Further, I will discuss implications for organizations and outline implications for further research. In the latter, I will be outlining possible avenues that will be interesting for future empirical studies of this phenomenon.

## 7.2 Answering the research questions and main research problem

To answer the first research question of this thesis, I conducted a structured literature review. There is a high focus in the literature on how the facilitators of knowledge retention and transfer initiatives must have a high awareness of the knowledge types that is critical for the organization in question to retain. Thus, identifying this knowledge and being aware of what knowledge that is important to retain can be said to be a key to any knowledge retention activities. The findings show that the practices for knowledge retention differ, in terms of being both strategic frameworks comprising of elements that should be in place for continuous knowledge retention in the organization and concrete methods for knowledge

transfer. The findings also show that there are proposed processed for knowledge retention that can be applied to situations where a senior with a critical knowledge base is due to retire in a short period of time. The findings give the impression of being dispersed. Still, a recurring point are how practices, methods and strategies for retention have to be adjusted and aligned with the organization that they should be implemented into. The importance of this is presented and highlighted by many of the most acknowledged authors in the literature of knowledge retention today, as well as being highlighted by other researchers in the field. Another interesting finding points to how knowledge transfer seems to be changing from a source-recipient model to a model of mutual exchange. This will have implications for how knowledge transfer efforts both can and will be implemented in an organization. Five knowledge transfer methods were identified. Also, the knowledge transfer methods are presented with an emphasis on the need for adjustment, especially with regard to the organizational context and the knowledge types that are to be transferred. Findings show that knowledge retention is possible when the time is short before the retiring experts are about to leave, but it is still recommended that organizations should have a structure in place for continuous knowledge retention. To sum up with some key words; engaging in **continuous knowledge retention** is better than «quick fixes», knowledge transfer should use the model of **mutual exchange**, having a repertoire of flexible **knowledge transfer practices** and methods that should be **adjusted and aligned** to meet the prerequisites of the organization and **knowledge types** that are being transferred.

The second research question was answered by describing the characteristics of the case study, respectively the ideas for and organizing of knowledge transfer and retention efforts. Findings point to an overall view of the importance of knowledge transfer and retention, but the respondents acknowledge that when some individuals leave, other people might come forward and blossom. In addition, the bi-directional knowledge transfer is highlighted, by a rationale that senior workers can gain a lot from learning from younger workers as well. As promotors and inhibitors for knowledge transfer, a culture for learning and sharing was emphasized, as well as curiosity, collaboration, variation in teams and user-friendly systems. In contrast, the opposite was looked upon as inhibitors. Collaboration was especially highlighted, as a recurring theme all of the respondents was occupied by. The knowledge types that is important to transfer and retain is the experienced based knowledge, stemming from having been exposed to different scenarios and situations. In relation to this, historical knowledge was also recognized as important to transfer and retain in the company. When it

comes to the organized practices for retention and knowledge transfer between generations, Statoil does not have a stated strategy for retention. However, the finding shows that they have a collaborative attitude underlying how they work, which in turn bring a robustness to their company that can be argued to work indirectly for retention. The robustness is made up of having their knowledge documented, internal rotation and variation and planning ahead in terms of being prepared for the future. They also have a range of more or less organized practices that enhance transfer of knowledge between individuals, such as professional groups and mentoring. An important finding from the case study, is how leadership clearly has an impact on knowledge retention and transfer initiatives, especially in an organization that empower their leaders and give them responsibility to set directions. This gives leadership a space to maneuver. The findings indicate that the leaders in Statoil that have an overall focus on knowledge also have an organized approach for retaining valuable knowledge in the organization. These outlined characteristics can be summed up by the following key words: knowledge retention and transfer is seen as **important**. Knowledge flows should be **bi-directional** to learn from each other which in terms support the **collaborative** focus. **Mentoring** and **professional groups** contribute to this. **Diversity**, **variation** and **rotation** is important to build breadth in the company. A **continuous robustness** to enhance learning across the organization and a clear and expectant **leadership** to set direction.

To answer the main research question, I have drawn on the insights from the findings outlined above, to study how knowledge retention and knowledge transfer can happen in organizations who face a possible knowledge loss when older employees leave. In addition to this, I have studied and analyzed how different methods for knowledge transfer can be seen as an act of translation, in light of Røvik´s (2009, 2016) instrumentalized translation theory.

This study reveals that an awareness of the phenomenon of retention is something that organizations should have to be able to be one step ahead of a possible knowledge loss. The indicators are present in the review, as the identification of critical knowledge is key to a retention process. The findings in the case study is also pointing to how important it is to be aware the risk a possible knowledge loss can pose. This is important to be able to set course and look ahead. Planning for the future is in this context significant. Knowledge retention strategies are proposed in the literature, as a strategic pointer to how one can ensure continuous work for retention. This is to some extent supported by the case study through the organized practices that are put in place to enhance continuous learning across the

organization. An interesting finding in this context is how closely related many of the practices in Statoil are to the suggested strategic frameworks in the literature, as elaborated in chapter 6.

This study has also discovered how knowledge transfer and retention should be done as mutual-exchange of knowledge to make the transfer process more successful. The literature indicated how this has been researched, and the shift of how one views knowledge transfer is interesting in light of the research problem. What is especially interesting, is how the informants in the case study is occupied with variation and diversity in teams to enhance a knowledge flow between different people, with different experiences. In relation to this, the practices for knowledge transfer are as stated initially in this thesis the foundation of any knowledge retention work. What this study has identified and confirmed, is how important it is to adjust the methods for knowledge transfer in accordance with the knowledge types that are to be transferred and the context of the organization. All situations where older employees leave will vary, and there are a lot of variables that will be decisive for what knowledge transfer efforts to engage in. In relation to knowledge transfer, this study has discussed and implied how knowledge transfer can be seen as a translation process. The discussion indicates that an awareness of the process will benefit the individuals that is part of the knowledge transfer process, and by building translation competence the success of knowledge transfer efforts is likely to increase, which in turn will make sure that successful retention of knowledge can be achieved.

One last, but not less important finding from this study, is the findings that point to how knowledge transfer and retention can happen in organizations through leadership. Indications from the case study implies that leaders are important for setting the stage, pointing out direction and act as a motivator for the employees. This is conceivably connected to awareness. Leaders that have an awareness of the risk that knowledge loss can imply, have a good overview of the competence their employees possesses and setting the stage for knowledge retention can possibly be an important part of knowledge retention efforts.

## 7.3 Implications for organizations

Knowledge retention and transfer is a complex and composite phenomenon, as this study has implicated through numerous variables for retention and transfer. A knowledge-intensive

company as Statoil can draw on such insights to enhance knowledge retention and transfer efforts in the future. As indicated in the introduction, the workforce in Statoil, as well as the industry as a whole, is approaching a significant generational shift. It can therefore be of value to draw on the insights from this study, given that an aim for an organization facing these challenges is a more efficient transfer of knowledge and retention. For the case study in this study, the data can give indications to where they should place their efforts in the future to enhance knowledge transfer and retention initiatives. As implied in the discussion, Statoil does not have an explicit strategy for retaining knowledge. However, they still have a lot of efforts that concur with the findings from the proposed frameworks in the literature. As indications from the review outlines, a strategic direction both can and will create a structure that enhances knowledge retention in an organization. To have a stated retention strategy could also increase the awareness of this issues, which in turn could benefit the organization as a whole. Leadership is indicated to play a big role as shown in the empirical findings. It could be important to draw on the experiences and attitudes of these robust leaders. The experience that leaders have in relation to knowledge transfer and retention initiatives should be shared in the company, especially in units which may be expected to have similar challenges. Using the knowledge of people that have succeeded with this could be an important inspiration for future knowledge retention efforts. When it comes to the methods for knowledge transfer, the data material indicates that mentoring and communities of practice is both common and can give a successful outcome of knowledge transfer. This is something that Statoil have already organized. The insights of how these two methods can be acts of translation can give an additional improvement to such practices for organizations that use them. As indicated in the discussion, translation competence can enhance a knowledge transfer process, and outcomes can thus become better. In addition, it can give a better understanding of the knowledge transfer process to the participants engaging in such processes. Successful knowledge transfer will in turn lead to retention of knowledge.

## 7.4 Implications for research

This study has identified and outlined how knowledge retention and transfer can happen in organization. The findings can be said to have contributed in illuminating the field of knowledge retention further by providing a broader insight into the world of knowledge retention. Seeing as the field is described by researchers as emergent (Burmeister & Deller, 2016; Harvey, 2012), there are still a lot of avenues to explore. One of the most interesting findings from the case study in this thesis, was the indicator of how leadership plays a part of

knowledge retention efforts. This could be an important path to follow in further research, which has not been covered by the literature on knowledge retention before. One interesting way to go, could be to focus on how leaders encourage and motivate employees, and measure the effects on knowledge retention outcomes. Another white spot in the literature is the coverage of the possibilities and challenges of knowledge retention in international companies. One avenue could be to seek out how different language and cultures are receptive to knowledge retention efforts, hence how this will affect such processes. Another possibility in this context can be to research the potential of transferring and retaining knowledge across organizational and national borders. The relevance would be enhanced by the fact that more and more companies today are globalized, and the potential of learning and sharing knowledge across organizational and national boarders could add value to theories about how organizations learn. The use and development of translation theory to benefit such a study could further be highly interesting. Finally, more longitude studies on knowledge retention efforts and effects will be needed in the future, to empirically test and validate practices for and outcomes of such initiatives.

**Closing words**

Picture a senior worker that has been employed in an organization for 30 years. In a couple of years, he will be retiring, and his life will consist of hobbies and spending time with his grandchildren. The knowledge that he has accumulated over all these years of experience, is important for the company also after he has walked out the door. The job to be done from here on and out, is to make sure that his knowledge is retained in the company before it is too late. Since his organization already has knowledge retention strategy implemented, a lot has already been done. During the years of employment, the senior has shared his valuable knowledge and experiences with his colleagues through different knowledge transfer practices, but also received knowledge from junior employers which has contributed in developing his knowledge further. Now the senior will enter a translator role, which will require that he translates his tacit and most important knowledge into something explicit that his successor can benefit from. His successor will be pleased that he will be able to manage his new role in a way that benefit both the organization and his own further development. His motivating and encouraging managers will also be pleased with this. The senior's knowledge backpack is still heavy and filled with years of experiences and knowledge when he eventually retires, but his successors backpack is a little heavier, and so is the organization's.

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# Appendix 1 Table of contributing articles for literature review

| No. | Year | Author(s) | Title | Citation frequency |
|---|---|---|---|---|
| 1 | 2008 | Haarmann et al | K.exchange - A Systematic Approach to Knowledge Transfer of the Aging Workforce | 11 |
| 2 | 2015 | Burmeister & Deller | Knowledge Retention From Older and Retiring Workers: What Do We Know, and Where Do We Go From Here? | 3 |
| 3 | 2015 | Burmeister & Rooney | Knowledge Retention at Work and Aging | 1 |
| 4 | 2003 | DeLong & Davenport | Better Practices for Retaining Organizational Knowledge: Lessons from the Leading Edge | 69 |
| 5 | 2012 | Harvey | Managing organizational memory with intergenerational knowledge transfer | 50 |
| 7 | 2015 | Bratianu & Leon | Strategies to enhance intergenerational learning and reducing knowledge loss: An empirical study of universities | 0 |
| 8 | 2001 | Leonard et al | Managing knowledge assets creativity and innovation: using mentoring and storytelling to transfer knowledge in the workplace | 7 |
| 9 | 2011 | Levy | Knowledge retention: minimizing organizational business loss | 82 |
| 10 | 2014 | Massingham | An evaluation of knowledge management tools: Part 1 – managing knowledge resources | 32 |
| 11 | 2014 | Massingham | An evaluation of knowledge management tools: Part 2 – managing knowledge flows and enablers | 13 |
| 12 | 2013 | Joe et al | Knowledge loss when older experts leave knowledge-intensive organisations | 41 |
| 13 | 2015 | Ropes | Addressing the challenges of an aging workforce: an intergenerational learning toolkit | 0 |

| | | | | |
|---|---|---|---|---|
| 14 | 2010 | McNichols | Optimal knowledge transfer methods: a Generation X perspective | 60 |
| 15 | 2004 | DeLong | Lost knowledge - Confronting the Threat of an Aging Workforce | 543 |
| 16 | 2014 | Leonard et al | Critical knowledge transfer: Tools for Managing Your Company's Deep Smarts | 8 |
| 17 | n.d. | Liebowitz et al | Knowledge Retention: An Overlooked Strategy in Today's Organizations | 0 |
| 18 | 2008 | Liebowitz | Knowledge retention: strategies and solution | 70 |
| 19 | 2008 | Alfeis | Knowledge management solutions for the leaving expert issue | 46 |

# Appendix 2 Feature map

## Part one

1. Name of publication
2. Writer
3. Year the literature was published
4. Where is it published?
5. Citation rate (google scholar)
6. Which method is used for collecting data for analysis?
    a. Quantitative
    b. Qualitative
    c. Case study
7. Where is the data collected?
    a. Private/public sector?
    b. Country?

## Part two

1. Is there a specific practice or process for retention and transfer between generations described?
    a. Which one(s)?
2. Are the effects of the practice/process measured in any way, in regard to being a mean for retention?
    a. How are they measured?
    b. Can the practice/tool be generalized to other organization?
3. Do the author(s)
    a. discuss the tool
    b. recommend the tool
    c. Claim the tool have effects on retention?
    d. Other

# Appendix 3 List of informants

| | |
|---|---|
| 5 Interviewees | HR leaders |
| 4 Interviewees | Senior leaders from HR, corporate governance and operations technology |
| 3 Interviewees | Operations technology leaders |
| 2 Interviewees | Professionals, operations and maintenance |

Interviewed between 22.02.17-09.03.17