# Master Thesis

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# Knowledge sharing process optimazation

- *A case study of a Unit within Copenhagen municipality*


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# Abstract

The purpose of this thesis was to investigate how current knowledge sharing occurs at the unit for build permits 'north' at Copenhagen municipality, and furthermore asses how IT and managerial initiatives can be applied to improve and facilitate the knowledge sharing process. This is to further facilitate the case processing in relation to building permits.

By applying a case study approach combined with a qualitative method, it was possible to generate subjective data and address the knowledge sharing issues. Moreover, knowledge management (KM) and knowledge sharing literature formed the basis for establishing a theoretical framework, which was applied in the empirical analysis. Nonaka's SECI model of knowledge creation and conversion, as well as knowledge management strategies, codification and personalization by Hansen et al (1999) was applied in this context. In addition, in order to properly address the issues, a thorough understanding of knowledge dimension was relevant. Especially the distinction between tacit and explicit knowledge, as well as experience and recognition-based knowledge perspectives. These to perspectives are synonymous with respectively the personalization and codification strategies. Personalization strategy encourages knowledge sharing through social interaction such as meeting, one-to-one conversation and collaborative networks. In contrast, codification strategy implies to collect and store explicit knowledge for organizational reuse.

The collected qualitative data extracted through semi-structured interviews provided great insight to the case type, knowledge sharing dimension and current knowledge sharing system. It is concluded that the Unit is providing a service that can vary a lot, that is casework for building permit. In addition, their knowledge haring is mostly based on tacit and experience-based knowledge. This furthermore means that their current approach to optimizing the knowledge sharing process is based on an inappropriate knowledge strategy, as they are exploring the prospect of improving the system, and thus applying the codification strategy. However, the interpreted data findings provided a different angle. Because of the varying service and experience-based knowledge, we recommend that the Unit rather apply a strategy split of 80/20 percentage, with personalization being the dominant, while codification applies for the remaining 20 percentage. To support this and at the same time optimize the current knowledge sharing system, SharePoint Online Platform is proposed as an upgrade. With the more appealing interface, user experience and flexible access possibilities, SharePoint Online would support the personalization strategy by increasing user participation, and hence improving and facilitating the knowledge sharing process.

# Table of content

## Relevant words and concepts

In order to have a proper and fluent understanding of the thesis content, this part provides a short description of some key words and concepts.

**Caseworker:** An individual that works within the Copenhagen municipality and process incoming building permit application.

**Building permit:** It is a permit that allows the applicant to build the object that he or she has applied for. The build permit is in this context issued.

**Build case processing:** The process of handling the incoming build permit application, where Copenhagen municipality has outline different service goals, which must be complied.

**Unit for building permit 'north':** To provide a simple and fluent writing, the thesis will use the word Unit instead of the long Unit for Building Permit 'North'.

**Byg and Miljoe:** The application process on the website. The process guides the applicant through the build process, and asks for relevant documents for the particular building case.

# 1.0 Introduction

The rapid development of information technologies and communication networks has advanced the importance of knowledge sharing in organizational context (Christiansen, 2000). Knowledge has been recognized as an essential resource for retaining sustainable competitive advantage (Drucker, 1993), and hence the creation and dispersion of knowledge have become increasingly important. In particular, modern and knowledge intensive organizations are subject to this development, where they are required to explore and invest in knowledge sharing solutions to increase their competitive advantage, and become more efficient. Information technology (IT) if often perceived as a facilitator of this process, as IT enables storage, detection, sharing and conversion of both tacit and explicit knowledge, which than streamlines the working processes (Christensen, 2000). In addition, organizational hierarchies are neglected in favor of more collaboration, as organization only gains sustainable advances from collective knowledge, knowledge efficiency and the speed of acquiring and using new knowledge (Davenport and Prusak, 2000). Therefore, organizations in the information age are synonymous with learning, storing, detecting and acting on the basis most available information, knowledge and expertise. This has led to a high demand for a considered and systematic approach for creating and sharing an organizational knowledge base that is populated with valid and very valuable knowledge and best practices (Kimiz Dalkir, 2005). Consequently, organizational knowledge is indeed not intended to replace individual knowledge but rather supplement it by making it more coherent, valuable, valid and broadly applied (Ibid).

Knowledge management (KM) was initially defined as the process of applying a systematic approach for capturing, structuring, managing and dispersing knowledge throughout an organization with the purpose of working faster, reusing best practices and reducing costly rework (Nonaka and Takeuchi, 1995). It represents a method for ensuring full utilization of organizational knowledge base combined with human individual skills consisting of competencies, worldviews, innovations and ideas, in order to produce a more efficient organization (Kimiz Dalkir, 2005). However, for it to happen a clear KM strategy is required, where two of the most recognized and applied are codification and personalization strategies. KM remain a popular concept especially with the support of IT, but several studies has identified failed attempts to integrate the two. To this extent, it is rather important to explore the factors influencing knowledge sharing, and identify the most suitable strategy and IT system to support this.

## 1.1 Motivation

The motivation for choosing this particular topic is because of the emerging trend of the two integrated concepts, knowledge sharing and knowledge management. They have gain popularity over the years especially in the current information age, where IT plays a significant role and provides numerous solutions. We assume that because of the increasing popularity, companies and organizations are embracing the field, and deliberately investing both time and relative amount of financial resources in providing the best possible solutions. It is therefore interesting to explore the literature and provide an aspect of the interplay between IT and knowledge sharing.

Our assumption in relation to the topic is that even though companies and organizations have embraced the field, they still are unaware of the real essence of knowledge sharing, and what effect effective knowledge sharing is able to produce. We assume as well that managerial and financial factors as always are influential in some aspect, and they as well inhibit the knowledge-sharing process. Moreover, as the topic is considered very broad, we believe it tests our ability to limit ourselves and find relevant theories and concepts, which can be applicable in the thesis context, and hence be applied to answer the formulated research question. This approach will inevitably result in providing a quality product and enhance our knowledge base within the topic.

**Choosing a case organization**

In order to produce an interesting, quality and valid product, our perception is that we have to cooperate with a case organization that meets the scope of the thesis. To this extent, we have some expectations and requirements when choosing a case organization.

- The case organization has to be knowledge intensive, and in particular consist of knowledge workers. In addition, a problem that is related to the topic has to exist, as it otherwise obviously would not make any sense.
- In order to collect enough valid and reliable data, we estimate that the case organization has to be professional and consist of at least 30 employees.
- The case organization is both transparent and flexible in providing both primary and secondary data. Moreover, there has to be mutual benefit, where the company just as us can use the thesis in further process. In our context, we are exploring the prospect of joining the consultancy industry, which is indeed associated with the topic.

These expectations and requirements are very common and traditional in master thesis settings, but they are nevertheless essential if we are to produce a quality and valid product, which further can be generalized to other as well.

To this extent, we have chosen to investigate the *Unit for building permits 'North'* at Copenhagen municipality. This is a public organization, where knowledge sharing is a very common and emerging subject. The focus is to explore knowledge sharing, and look at the factors that influences it, while also examining how these can be affected managerial actions and information technology.

## 1.2 Problem area

Before composing the problem statement, it is appropriate to outline the problem area surrounding the topic and identify the problem. A case description is displayed in the analysis section.

The problem area lies within the field of case processing, which is an area associated with processing incoming applications from either citizens or companies. It is a very common field, especially in the public sector and more precisely within regions and municipalities. In our context, the case processing consist of handling incoming building applications on building projects from both citizens and companies within the Copenhagen municipality. Hence, this is about build case processing. This could either be a small build project, where a citizen wishes to expand his or hers balcony, or in other scenario where a certain sized construction company is applying for building new project housing. A caseworker does case processing, and this particular function entails a certain value to the organization, as an effective case processing provides a better, quicker, more satisfying and efficient customer service. However, for the process to run effectively it is required to enhance collaboration and efficiency between employees processing the function of a caseworker or those that contribute in the case processing. Under normal circumstances, a case can be under process from various employees, as they respectively are required to analyze it from different perspectives. This can be enabled through improved knowledge creation and knowledge sharing, which thus can be mediated by IT. This further lead to a structured knowledge base, where employees can extract relevant knowledge and information to solve cases quicker. The knowledge base is typically composed of former similar cases, containing both tacit and explicit knowledge from i.e. experienced and domain employees. Work places that operates with similar set up and handling incoming applications typically experience similar process, in which a structured knowledge base would seem appropriate and promote effective replies to customer request.

As mentioned, the *unit for building permits 'north'* will serve as a case study and create the basis for exploring and managing the problem area. The purpose of the Unit is to case process the incoming applications by citizens and companies, and either provide a building permit or reject the application. According to our initial interview with the head of unit,

*"The 55 employees are dealing with a knowledge sharing system, which in reality is not a system but rather a way of getting information and knowledge from each other in order du proceed in their respective cases"* (Interview 1).

The quote displays the problem area, and thus challenges employee are experiencing in terms of the knowledge sharing. The mentioned knowledge sharing system or way of working is a folder structure consisting of word and excel documents that only can be accessed locally on computer. It is a standard folder structure on a common drive, where employees have access. The overall purpose of the folder structure is store and facilitate relevant information and knowledge that can be applied by other employees. These word and excel documents contain information and knowledge about basic principles and best practices in relation to the case processing. It is written down so that others within the unit, especially new and unexperienced employees can get the needed information and knowledge, quicker and without disturbing others when processing a particular case. This approach is perceived rather simple, insufficient and outdated, and considering the fact that employees are working within a knowledge intensive organization, this issue has to be addressed. To this extent, employees are continuously asking for actions to improve this process. According to the head of unit,

"*Employees are actually tired of the way they work, because the "system" is really difficult and time-consuming. They can use much of their working time on searching for updated information and knowledge within a specific area that can solve a particular case. So they have asked for improvement"* (Interview 1).

Employees are using much of their working time searching for the relevant information and knowledge, but the system is in this case inefficient because the content is unstructured and outdated. As the system maintenance has been neglected, the result is unstructured, outdated and none relevant system. Meetings have been settled in order to discuss how this can be improved, and in particular, how they can optimize knowledge sharing and become more effective. Getting the relevant and updated information and knowledge is the key focus, because an inefficient working process affects the entire case processing, where it eventually can last longer than required and expected. The

assumption is that if knowledge sharing is improved, then the case processing will automatically be approved and facilitated. The question is simply how to do it. Can a better system be the solution or are other actions required as well. Is collaboration intact or can it be more effective, and does it need to be more effective.  According to the head of unit,

"*My perception is that we have to have a common way of solving cases. Or at least that is what I wish we could do. For example, if two cases are similar, than the case process should be similar and probably have the same output. My view is that we could place a lot of the information and knowledge at one place"* (Interview 1).

The head of unit believes that a uniform case processing is possible if the information and knowledge is placed and stored in one place (system), where it than can be applied by others. His perception is that many of the incoming cases have mostly similar characteristics, in which case processing procedure should be the same. However, as we learnt from the interviews, far from all cases are similar as they can differ depending on the type and complexity, where external factors such as customers, building laws and case processing experience are influential. This emphasizes on another aspect, which is interesting to explore. What is the best possible solution for optimizing the case process, and in this context, how should the knowledge and information be accessed.

IT systems has obviously been discussed, and there have been some informal suggestions but the management seems to neglect it every time. This is primarily due to busy periods, and the fact that case processing is more important than improving knowledge sharing. However, they are aware that improving knowledge sharing could affect the entire case processing. It is therefore clear that the current system or way of working has to be revised. This bring us to the purpose of the thesis, which is to investigate how the current knowledge sharing occurs, as well as assess how IT and other initiatives can be applied to improve the process.

## 1.3 Problem statement

Since the problem area describes obvious flaws with the current way of working, it is therefore rather important that the potential decision on proposed solution is based on eligible material. This requires an in-depth insight to the knowledge-sharing environment, culture, and the factors influencing knowledge sharing, knowledge types, case types and management. In addition, since none universal IT system for organizations exists, the purpose is to explore and determine a solution that suits the

given organization. These considerations as well as review of the problem area leads to the following problem statement, which the thesis wishes to investigate.

- ***How can the Unit improve and facilitate the knowledge sharing process?***

In order to facilitate the process of answering the problem statement, some sub questions are composed. These are important to address and answer to get a clear understanding of the conditions regarding knowledge sharing.

- How is knowledge being shared at the Unit?
- What types of knowledge exists, and how can employees acquire relevant knowledge?
- Which factors prevent and promotes knowledge sharing, and how can these be affected?
- How are build cases being perceived?
- How can IT applied to improve this process?

To this extent, a broad format of literature on knowledge creation, knowledge sharing and knowledge management exists, where some of the most recognized and applied are Nonaka & Takeuchi, Davenport & Prusak and Hansen et al, (1999). The knowledge aspect is treated from different perspectives, in which the thesis can be subject of diversity. However, it is important to scope the literature to the case context and provide a perspective that suits the given organization.

## 1.4 Thesis delimitations

Given the nature of the topic of knowledge sharing, and its correlated management challenges, an array of different angles and perspectives arise, which are interesting to the thesis. However, in order to maintain a structure and a common thread, it is necessary to scope the research in order to focus on certain areas.

As the department of *Center for Buildings* consist of six units, and in particular three similar units with different geographical areas within Copenhagen municipality, the thesis will scope only to focus on the unit for build permits 'north'. This is mainly due to easy access to both primary and secondary data through inside source.

In terms of the employees within the Unit, we will not provide a deep insight into their respective working areas. The perception is that it is irrelevant in this context. It is not important to e.g. describe laws and paragraphs of a certain area. Rather we will describe their roles and in particular in relation to the case handling process.

In terms of the technical aspect, the thesis will primarily only focus on analyzing IT system from a general perspective, and hence no specific and thorough IT analysis. As the overall purpose is to analyze knowledge sharing and how this can be improved, and facilitated by IT, it rather makes sense to explore the different IT systems and recommend one in the context of the organization. The focus will be on overall functionalities and stereotype systems. To this extent, the thesis will neither provide an economic aspect to it. We will not look at the cost and benefits, but rather what functionalities are needed to improve the knowledge haring process.

## 1.5 Thesis structure

This section displays the thesis structure and the red thread it is composed of. The description provides an overview of four overall chapters, which are constructed by related sections. These are displayed in the following figure.

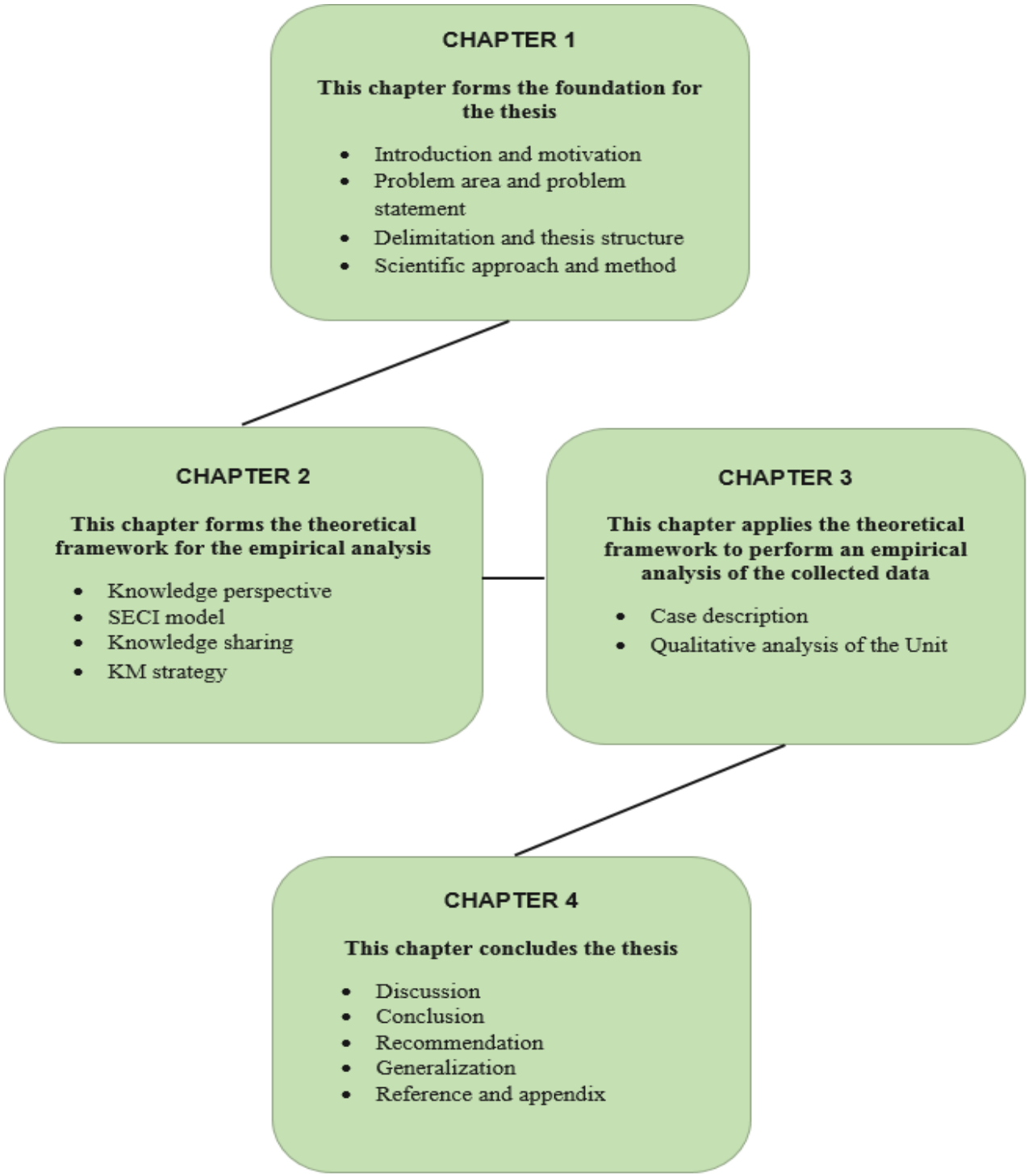



**Figure 1:** *Thesis structure*

## 2.0 Methodology

The purpose of this section is to explain the method for the study. By describing the chosen approaches, it becomes clear how data and literature forms the foundation for the thesis assumptions, analysis and conclusions. Furthermore, the design of the study is important it provides a basis for valid data and hence offer best possible conditions for answering the problem statement. The proposed problem statement forms the basis for selecting the most suitable methods and theories that meets the purpose of the thesis. The approach is therefor, first defining the thesis methodology and then the chosen theories.

The methodology is described as the doctrine of different approaches used within study activities, as well as the consequences these choices of approach have on the findings that are reached. It also includes the underlying assumptions the approaches are based on and what explanation types are considered satisfied (Andersen, 2008: p, 17).

To have a structured and systematic approach when acquiring and producing knowledge for the thesis, we have chosen to follow the layer model described by Ib Andersen (2008). The following figure outlines the methodology concepts sorted by levels.

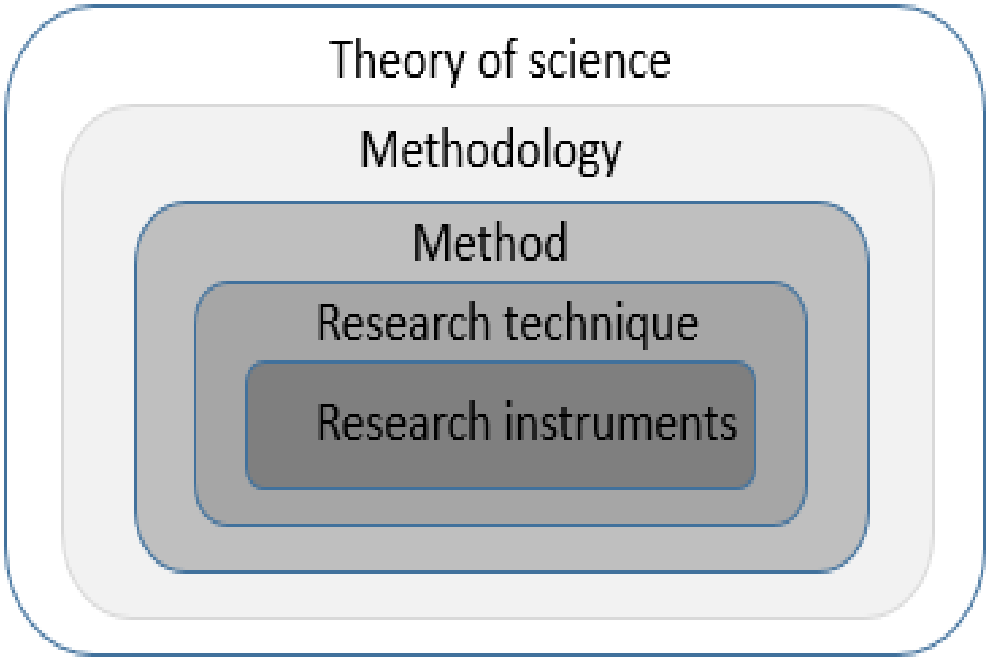



**Figure 2:** *Layer model* (Andersen, 2008, p.18)

The model will be applied as an overall frame for the study, which intends to clarify our scientific approach and position that affects the entire thesis. It is an appropriate and important process that facilitates the study and outcome. The first concept in the model is theory of science, which states our understanding and purpose of the study, and how we consider the findings to fit in the social context. The methodology describes the applied approaches and its consequences for the final research outcome. The method provides a systematic approach to explore the reality and understand the causes and meanings behind i.e. every individuals act at the Unit of Building permits 'North'. When the first three concepts are established and the methods are identified the final act is to consider what kind of combinations of study techniques to apply, as well what study instruments to use for the purpose of the thesis (Andersen, 2008: p.18-19)

In addition, Ib Andersen (2008) also proposes a general model for knowledge production that emphasizes on the basic elements it consist off, and how they affect each other.

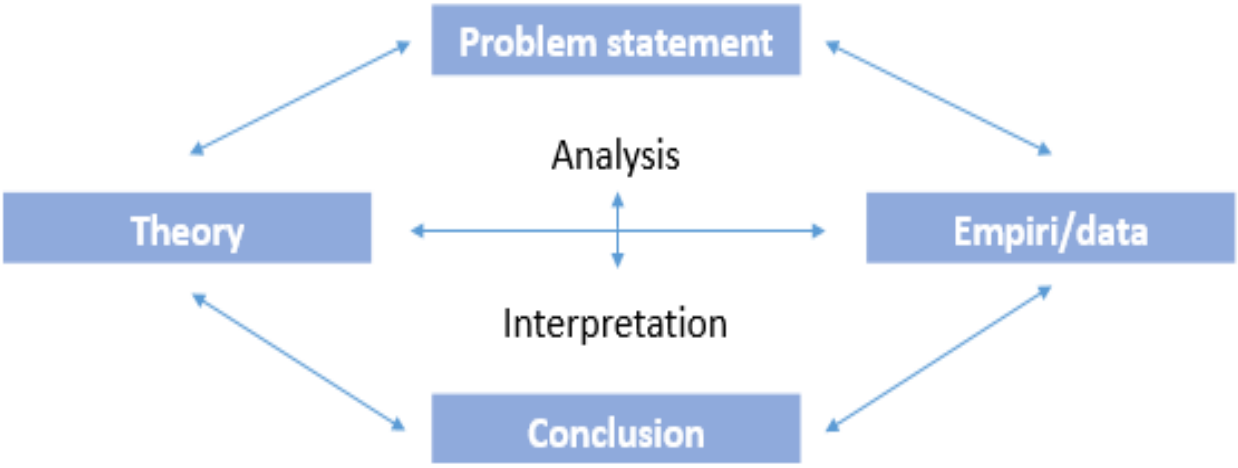



**Figure 3:** *Knowledge production basic elements* (Andersen, 2008: p.25)

As the model illustrates, the elements are interconnected through analysis and interpretation, which facilitates the thesis process. There is a red thread through the process, which is important for the validity and reliability. For example, when analyzing and interpreting, one important aspect is to ensure that the problem statement and data collection are linked to the chosen theories, as any mismatch in the model would affect knowledge production and its cohesion. This could result in reaching an inadequate conclusion that does not answer the problem statement thoroughly. To address this scenario, the aim is to choose relevant theories to have a valid basis for analysis and interpretation.

## 2.1 Theory of Science

We have chosen to approach the study through the constructivist paradigm, as the approach works well in conjunction with our chosen qualitative method. The principle of learning as an active and constructive process, where individuals actively construct or create their own subjective representation of objective reality, provides a good starting point to the purpose of the thesis (Cooper, 1993).

### 2.1.1 Paradigmatic background

Before reviewing the chosen scientific approach and theory, and how we wish to conduct the study, we believe it is important to understand the paradigmatic background, and the fundamental consequences that lies beneath it.

As there are several definitions of what a paradigm is, the thesis choses to use Guba's definition of paradigm, which is an interpretative framework, guided by *"A set of beliefs and feelings about the world and how it should be understood and studied."* (Guba, 1990).

A paradigm is a belief system that guides the way individuals act, whether it is through actions or thoughts. Every paradigm has a different perception of reality and hence different approach to knowledge creation, which results in different conclusions (Guba, 1990). Moreover, a paradigm has three fundamental consequences for knowledge creation: *an ontological, epistemological and methodological consequence* (Voxted, 2006: p.53-55).

**The ontological consequence**

It deals with the question, what is real and compels a particular worldview, which is crucial to how knowledge is created. The world is viewed through different lenses, as everyone is different and does not bear the same lenses. Our perception of reality changes gradually and sometimes experiences and incidents changes the way we perceive the world. This has consequence for the way we work epistemologically and methodically.

**The epistemological consequence**

"*Epistemology is the branch of philosophy that studies the nature of knowledge and the process by which knowledge is acquired and validated" (Gall et al, 1996).* It is a study on what information is and how it is perceived. How is it generated and treated as a result of the applied theories. Does is have any true value?

In addition, as the thesis surrounds knowledge sharing, we believe that it is important to clarify the definition and understanding of knowledge. This will further be described in the theory section about *Knowledge perspective.*

**The methodological consequence**

This is a process of how to observe knowledge. The methodological consequences is the fact that there are different underlying assumptions to the approaches for knowledge production, which in the end affects us as researchers. The entire research design and process is effected by the chosen paradigm and the consequences.

Ontology, Epistemology and Methodology is represented in its current chronology, as the perception of reality is the focal point, which affect the epistemology and again affect the methodology

### 2.1.2 Constructivism

The constructivist paradigm differ from positivism, as it in many ways questions the reality in its ontology. The perception is that there is no one exact truth of reality, as the reality is constructed by people through interpretations, attitudes and values. Every human being is different and hence have different values, interpretations and attitudes, which varies the perception of reality. The possibility of outlining a single conclusion or model that reaches one exact outcome does not exist, rather the process is to understand and apply different worldviews and perceptions. The epistemology in constructivism is subjective, as the interpretations are subjective. This means that researcher and the studied phenomenon cannot be separated, as they interact and affect each other, and hence data depends on the interaction between them. The produced data tries to explain and understand the studied reality, which again is an interpretation (Voxted, 2006).

The one and most applied methodology within the paradigm is the qualitative method. This approach is perceived as essential to properly answer the problem statement. This will further be explained in the research design section.

## 2.2 Research design

According to Ib Andersen, research design refers to the way we explore the studied phenomenon (Andersen, 2008: p. 107). It is a set of methods and procedures used to collect, analyze and interpret empirical data. The process typically emphasizes on how data is collected (i.e. through interviews, observations etc.), and what instruments will be applied and used for the analysis part.

### 2.2.1 Data collection

Before describing how data collection will occur, we wish to describe the different aspects of data.

Ib Andersen (2008) argues that data collection is essential and governed by the problem statement, research design and project plan. Data collection techniques can in general be dived and classified into four criteria (forms) that are important to distinguish. These are the following: *Quantitative or qualitative and Primary or secondary.*

Numbers and hence measurable outcomes represents quantitative data, while e.g. texts, recordings, photos, transcribed interviews and others that can be interpreted represents qualitative data. Unlike quantitative data, qualitative data is perceived as "soft data" that cannot be measured. For example, we wish to explore how employees handle knowledge and their perception of it.

Primary and secondary data relates to our (the researchers) involvement in the collection of raw data. Primary data is characterized by being primarily collected by the researchers through e.g. interviews, observations and other techniques, while secondary data is characterized by being collected and stored by e.g. the studied organization (Andersen, 2008). This could for example be a document containing an organizational diagram or other locale intangible sources. In addition, these can further be divided into stimulus and non-stimulus data. Stimuli data is the important one, as it is answers (reactions) to questions (stimulus) from the researchers, which is relevant in relation to our interviews.

The following table summarizes the techniques that are divided and classified into above mentioned criteria.

| | Primary data | | Secondary data |
|---|---|---|---|
| | *Stimulidata* | *non-stimuli data* | |
| **Qualitative data** | - Recordings | - All forms for observations techniques | - Documents, notes, memoranda, letters, movies, pictures, videos, audios, physical objects contain information, records, newspaper articles etc. |
| | - Unstructured and semi structured interviews | - Indirect techniques | |
| | - Surveys | - Photo and vidoe techniques | |
| | - Photos and video techniques | | |
| | - Projective techniques | | |
| | - psychological tests | | |
| **Quantitative data** | - Standardised / structured interviews | - Quantitative observation techniques | - Public and private statistical data collections and registers |
| | - Surveys | - Indirect techniques | |
| | - Projective techniques | | |
| | - psychological tests | | |

**Table 1:** *Overview of data collection techniques related to data forms*[1]

As table 1 illustrates, there are numerous instruments related to qualitative and quantitative data, and primary and secondary data. Most notable is the unstructured and semi structured interviews that are typically applied in qualitative study, where qualitative data is needed. In contrast, when searching for quantitative data, standardized and structured interviews are more appropriate. When searching for qualitative and subjective data, it is better to apply unstructured or open interviews and apply laddering technique.

Since data collection is govern by the problem statement, we have chosen to use qualitative data as both primary and secondary. The perception is that they are most relevant to the thesis structure and outcome.

[1] Source: (Andersen, 2008, p.152)

### 2.2.2 Qualitative method

Because of the limited insight to the problem area, knowledge sharing and knowledge management, the decision is to apply a qualitative method to gain a deeper and broader understanding of the knowledge environment, knowledge strategy and the IT systems that is being applied. A qualitative method would provide a great amount of information about employees using the system i.e. how they perceive the system, their opinions, feelings, motivations, attitudes and hence their perception of 'reality'. In addition, what types of knowledge is being exchanged between employees, and the strategy that lies beneath it. This is a very relevant aspect in order to gain a proper understanding, and approximate answering the formulated research question. The method is furthermore exploratory, and hence provide knowledge production an exploratory perspective. New information that ware not considered in the beginning of the process is discovered (Cresswell, 2009). This is the primarily reasoning for choosing this method, as the outcome of the thesis is unknown.

### 2.2.3 Case Study

The following section will outline the key aspects of the case study method, and how it is applied in our context. The section will in particular provide a description of the benefits compared to other methodologies, which in turn concludes the reasoning for the choice.

According to Robert Yins "*Case Study Research"*, the case study method is one of the most wide spread methodologies in terms of analyzing and understanding complex social phenomena. Yin (2009) argues that:

*"The case study method allows investigators to retain the holistic and meaningful characteristics of real-life events-such as individual life cycles, small group behavior, organizational and managerial processes, neighborhood change, school performance, international relations, and the maturation of industries"* (Yin, 2009: p.4)

As the case organization is suitable in Yin's description of complex social phenomena, the thesis choses to apply the case study method. To be more specific, we have chosen to apply a single case study approach, as the thesis is delimited to the unit of building permits 'North' in the Copenhagen Municipality, whereas a multiple case study includes more than one organization. In addition, Yin (2009) and Andersen (2008) outlines a typical purpose that supports the single case study method, as the case is

*"Critical in relation to applied current theory, models, assumptions or practices. The purpose is to test the case in relation to whether or not the current, general knowledge is useful"* (Andersen, 2008: 119)

The statement supports and frames the purpose of the thesis, which is to be critical of current practices within the organization i.e. their current knowledge sharing approach. Furthermore, the nature of the context makes the analysis unique to the unit of building permits 'North', due to the specific conditions surrounding the case i.e. the company structure and the consequences of managerial decisions. However, the single case study approach is questioned in this context, as there are two similar units - *building permits 'Inner'* and *building permits 'South'* with similar working environment and procedures. They are nevertheless within the same organization, which then excludes a multiple case study approach. This requires similar organizations with similar issues, which in this particular case would be difficult to uncover. This is furthermore supported by (Kruuse, 2007) who states that multiple case studies are characterized by covering more than a single case, which further is conducted on different places and different conditions.

Yin (2009) applies the following figure to display the different types of case studies.

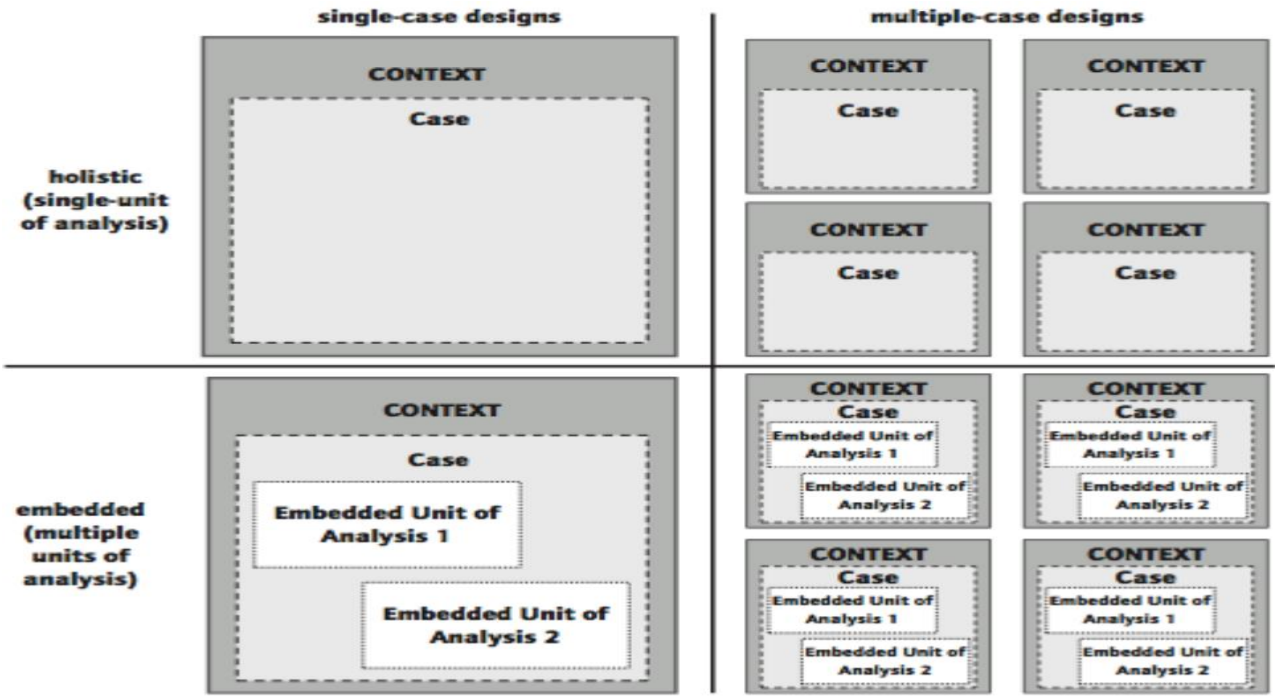



**Figure 4:** *Basic Types of Design for Case Studies*

Figure 4 illustrates four types of designs for case studies displayed in a 2 x 2 matrix. All four designs includes analyzing case organizations from contextual condition that is in what context the case method is applicable. The figure shows that single- and multiple-case studies are reflected by different approach and design situations. The four boxes displays four different designs; "*single-case (holistic) designs, single-case (embedded) designs, multiple-case (holistic) designs, and multiple-case (embedded) designs"* (Yin, 2009: 46).

As stated earlier, the nature of the case is limited to a single case study. However, the differences between the singe case holistic and embedded designs can make the difference in the study, and should be considered in relation to the problem statement. The holistic approach considers the organization a single unit, whereas the embedded approach considers it a multi-unit organization that can affect the study (Yin, 2009: 48). In order for the study to produce a satisfactory outcome, the perceptions is that an in-depth analysis of the interviews is required. Rather than considering the data collection as one whole unit, we adopt the embedded approach in order to gain a better insight in each employee's perception of the organization, and its activities in terms of knowledge sharing.

However, one key factor to note is that single case studies lack in reliability, due to the data limitations, and can consequently be difficult to generalize to a broader theory. Flyvberg (2006: p.224) argues that this view is considered devastating for the case study as scientific method. Anthony Giddens (1984) further supports the view, as seen as follows:

"*Research which is geared primarily to hermeneutic problems may be of generalized importance in so far as it serves to elucidate the nature of agents' knowledgeability, and thereby their reasons for action, across a wide range of action-contexts. Pieces of ethnographic research like . . . say, the traditional small-scale community research of fieldwork anthropology—are not in themselves generalizing studies. But they can easily become so if carried out in some numbers, so that judgements of their typicality can justifiably be made"* (p. 328)

Gibbens (1984) description provides one way of generalizing, which often is both appropriate and valuable. It would nevertheless be inappropriate and wrong to declare that this is the only way to work, just as it would be incorrect to conclude that generalization from a single case is not possible. It depends of the nature of the case, and in what context it is chosen (Flyvberg, 2006: p.225). According to Yin generalizing the conclusion is though still possible by thorough description of the case, and by applying inductive reasoning to deduce a general understanding of the issue (Andersen,

2008: 120). The reliability dimension is possible to increase by applying existing theories and studies on knowledge sharing, as these are similarly based on other studies (lbid). In our context, the purpose is to examine the knowledge sharing dimension and propose a solution for this, in which the result would provide an indication of how other organizations with similar setup can learn from the challenges that the organization is facing.

### 2.2.4 Primary and secondary data

Interviews will be the primary source for data collection, where the purpose is to collect subjective data on employees' perceptions of the knowledge sharing environment and strategy approach, and head of unit's opinions on the same areas. This approach excludes the use quantitative methods i.e. survey, even though according to Andersen (2008), conducting both the quantitative and qualitative methods to collect data would provide the possibility of consolidate the collected data. This is possible by cross references, labels, and general trends. Our perception is that qualitative interviews would generate the needed and relevant data to explore and support the findings.

Secondary data is also relevant to outline, as it is a part of data collection. It also facilitates the thesis process and refines the analysis, as applying primary data is not enough to conduct a proper and valid thesis.

Secondary data can be categorized into three types of data; *process data, register data and science data* (Andersen, 2008). The thesis will primarily collect and apply process and science data. Process data will consist of documents from the case organization about the organizational structure, working process, employees and document handling. Science data will consist of articles, journals, theories and other literature studies that support the field of knowledge sharing and hence forms the foundation of answering the formulated research question.

### 2.2.5 Interviews

According to Ib Andersen, there is a distinctive difference in what interview form to apply for data collection. It is therefore relevant to outline the differences, and a review of the basis for choosing a particular one. The collected data has to have qualitative format, as it has to be interpreted. The most common interview forms are the *structured, unstructured and semi-structured.* Applying the "wrong" form could affect the outcome negatively.

The structured interview format can be applied in both the qualitative and quantitative method, but primary only when the research questions has a determined structure and hence does not vary. This

approach would not provide any new data outside the determined questions of the studied phenomenon, which essentially means that it is rather inapplicable in relation to this particular thesis.

The unstructured interview form is completely in contrast to the structured, as there is no particular determined structure and hence the questions are rather open, free and flexible, which also provides and unexpected data that varies from the research question.

The semi-structured interview form is a hybrid between the two above-mentioned and very popular, as the structure is partly determined but still open and flexible. This approach provides great interview process, where the respondent feels more comfortable, as there is no clear structure, but rather free and open question that does not vary too much from the research question. To gain valid and important data, it is rather critical to stay within the research area and at the same time make, retain the interest of the respondents in the interview process (Andersen, I. 2008: 169).

The thesis will conduct qualitative interviews with a semi-structured form, with the purpose of exploiting the advantages, and provide a good interview process for the respondents as well as obtain important and relevant data. This approach will provide great amount of subjective data that is not manipulated by interruption of others. Moreover, as above mentioned the semi-structured form would also provide a relevant question structure that can vary and be both open and free, which is important as the respondents have different worldviews. In addition, the interviews will be conducted face-to-face and be based on *"Seven stages of interview investigation" by* Kvale and Brinkmann (2015), which will further be described in the next section.

To this extent, we have decided not to use two of the most common research methods in research studies. These are observations and focus group interviews. This is primarily due to the perception of enough data generated through qualitative interviews with additional laddering technique. As this is not a study of behavior in social contest, our perception is that data from observations would not have been valid enough. For example, users would probably be affected by our presence and the purpose of the observations.

Focus group interview is a research method where the chosen participants produce data through group interaction about a topic that is chosen by the researcher (Halkier, 2002: p.9). One of the main flaws about the method is that it produces less subjective data about participant's worldviews. Participants tends to be more quite and fails to clearly express themselves, that is unlike in an individual qualitative interview, where participants frequently deliver detailed data about experience, opinions among

others (Halkier, 2002: p.16). This is the primary reasoning for not choosing this method. However, according to Kvale (1996), there are disadvantages associated with an exclusively semi-structured interview approach. The drawbacks are that the research questions focuses heavily on the individual, and fails to grasp the interpersonal dynamics in the empiricism, as the induvial typically always will be a product of social context. This could eventually be accommodated by a focus group interview. Finally, the methods are also time consuming. The case organization has up handed informed us that the employees have busy schedules in the upcoming months, which limited us from conducting and applying more methods than required.

## 2.3 Seven stages of interview investigation

The following section will outline Steinar Kvale's seven interview stages, which will be applied to our context. Designing and implementing an interview properly is the basis of any good interview data collection approach, and the importance of good structure will be further emphasized in this section. Although much of the value derived from interviews is a consequence of its flexibility, it is still crucial to any study to contemplate on a process and outline the basics for the structure, which in turn yields a better and more useful output. At the most basic level, our interviews is an attempt to understand the respondent's point of views and reflections. According to Kvale (1996),

*"understand the world from the subject's point of view, to unfold the meaning of people's experiences, to uncover their lived world prior to scientific explanations"* (Kvale, 1996: p.1).

The interviews conducted is in a research or evaluation context, and may enhance understanding and some change. However, the attention lies not on an output that dictates a change, but rather is an attempt of intellectually grasping the circumstances (Kvale, 1996). Furthermore, it is our responsibility as evaluators to provide a framework that facilitates accurate depiction of the statements from the respondents, in order to gain a proper understanding of the reality. Patton notes:

*"The task for the qualitative evaluator is to provide a framework within which people can respond in a way that represents accurately and thoroughly their point of view about the program"* (Patton 1987).

Given the responsibility, we now have, it is necessary to outline a structured framework to our interview design that will dictate the quality of the outcome. In order to secure a framework with a common thread, we have applied the seven stages of interview investigation, which will be presented in the following section.

### 2.3.1 Thematizing

The first phase of the seven stages accentuate the purpose of the study, while describing the topic at hand prior to interviewing the respondents. This stage, as the title suggests thematizes the interview, which provides an overview to the evaluators on what the end goal is. Contemplating on theories and concepts that are necessary for a successful interview is crucial, as lack thereof would suggest that there are gaps in the evaluators understanding of their purpose, while also displaying their inability to grasp the topic they are studying.

In our study, we are conducting research on knowledge sharing within the unit of building permits 'north' at the Copenhagen Municipality. Given the nature of the study, having multiple topics inevitably overlaps. Theories on topics such as knowledge, knowledge sharing and management must necessarily be prioritized in preliminary studies prior to the development of the thesis.

We are seeking to investigate the employees' perception of the knowledge sharing environment. In order to achieve intellectual insight in to this area, we must exploit a tool to bridge the gap between us, and their opinions and reflections. That tool is our interview questions.

### 2.3.2 Designing

Once laying the foundation for the study has been completed, the next step is to design the methodological processes, which will facilitate the mission. The design phase is the practical planning, spanning from time frames to available resources, as well as other factors included in the execution of the interview. This stage is the handling of the remaining phases.

In relation to our period frame, we expect to conduct the estimated nine interviews in a span of three weeks, dividing our respondents in to three groups, each group being interviewed in one week. The interviews will be in a semi-structured format, as explained in previous sections.

Converting the recorded interviews in to a usable format, to which we can refer to, will be completed by both researchers.

### 2.3.3 Interview

As evaluators, we consider ourselves instruments that assist the respondent in articulating their opinions and reflections on certain topics (Guba & Lincoln, 1981). According to the researchers, the evaluators can also affect the validity of the interviews by factors such as fatigue, experience and level. We are aware of these areas in relation to eliminate inconsistency in the validity.

During the interview phase, we intend to be observant to nonverbal messages and the consequences of conducting the interviews in the given environment. If not, these factors could produce decreased validity. In addition, if the process is approached correctly, than factors such as nonverbal messages can be exploited to provide more in-depth insight.

The interviews will be conducted in approximately 30 minutes time, which we consider is more than sufficient. Conducting longer interviews could potentially enable purposeless questions. Kvale et al (2015) furthermore support this view, as in order for interviews to be informing, they do not necessarily have to be long:

*"Modern qualitative research interviews are, however, far too long and filled with empty. If you know what you are asking, why you're asking it and what to ask, one can execute short interviews with plenty of substance"* (Kvale & Brinkmann, 2015: p.220).

### 2.3.4 Transcription

The above outlined stages have until now primarily been associated with the planning aspect of conducting an appropriate interview that would produce usable and valid data. The remaining stages are regards to converting collected data to a useable output, and thus interpreting and applying it to the thesis. This transcription stage emphasizes on transcribing interview data in a structured format that is open for analysis. According to Kvale and Brinkmann (2015) there are different tools to apply during the interview that can determine the quality of the transcription. Tools such as the human mind will necessarily result in forgetfulness, while digital tools are applicable in documenting everything. In relation to our interviews, we will apply a Dictaphone (Recorder) to ensure to document every detail of expressed words, tone and information, which are subjects to the analysis.

The interviews will be transcribed word for word, as it provides a more detailed and specific reflection of what was expressed. Moreover, it also provides a higher sense of reliability, as conversion to formal written format would require interpretation, which could be disadvantageous to the thesis. A word for word approach is more neutral.

Expressions such as "uhm" and "haha" etc. will be excluded, as it will only take up space, without adding any value. Long pauses will be subject to same conduct, unless it is assessed that a long pause adds any value to the statement from an analytical standpoint.

When discussing whether an interview is reliable, we often neglect to discuss the reliability of the transcriptions (Kvale & Brinkmann, 2015: p.243). Consequently, we will attempt to provide an exact

transcription of the interviews by independently transcribing the same interviews, followed by a comparison. This ensures a high level of reliable data.

The next stage of the process is to ensure high levels of validity in the interviews. There is no such phenomenon as an objective transcription, as they all are objective, depending on the purpose of the interview. In relation to our thesis, the purpose is to discover certain problem areas, and the causes of these issues. To facilitate that, our transcription is considered valid, as our method of transcribing is in harmony with our purpose.

### 2.3.5 Analyzing

Reaching the stage of analysis concludes that the work that pre-dates this stage has been completed. As our interviews have been transcribed, we must also attempt to analyze its contents, and deduce some value from it. To do so, Kvale suggests an array of analytical tools (or methods), such as meaning condensation and hermeneutic interpretation.

As our interviews are subjective opinions and reflections, we believe the hermeneutic interpretation approach harmonizes with our paradigm, and is the best applicable method. Hermeneutic interpretation refers to a continuous process of interpretation, where isolated parts, are being weighed against the entirety of the transcriptions (Kvale & Brinkmann, 2015: p.275). This approach ensures an energetic interpretation process, which will be the foundation of the latter part of the seven stages model.

The hermeneutic interpretation approach has been the subject for some criticism of not being scientific, as it does not produce an outcome that is considered a conclusion. Rather it provides multiple conclusions, depending on the amount of resources invested (Kvale & Brinkmann, 2015: p.276). We have chosen this approach, as small details can be a reflection of a larger problem, such as hesitant and doubtful answers, as well as passionate answers. The researchers can attribute different value to these factors, which could give a much broader insight from the interviews than previously assumed. Given the circumstances in which we operate, where management has neglected to improve knowledge sharing, one could imagine the hesitancy towards answering honest questions on management. People by nature hesitates to criticize their superiors/managers, which could blemish the reliability.

### 2.3.6 Verifying

This section discusses four terms used in the verifying stage. Verifying is a term, which consists of four factors: *objectivity, reliability, validity and generalizability*. These four terms make up this entire stage, and the strength of each category will determine the strength of our verification.

Objectivity is a difficult thing to address, as the question posed is, can subjective interviews be objective? (Kvale & Brinkmann, 2015: p.315). Rather than attempting to argue that subjective information is objective, we operationalize the term by inspecting how it used in other fields such as journalism. Although one cannot transform subjective data to objective, our approach can be objective, meaning that any researcher bias is excluded (Ibid). In this context, the ”definition” of being objective derives from an every day definition, where being objective is firstly an ethical matter, and then secondly an epistemological matter. According to Alasdair MacIntyre (1978):

*”Objectivity is a moral term before it is a methodological term, and the scientific activities is a form of moral activity”* (p.37).

Consequently, the level of objectivity in our thesis will be determined by an objective approach to our problems, disregarding any form of pre-existing bias. As humans inevitably will have a certain level of bias, it is our duty as researchers to write them down, when we consider it will affect the interview.

The next term is reliability, which refers to whether or not other researches can produce the same result. This essentially refers to whether or not the respondents will provide different answers to different researchers. If it concluded that the respondents would do so, one can point to the faults of oneself, as our interviews have been insufficient. In terms of interviews, a high level of reliability can restrict our creativity during interviews, as laddering becomes impossible due to the fact that the formulation of a question can differ, which can produce different answers (Kvale & Brinkmann, 2015: p. 318). Consequently, reliability has to be determined through a balance between flexibility and abiding by the script.

Validity in qualitative research refers to how well our results reflect our problem statement. In other words, it refers to which extent our observations reflect the phenomenon or variables we are interested in finding (Pervin, 1984: p.48).

Generalizability refers to how well our study can be applied to a different context. In scientific research, generalizability is highly important, as it can explain problems or pose solutions to cases

that are close our context. As describes in the case study section, the purpose is to examine the knowledge-sharing dimension and propose a solution for this, in which the result would provide an indication of how other organizations with similar setup can learn from the challenges that the organization is facing.

### 2.3.7 Reporting

The last stage refers to the presentation of the information extracted from the data. Factors such as anonymity will be noted, and anonymous respondents will be provided different names to protect their identity. Lastly, the information extracted will be presented in our analysis, from which we will draw conclusions.

The following section takes on chapter two and begins with the knowledge perspective, which forms the basis for the theoretical foundation.

# 3.0 Knowledge perspective

The purpose with this section is to create a theoretical foundation for the upcoming sections, where the basics within the knowledge perspective is reviewed. The section will deal with theories and definitions to form a basis for the analysis, as well as an understanding of the correlation between knowledge and knowledge sharing. Furthermore, to provide a nuance aspect to the thesis, the theoretical frame constitutes of theories by other relevant studies. Finally, the theoretical understanding and analytical framework creates the basis for the final empirical analysis.

## 3.1 Definition of knowledge

As knowledge is considered as an essential asset in this context, it is rather important to emphasize on the concept. According to Drucker (1993) "*Knowledge is the only meaningful resource today"*. With Druckers statement in mind, the following section will account for, what knowledge is, how it is defined and in what perspective it can be applied to.

Knowledge is a broad concept with various different definitions from an array of literature perspectives. The frame of the thesis limits the definition of knowledge to its context, where it is considered tangible in relation to the problem area. This is primarily to avoid reviewing unnecessary and irrelevant material. Therefore, this section will in particular describe and discuss different perspectives on knowledge in the context of an organization.

Newell (2009) argues that the concept of knowledge is considered an abstract entity, and consequently does not live up to a term defined by a fixed set of criteria. It is rather a fluid term, which due to its

nature of different definitions has varying criterion (Newell, 2009: p.3). However, from a scientific standpoint, epistemologies are used to have a standard definition in order to conclude what knowledge is and what it is not (Ibid). According to Christensen (2002), two epistemologies on knowledge exist.

- **The classical epistemology:** views knowledge as recognition based
- **The pragmatic epistemology:** views knowledge as experience based

The classical epistemology is also known as the epistemology of*"justified true belief"*(JTB). Justified true belief is a contrast to *"revealed"* knowledge, and presents itself as a more objective truth. The criteria for justified true belief are according to (Roderick, 1982) the following:

X knows that p is true, if and only if:

1. *S believes that p is true, and*
2. *p is true and*
3. *S is justified in believing that p is true*

This illustration is in other words a paradigm, where there must be more than only belief in the truthfulness of a proposition. Justification must also be provided, and in failing to do so, it will not be considered justified true belief. The purpose of applying a justification condition was to exclude any coincidental knowledge creation, which in turn increases reliability of studies (Steup, 2001). The question then becomes, whether knowledge is always justified or not. Most scholars believe that the three conditions of the justified true belief (JTB) theory are necessary. However they do not all believe that it is enough. Dreyfus (1997) exemplifies:

*"Imagine that we are seeking water on a hot day. We suddenly see water, or so we think. In fact, we are not seeing water but a mirage, but when we reach the spot, we are lucky and find water right there under a rock. Can we say that we had genuine knowledge of water? The answer seems to be negative, for we were just lucky"* (Dreyfus, 1997).

As stated above, knowledge can also be created in coincidental contexts, and thus not always justified. This is referred to as the Gettier problem, associated and named after Edmond Gettier who in 1963 described two cases, where true belief was concluded on the basis of a justified false belief. He did not consider that knowledge – it was only lucky that they turned out to be true (Steup, 2001).

Christensen (2002) furthermore claims that knowledge management can consider the classical epistemology as usable information, which can be used to understand the processes in which something is considered knowledge.

In addition, as the classical epistemology has obvious shortages, the pragmatic epistemology attempts to make up for it. The main difference between the classical and pragmatic epistemology is the human aspect. Pragmatic epistemologists believe that knowledge creation is a result of human interactions and interpretations, where knowledge is knowledge is generated through the interaction between object and subject. In other words, there is no existing objective truth. Rather it is generated because of human contribution in the form of reflections, thoughts etc. (Christensen, 2002: p. 205).

As knowledge is a result of interpretation and contemplation, what is considered knowledge is only considered a temporary entity that changes continuously. This is due to new views being created in the mind of the individual, as a result of interaction with its reality (Bendixen, Dunkle & Schraw, 1994).

As a result of this iterative process, the pragmatic epistemology can be considered applicable in problem solving contexts, as the deep reflective aspect creates a more nuanced approach to different problems (Christensen, 2000)

The two epistemologies contrast each other greatly, and the main difference between the two is the need for justification, versus contemplation and interaction. However, they can still complement each other to provide a richer insight to the knowledge created with in an organization (Ibid). Christensen (2000) provides insight in to how the two perspectives can be complementary to each other. Since the pragmatic epistemology necessitates some form of interaction between object and subject, it limits the amount of knowledge an individual can attain, as the knowledge generation process is dependent on interaction and reflection. In an everyday context, that is not considered optimal. In an organization, there may be knowledge one must accept without having had time to contemplate and reflect on it. Employees do not necessarily have to be included in every process to accept something as a truth. Knowledge transferred from another organization, which have had great success, can also be considered truth. In contrast, if all truth is only from an objective reality, which is waiting to be discovered, one could argue that knowledge can only be considered truthful, if it lives up to the criteria of the JTB theory, which we concluded earlier was not sufficient (Christensen 2000). It is consequently not sufficient to limit oneself to one perspective, as it limits the amount and the kind of knowledge one can attain.

The distinction between the two perspectives naturally create a distinction between knowledge. Knowledge is divided in to two categories, being:

- **Recognition-based knowledge**
- **Experience-based knowledge**

Recognition based knowledge, also referred as know-that knowledge, is tangible that can be stored, refined and easily accessed through databases and other knowledge repositories. This is also referred to as explicit knowledge. In contrast, experience based knowledge is knowledge, also known as know-how, is created through social interaction, which makes storing it is much more difficult, because is resides within the individual. This refers to the pragmatic epistemology and is called tacit knowledge (Christiansen, 2002, p.204).

The following table 2 summarizes the two perspective, which is inspired by Christiansen (2002).

| | **Know-that** | **Know-how** |
|---|---|---|
| **Synonymous** | • Explicit knowledge<br>• Recognition based knowledge | • Tacit knowledge<br>• Experienced based knowledge |
| **Metaphor** | • Knowledge of | • Knowledge about how |
| **Obtained through** | • Rules and channels | • Routines and practices |
| **Example** | • I know who you can ask about using this model | • I know how to use this model |

***Table 2:*** *Difference between knowledge types*

The above table provides a chronological approach to understand the difference between them.

The following part will look at the role of knowledge in modern organizations, and thus what type of knowledge is created and stored.

## 3.2 The role of knowledge in modern organizations

The purpose with this part is to outline the role of knowledge in modern organizations, and in particular to emphasize on the knowledge worker concept. In addition, the focus will be to describe the correlation between concepts data, information and knowledge, and explain their contribution in the context of tacit and explicit knowledge. Finally. The SECI model of knowledge conversion will be introduced, which forms the foundation for the later analysis.

**Knowledge worker**

Knowledge is vital in today's organizations, and especially in knowledge intensive organizations. Value is generated based on how much knowledge the organization possesses, and how well it is exploited. Knowledge has become synonymous with competitive advantages, which also means that knowledge is success (Christiansen, 2000). However, even though knowledge is perceived vital, it remains an asset, which is difficult to explain. As mentioned, knowledge originates and is applied in the minds of people. It is rather embedded in the mental space of an individual and strongly related to psychological features, motivation, will and emotional intelligence (Davenport & Prusak, 2000). This evolution illustrates the importance of organizations viewing employees more than just another resource. According to Drucker (2002) organizations must view perceive employees as an array of executives.

*"Every knowledge worker in modern organization is an "executive" if, by virtue of his position or knowledge, he is responsible for a contribution that materially affects the capacity of the organization to perform and to obtain results"* (Drucker, 2002).

The concept of "*knowledge worker"* was first introduced by Drucker (1954), but has since been adopted by other researchers. Davenport (2005) defines knowledge workers as the following:

*"Knowledge workers have high degrees of expertise, education or experience, and the primary purpose of their jobs involves the creation distribution, or application of knowledge"* (Davenport, 2005: p. 10).

The greatest asset of a knowledge worker is his or her mind. They think for a living, and their jobs are based on intellect and not physic (Serrat, 2008). They possess unique skills and are domain specialist, well informed, educated, proactive and responsible, aware of their value and role, and self-manageable in an organization (Mládková, 2009). They usually understand and identifies the context in which their own contribution can be enhanced. They put their best abilities to the test, as they challenge and achieve (Serrat, 2008). In addition, according to Morello & Caldwell (2001) knowledge workers typically are capable of understanding and defining their domain of influence, knowledge and responsibility.

As a summary of the definitions and characteristics, a study on *'Knowledge workers engagement in work in theory and practice'* from Figurska (2015) outlines the characteristics of a knowledge worker form an organizational perspective. These are as following:

- ***"Has** – knowledge, experience, social competences, values, etc.,*
- ***Wants to** – develop, share and use knowledge, experience, social competences, as well as use resources, methods, tools etc.,*
- ***Is able to** – use knowledge, experiences, tools, resources, methods etc. thanks to his skills,*
- ***Can** – is provided by the organization the opportunity to actively participate in the realization of knowledge management processes,*
- ***Is needed** – his knowledge, experience, social competencies, engagement, etc. are important for achieving the objectives of the organization". (p.45)*

The following model exemplifies the characteristics.

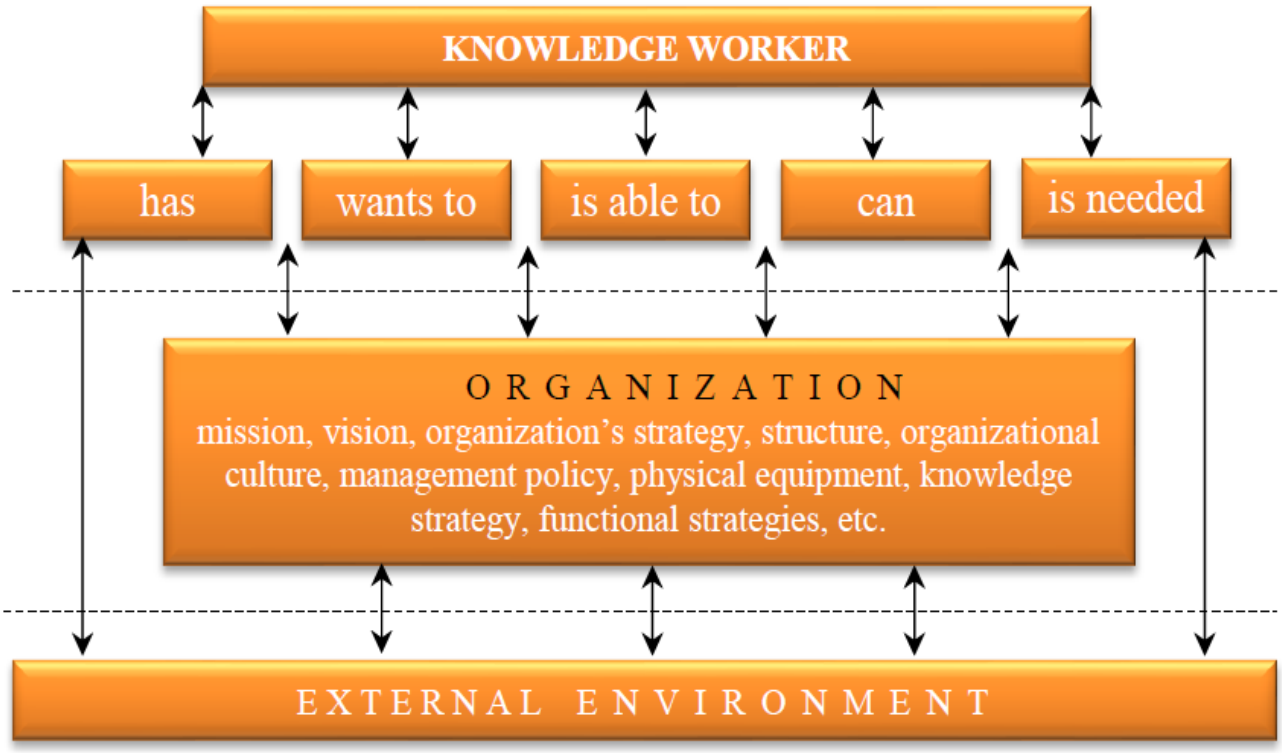



**Figure 5:** *Knowledge worker characteristics* (Figurska, 2015, p. 45)

The figure displays the factors that influences a potential knowledge worker. They consists of external environments, in which the organization is provide with resource such as data, information and knowledge. Moreover, organizational vision, strategy, mission etc. also influence the knowledge worker, as they become engaged in the process and develop the different above outlined

characteristics and skills. One aspect to note is that a knowledge worker can through domain-based decisions and actions actively interact with the organization, and eventually affects its external environment. For example, when a knowledge worker develops an innovative product, the product can achieve success and become a standard in the industry, which would eventually lead to providing the organization competitive advantage on the market (Figurska, 2015).

**Knowledge intensive organization**

Knowledge intensive organizations are by Sveiby (1992) described as:

*" It is an organization where the majority of the employees are highly educated, where the "production" does not consist of goods or services but complex non-standardized problem-solving. The problem-solving process involves a lot of information processing (not necessarily computerized) and the end result is normally a report or process delivered orally or as hard copy. The customers are treated individually and often called clients or patients".*

With this definition, knowledge intensive organizations must necessarily consist of knowledge workers. Organizations are realizing that sustainable competitive advantages come from sources that are difficult to imitate. Traditionally, it was machines, IT and IS, however that is not all. Differentiating from competitors can also be achieved through the right sources of knowledge. Due to the nature of knowledge, it is difficult for competitors to imitate, since factors such as scarcity, specialization and tacit knowledge play a part (Lippman & Rumelt, 1982).

In order to nurture and encourage an environment, where knowledge workers are housed, the organization must be able to maintain constant dynamics, which is centered around development and use of knowledge. Different factors may affect the usability and quality of their knowledge. Knowledge sometimes need to be updated, and one could imagine societal changes affecting the knowledge, which the organization possesses. In order to maintain sustainable competitive advantages, the organization must continuously create an environment, where employees can generate new knowledge. In addition, as knowledge workers differ from traditional workers, managers must also adapt to knowledge managers. They are no longer considered as an observer, who facilitates and ensures operations runs efficiently. The unit is driven by knowledge, and consequently requires a different approach. Knowledge managers must now stimulate, motivate and use the knowledge of employees, as well as harmonizing employee management with organizational goals (Christiansen, 2000)

The unit of building permits are in an untraditional situation. The employees handle cases, which means they have a far better insight in to the specific cases than management typically does. In other words, the employees are self-managing, which creates the question and issue of, how to manage self-managing employees? This issue is combatted with appropriate communication so that management have proper basis for making decisions. In this context, the role of management differs from the traditional approach, since employees are also considered managers. This phenomenon is referred to as shared leadership, and is described as follows:

*"Shared leadership occurs when two or more members engage in the leadership of the team in an effort to influence and direct fellow members to maximize team effectiveness."*(Bergman et al, 2012)

There are different definitions of shared leadership, all of which have minor differences, however they all share similar traits:

- *Influence process rather than downward influence*
- *Sharing power rather than centralizing it*
- *Equal power among a select few* (Bergman et al, 2012)

As will be discussed in following chapters, knowledge intense organizations will have a competitive advantage (Drucker, 1993). It is the single resource, which an organization can differ on greatly, making it a powerful tool to exploit. In production, where knowledge is the main driver often consist tacit knowledge, which is within the individual. This makes it difficult for competitors to imitate, as it relates to that specific employee. Consequently, it is necessary for knowledge intense organizations to employ people, who possess high quality knowledge.

As knowledge is the key concept, and because of its complexity and broad definition, the following section will emphasize on discussing the concept within the frame of the topic.

### 3.2.1 Data, Information and Knowledge

The concept of knowledge is within the literature of knowledge management (KM) mostly associated and discussed with data and information, or as a distinction between tacit and explicit knowledge (Christensen, 2002: p. 203). Davenport and Prusak (2000) further argues that data, information and knowledge are not interchangeable concepts. Organizational success and failure can often reflect their usage, as organizations have to know which of them they need, which they have, and what each of them can and cannot be applied to.

According to Dr. Zins paper "*What is the meaning of "data", "information", and "knowledge"?"*, different definitions of each concept is provided, as they reference other researchers. The article documents 130 different definitions of the three concepts, which are all formulated by 45 scholars. It maps the major conceptual approaches for definitions of the concepts.

For the sake of simplicity, Dr. Hanne Albrechtsens definitions are included and then supported by Davenport and Prusak (2000):

**Data**

Data is in this context defined as,

*"In computational systems data are the coded invariances. In human discourse data are that which is stated, for instance, by informants in an empirical study"* (Zins,2005)

In addition, Davenport and Prusak (2000) defines data as a "*set of discrete, objective facts about events".* Data solely consist of objective measures, and none explanation or information about its existence. In organizational context, data is mostly useful described as "structured records of transactions" (Ibid).

**Information**

Information is in this context defined as,

*"Information is related to meaning or human intention. In computational systems information is the contents of databases, the web etc. In human discourse systems information is the meaning of statements as they are intended by the speaker/writer and understood/misunderstood by the listener/reader"*(Zins, 2005)

Davenport and Prusak (2000) further employs the argument to think of information as data that makes a difference. Information is a massage in some text, audio or visible communication between a sender and a receiver.

**Knowledge**

Knowledge is it its essence a complex measure. However, Albrechtsens defined it as

*"Knowlegde is embodied in humans as the capacity to understand, explain and negotiate concepts, actions and intentions"*(Zins, 2005).

In addition, Davenport and Prusak (2000) also provides a definition, which has been widely applied in many studies.

*"Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating an incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms"* (Prusak & Davenport, 2000: p.5).

Knowledge is both fluid and at the same time structured. Information and knowledge are both depended of context, and it can be difficult to understand the difference. However, it is important to distinguish between them. Knowledge is created when the recipient acts on basis of the information context. If information is not used to create an action, no value is created, which means that no knowledge is created (Prusak & Davenport, 2000).

In summarizing the correlation between the concepts, data holds no value unless human interaction is applied. Data must be contextualized in order for it to be transformed into information, and humans must interpret information, in order for it to become knowledge.

The following figure displays the correlation between the three concepts.

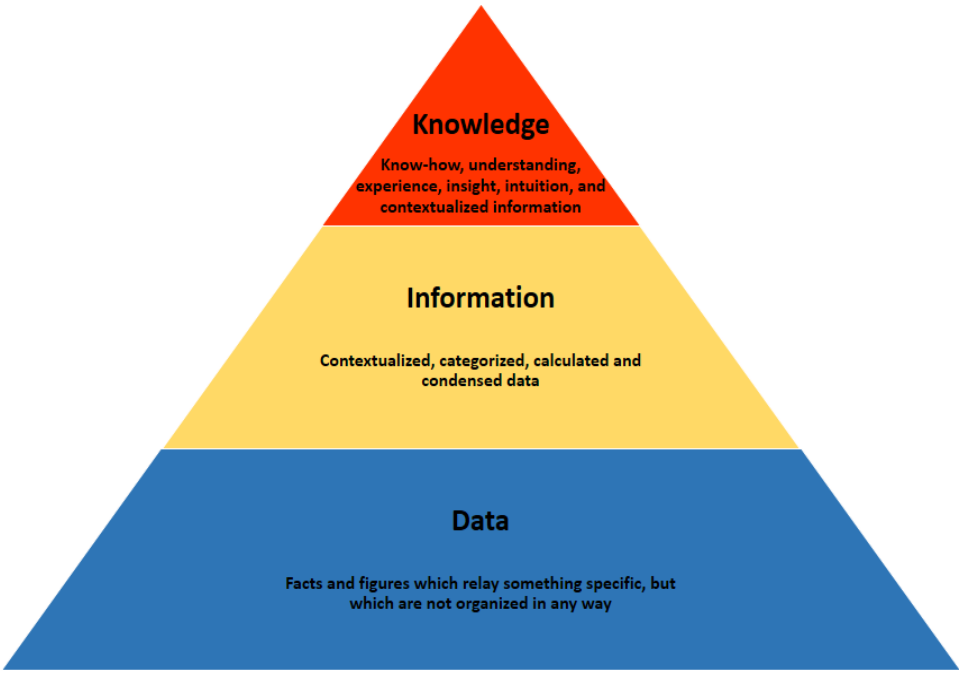



**Figure 6:** *Correlation between Data, Information and Knowledge*[2]

[2] Figure extracted from http://welearntoday.com/what-is-meant-by-organizational-knowledge/

The figure illustrates that data section contains great amount of unorganized data that needs to be processed. This is typical raw data, which makes no sense unless it is associated with something. For example, numbers 1 and 12 does not mean anything or is simply raw data. They could simply mean that 1 is greater than 0 or 12 is either greater than 11 or less than 13. However, if number 12 is associated with the numbers of months in a year, than context is created. With context, this data becomes information, which in this particular example means that there are 12 months in a year. Hence, data become information in the process where individuals assigns them a certain value or meaning. Information then becomes knowledge as individuals interprets the converted information in combination with their own experience and knowledge base. It is a reflection process. To this extent, organizational knowledge is building through social interaction (Davenport and Prusak, 2000).

The following part will emphasize on to knowledge dimensions, tacit and explicit in the context of organizational knowledge creation and conversion.

### 3.2.2 Explicit and Tacit knowledge

As discussed previously, for organizations to success, knowledge is the primarily resource. Knowledge has many sources such as the educational background of employees, employee's former work places and their current competences. That make them vital, in which organizations will only reach as far as their employees take them. That is because we assume in most situations that knowledge workers and their knowledge base usually run organizational business segments. This bring us to the fact that the overall sum of organizational competences is a result of employee competences, which indicates that employees are essential in production of organizational knowledge. However, according to Nonaka and Takeuchi (1995)

*"Although we use the term "organizational" knowledge creation, the organization cannot create knowledge on its own without the initiative of the individual and the interaction that takes place within the group. Knowledge can be amplified or crystalized at the group level through dialogue, discussion, experience sharing and observation "*(p.13)

This quote introduce the concept of knowledge creation within the organization, and the conversion from tacit to explicit knowledge. In its basic form, the quote furthermore displays that organizations cannot create knowledge by themselves, and need employee assistance for it to occur. In addition, this provided the basis for exploring how employees or individuals produce knowledge, and how the organization collects this new knowledge. This particular process enable and facilitates employees adding and expanding their competence base, which eventually benefits the organization as whole.

**Dimension of knowledge creation**

One dimension of the knowledge creation process can be drawn by distinction from the types of tacit and explicit knowledge Nonaka (1994). The concept of tacit knowledge is as formerly mentioned associated with experience-based knowledge. Michael Polanyi first introduced tacit knowledge in 1996, where he exemplified the phenomenon by a face-to-face recognition illustration. The example displays the fact,

*"if we know a person's face, then we can recognize it among thousands, even if we usually cannot explain how the recognition happens*" (Polanyi, 1966: p.5).

Tacit knowledge is associated with people carrying it into their state of mind, which makes it difficult to access and share. It is often context dependent and has personal quality. It is rather hard to communicate and deeply rooted in action, commitment, and involvement (Nonaka, 1994: p.16). Consequently, most of the tacit knowledge cannot be articulated (Polanyi, 1966: p.5). Moreover, in cases where employees have accumulated years of experience, i.e. the stock market, it is much more difficult to deduce any information, which can be standardized and shared. Once this process is attempted, it becomes explicit knowledge and can be shared to the entire organization. Tools such as information technology can facilitate that process (Nonaka and Takeuchi, 1995).

On the other hand explicit knowledge is knowledge that can be codified, and eventually formally and systematically expressed in i.e. formats such as words and numbers (Nonaka and Takeuchi (1995). Moreover, explicit knowledge can easily be processed by computers, transmitted electronically and stored relatively easily in databases. This leads to organizations capturing new knowledge in knowledge repositories or other operating system, and makes it available to all members of the organization.

The transfer of explicit knowledge to other individuals creates a natural evolution, where the recipient combines the received information with their own experience. This creates even more knowledge and that cycle continues. Once a particular employee combines explicit knowledge with own experiences, the knowledge becomes tacit again, and the cycle again continues.

This cycle will further be explained in the next part with the SECI model of knowledge creation and conversion.

## 3.3 The SECI model of knowledge conversion

Nonaka and Takeuchi (1995) anticipated the SECI model of knowledge conversion to describe the process of interactions between explicit and tacit knowledge. The model explains how tacit and explicit knowledge are converted into organizational knowledge, while it distinguishes four knowledge dimensions - ***socialization, externalization, combination, and internalization***. The SECI model was considered as "*the engine of knowledge creation*", as many Japanese companies that used this model could successfully create new organizational knowledge (Nonaka and Takeuchi, 1995, p. 62).

The following figure illustrates the SECI model.

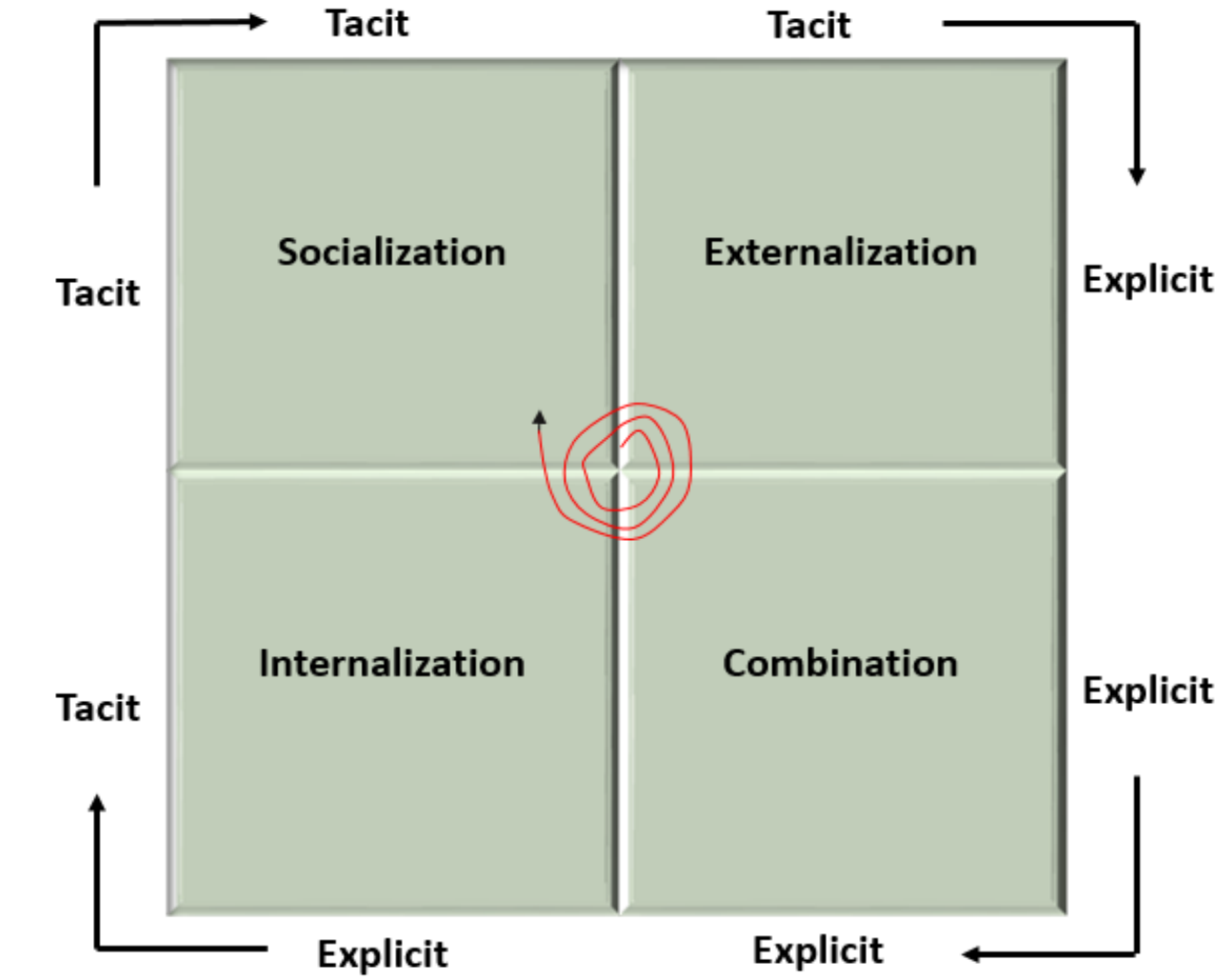



**Figure 7:** *Four modes of knowledge creation* (Self constructed)

The figure visualizes knowledge creation is an iterative process, where tacit becomes explicit and explicit becomes tacit. The first mode of conversion is tacit to tacit, which is facilitated by the socialization process. Externalization mode is where tacit knowledge is converted to explicit knowledge. The combination mode is where explicit knowledge is converted to explicit knowledge. The internalization refers to conversion of explicit knowledge to tacit knowledge (Nonaka, 1994).

### 3.3.1 Socialization

The socialization stage refers to the process where existing tacit knowledge is converted into new tacit knowledge through shared experiences by everyday social interaction and cultural ongoing organizational activities (Nonaka and Takeuchi, 1995). Socialization typically occurs informally and in traditional apprenticeship type learning through social meetings, both outside and inside the workplace, where tacit knowledge such perceptions, mental models and mutual trust is created and shared during the interaction (Nonaka, 1994: p.19). The apprenticeship type learning occurs typically as observation, where new employed person follows one experienced, and learns from his experiences. In addition Nonaka and Takeuchi (1995: p. 64) provides an example that in a interaction scenarios with customers in relation to product or service development, both before and after, is an ongoing and never ending process of tacit knowledge sharing of idea to improve.

### 3.3.2 Externalization

This phase applies to the process of converting tacit knowledge into explicit knowledge. Metaphors, analogues, and dialogue are methods for this process and hence the conversion of tacit and human capital into explicit and structural capital (Nonaka and Takeuchi, 1995). When tacit knowledge is converted to explicit, the knowledge is then 'crystalized', in which it is enabled to others in the organization through written documents, images and concepts (Dierkes et al, 2003: p.495). Documentation of dialogue outcomes is an effective method to formulate tacit knowledge and converting it into explicit knowledge. Reporting discussion outcomes from workshops and meeting is an example of it. Metaphors is another important tool for creating network of new concepts. It assist individuals in explaining tacit concepts, which are difficult to formulate, and imaging it symbolically (Nonaka and Takeuchi, 1995). In addition, applying metaphors enable an ongoing process of relating abstract concepts to concrete ones (Ibid). Analogies facilitates the understanding of the unknown and known, and bridges the gap between images and logical models (Dierkes et al, 2003: p.496). In addition, Nonaka and Takeuchi (1995, p. 66) assumes that "*among the four modes of knowledge conversion, externalization holds the key to knowledge creation, because it creates new explicit concepts from tacit knowledge".*

### 3.3.3 Combination

The combination process refers to connecting discrete elements of already explicit knowledge and convert it into a more systematic set of explicit knowledge (Dierkes et al, 2003: p.496). Through combination, explicit knowledge is both collected from inside and outside the organization, which then is combined and edited. The new explicit knowledge is then dispersed among other members of the organization. Media such as documents, telephone conversations, computerized communication networks and databases facilitate this process (Nonaka and Takeuchi, 1995, p. 67).

### 3.3.4 Internalization

The internalization process refers embodying or recycling explicit knowledge into tacit knowledge, which is suggesting that explicit knowledge is internalized. This concept is closely related to "learning by doing" (Nonaka and Takeuchi, 1995). Knowledge that is created is shared throughout the organization, where explicit knowledge now is tacit. Training programs best exemplify this process, where these can help new trainees acquire skills by reading in documents or manuals. By reading the documents enriches their tacit knowledge base (Dierkes et al, 2003: p.496).

**Summary**

We have now established a knowledge foundation, and the context of knowledge creation and conversion from tacit to explicit and explicit to tacit. The following section will look at the aspect of how knowledge is shared among employees in organizational context. The SECI model will later be combined with information technology (IT) with the purpose of analyzing how the four knowledge dimensions can be supported by IT.

# 4.0 Knowledge sharing

The previous section introduced the concept of knowledge, and defined it form different perspectives. In its most basic structure, knowledge emerges when data becomes information, which then is interpreted into knowledge. This results in knowledge being perceived as a resource, which can be applied in a decision-making context.

The following section will address the concept of knowledge sharing, and in particular the terms of experience based and recognition based knowledge. The purpose is display the knowledge-sharing dimension, and how knowledge is being shared between individuals in organizational context. In addition, knowledge management is introduced and consequently, the foundation for knowledge sharing strategies are established.

## 4.1 How is knowledge being shared?

Sharing of knowledge can occur in many different contexts, and in many different ways. Within the knowledge management literature, the concept of knowledge sharing is often synonymous with knowledge transfer (Buckley and Jakovljevic, 2012). For example, sharing is the process of transfer where experts share knowledge on demand by the user. This might happen if the expert does not intend to share it or welcomes the sharing in the interest of the organization. The shared knowledge may or may not then be used by the recipient, and the adoption of it is none an automatic matter, but the extent of the will of the recipient (Ibid). Moreover, as mentioned earlier, the transfer of i.e. explicit knowledge to other individuals creates a natural evolution, where the recipient combines the received information with their own experience. This process is also associated with the recognition-based perspective, where knowledge can be quantified and shared.

Knowledge can also be shared by learning. This particular concept is widely applicable, where knowledge is shared and attained by activities associated with learning process (Christiansen, 2000). In this context, the basis it the experience-based perspective, where knowledge is only attained through activities such as task participation and completion. From the recipient's perspective, this particular view makes the knowledge sharing none different from the creation of new knowledge, as they must create the knowledge themselves in order to experience it.

## 4.2 Knowledge Management (KM)

The concept of knowledge management (KM) is nothing new and goes far back, where it can be exemplified with e.g. owners of family businesses have passed their commercial wisdom on to their children, and e.g. employees have exchanged thoughts and expertise on daily basis (Hansen et al, 1999). The 1990s was the first period where chief executives started talking about knowledge management, and in particular to investigate the knowledge underlying their businesses, and in what context that knowledge was being used. This is primary because of the shift from industrial natural resources to intellectual assets (Ibid).

The field is multidisciplinary and covers a broad array of grounds, in which a good definition incorporates both capturing and storing knowledge perspective, as well as valuing intellectual assets. According to (Kimiz Dalkir, 2005),

*"Knowledge management is the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation. This coordination is achieved through creating, sharing, and applying knowledge as well as through feeding the valuable lessons learned and best practices into corporate memory in order to foster continued organizational learning"* (Kimiz Dalkir, 2005: p.4).

This above definition covers the vast majority of the many definitions of KM, because the discipline is young, and there has been many different definitions, depending of business context. However, all definitions are concerned with the main aspect of capturing, codifying and sharing knowledge held by employees within organizations. (Kimiz Dalkir, 2005).

### 4.2.1 KM activities

According to Davenport and Prusak (2000), organizations that wishes to leverage knowledge have to perform three main KM activities, which are *generation, codification, and transfer of knowledge*. The following part will look at those processes.

**Generation**

In terms of knowledge generation, the activity ensures that knowledge is generated and thus collected within an organization. Knowledge generation can occur by either hiring new individuals, acquiring new company or organization or leasing external knowledge. Furthermore, knowledge is typically generated when groups of professionals or individuals with different skills and perspectives are united on projects, where they e.g. collaborate and help each other. This process is rather common and very efficient when talking about knowledge generation. However, for enabling knowledge generation,

employees have to share common interest and desire and most relevant the motivation to share and exchange, otherwise there is the risk of failing (Davenport and Prusak, 2000).

**Codification**

The codification activity is associated with the idea of fusing organizational knowledge into a format that both is structured and accessible to those who needs it. One simple and very often example is the legal system, where laws, decisions and former cases are codified in text formats for further usage (Davenport and Prusak, 2000. Knowledge codification simply converts the knowledge into a easy understandable code, which is structured, organized and transferable. Information technology and more precisely e.g. Microsoft office tools are very applicable in this process, as the can facilitate the process of codifying and transferring knowledge into written or recorded formats. To this extent, Davenport and Prusak (2000) suggests four principles that should guide the knowledge codification process in organizations:

- *The management has to decide on what business goals the codified knowledge will address and serve.*
- *The management has to be aware of the existing knowledge capable of reaching these goals.*
- *The management has to evaluate knowledge in terms of usefulness and correctness for codification.*
- *In relation to Codifiers, they must identify an appropriate medium for codification and distribution* (Davenport and Prusak, 2000, p. 68)

These four point emphasizes on the codification or recognition based views, and guides through the codification process.

**Knowledge transfer**

The SECI model has been introduced where the four modes of knowledge conversion has been outlines. Knowledge transfer refers to the process, in which a knowledge asset is transferred to another individual. However, according to Davenport and Prusak (2000), sharing and exchange of knowledge occurs mainly through personal conversations at meeting locations such as coffee stands, water cools, talk rooms and open forums rooms. These places enables both formal and informal knowledge sharing. In addition, job rotation is also recommended as it would increase the knowledge transfer, where new functions requires new insights, while at the same time maintains a knowledge base. For example, in software development, rotating testers and developers could be an good idea,

so they both can get the full understanding of their working process, and hence the software development. Another example could be to rote caseworkers within different areas, so they also can get experience with other areas as well. Even though this process does not rotate the function in full, but rather assign to a new area of interest. A third example is to move engineering executives in big production companies down floor and managers up floor to get an insight into the entire production process. However, as knowledge transfer seem to be a fluent process, some relevant factors either can block or at least slow the process down. Culture is one of them, as different culture or at least an inappropriate culture can prevent the knowledge sharing process and knowledge transfer (Kimiz Dalkir, 2005). This process can also omit knowledge, as employees within an organization that is not support by a knowledge sharing culture intends to neglect and omits relevant knowledge. Finally, managers have a relevant role, as they can encourage employees to transfer knowledge by building social line between them though trust, commitment and loyalty (Davenport and Prusak, 2000). These activities are addressed by Hansen et al. (1999), and summarized into two main distinct KM strategies, which are codification and personalization. The next part views the two strategies in the context of the aforementioned experience and recognition based views.

### 4.2.2 Codification vs. Personalization

The aforementioned experience and recognition-based knowledge sharing approaches to knowledge are synonymous with two basic KM principles. These principles or rather strategies are referred to as codification and personalization. These are two distinct KM strategies within the knowledge-sharing environment, where they emphasizes on the aspect of knowledge within organizational context. The two strategies are rather opposite and have different perspectives (Hansen et al, 1999).

The recognition-based perspective is associated with codification strategy, and perceives knowledge as a codified format in e.g. databases, where it then can be accesses, used and re-used by employees within an organization. In this context, codification refers to organizations perceives knowledge as an material and reused object, which can be allied over and over again, as it is collected, stored and dispersed within the organization (Argyris, 1999).

Personalization strategy is closely associated with experience-based perspective, and perceives knowledge as an interpersonal relation, where it is closely tied to the individual that developed it and shared it, mainly through social interaction. In this context, knowledge is not directly being shared, but rather transferred to the one that interacts with the more experience employees, and in that way learns from them through e.g. social interaction and collaboration (Argyris, 1999). The strategy is therefore more associated with working practices rather than knowledge banks.

## 4.3 Personalization activity

The activities within the personalization strategy are relevant to address, as it differs from codification in terms of codifying knowledge for reuse. The basic principles of personalization is not to codify knowledge, but rather enable access for employees to interact. Thus making employees available for each other. Individuals create their own knowledge base, and the sharing occurs when interaction takes places, where experience and other tacit knowledge from peers is expressed. Social interaction, collaboration and other forms for cooperative initiatives that requires face-to-face meetings, where both formal and informal knowledge is shared, primarily facilitate this process.

### 4.3.1 Interaction

Interaction is a basic and most relevant activity or process with the personalization or experience based perspective. As the approach perceives knowledge sharing as a learning process, the sharing methods/approaches are based on various teaching approaches. The purpose is to include the knowledge receiver in a knowledge sharing process, where they are based on interaction between individuals. By creation of informal spaces for employees to interact, the organization can encourage an environment, where knowledge is transferred. An example of this approach is the case of *"Bridging the work/social divide: the emotional response to organizational social networking sites"*. Employees were granted access to a social networking platform (SNS), where they were allowed to interact across departments. This provided a much high work morale, but also increased the knowledge sharing, as employees who might not have gotten to know each other, could connect and interact, informally, with their peers (Koch et al, 2012).

**Methods for interaction**

In contrast to the codification approach, personalization produced socially constructed knowledge, in which organization needs knowledge sharing methods to propel this process. Collison et al (2001) provided three different method worth considering. These are the following: *Peer Assist*, *Storytelling and Mentoring* (Collison et al, 2001: p.5). The method are easy ways to facilitate a better access to relevant needed knowledge, when working.

Follows a short description of the methods.

**Peer Assist (PA)**

PA is a method of cooperation that *"brings together groups of peers to elicit feedback on a problem, project or activity, and draw lessons from the participants' knowledge and experience"* (Kstoolkitorg, 2017). The method is rather applicable when:

- An individual has got a new job, and wants to benefit form more experienced people
- Similar problems that other groups has faced
- Small and quick process that does not require long process
- Similar project to other. The planning is the same

For the method to be success, a clear purpose it relevant. In addition, socialization is the main aspect in terms of preceding (Collison et al, 2001).

**Storytelling**

This method is rather appropriate to apply when telling a particular story of a case. The overall purpose is to transmit tacit knowledge that organizations can apply. The process of storytelling is a simple and accessible way of communicating complex and tacit ideas, key messages and lessons learned. The benefits are clearly the inspiration employees get form hearing story, as well as the fostering of community. Story telling develops relationships among people and thus employees (Collison et al, 2001).

**Mentoring**

This process is typically associated when staring at a new job and a mentor is allocated to follow the person. It is a learning relationship between two employees. In this case, mentors are experienced employees who share their knowledge, experience and ideas with less experienced employees or associates (Collison et al, 2001: p.8). This is a rather important and well-applied method, as it contributes with equipping an associate or new employee with confidence, support and in general improves working performance.

Essentially, the above outlined methods necessitates that the experienced employees are sharing their knowledge, and are showing how to complete specific tasks are solved. Knowledge is thereby transferred through human interaction, which can be translated to organizational knowledge in the form of forums and meetings, workshops, instructions, trainee programs and expertise presentation (Collison et al, 2001).

The following section addresses the organizational factors that influence the best-suited knowledge sharing approach for a give organization. Additionally a balance between codification and personalization strategy is described. Finally, the physical infrastructure is displayed, as it plays a significant role in terms of knowledge sharing and knowledge strategy.

# 5.0 Knowledge strategy in an organizational context

In the previous chapters, basic principles of knowledge, and knowledge sharing were discussed, from different perspectives. The following chapter will discuss how an organizational business strategy affects the decision-making in terms of knowledge sharing strategies.

The topic of knowledge creation and sharing is a victim of its environment. In order for them to succeed, it is important to operate in an environment, which supports it in the form of the right social and cultural surroundings. This essentially refers to an organization having the right culture, and a management, which are willing to put in the effort to implement the solution, but also understands how much it requires. Without this, the knowledge sharing and knowledge creation efforts will not be very efficient, and in some cases be completely wasted. Furthermore, it is important to have a wide angled focus, and being able to have multiple balls in the air. Neglecting to understand that one must have an eye for multiple areas, could also lead to failure. This could for example be a very knowledge and IT heavy focus, which in turn would be neglecting knowledge management. Similarly, it could also work the other way around. In order to attain success in this area, one would need a well-defined, and well communicated strategy, consistency from management and the human resources. That is a long time consuming process. The reasoning behind this is because the strategy has much more meaning to it. It is a reflection of the value associated with creating and sharing knowledge for the organization – in other words: very important! If the strategy is poor, sharing and creating knowledge will also be poor, and vice versa.

One way management can enhance their chances of creating a data sharing environment, is simply by including employees in the decision making process. The employees are the ones, who mainly share and create knowledge on a daily basis, so including them would allow for them to give their input, and help form the strategy, as stated as follows:

*"One of the basic conditions of effective knowledge management is to build knowledge oriented culture, where personnel services play the key role. It is the human resources department that has all the information about employees at its disposal, which may turn out to be useful in knowledge management. Employees of human resources department and managers should jointly define what the knowledge-oriented culture should be like and how it should be achieved, and then inform the employees using various forms of communication – indirect and direct, formal and informal"* (Figurska, 2009)

For a modern organization, knowledge becomes a highly important part of their business, and has also been attributed to providing a competitive advantage. However, to understand its actual importance, we turn to Grant (1996), who believed that knowledge was the ”significant competitive asset” that any organization has, which speaks to the importance of knowledge (Grant 1996). That claim is further supported by more researchers such as Spender (1996) who attributed an organizations competitive advantage to the knowledge currently stored, and their ability to generate knowledge. Furthermore, it is only by exploiting limited, intangible and firm specific knowledge that an organization can attain competitive advantages (Spender 1996).

This suggests that attaining competitive advantages only can be achieved through knowledge sharing, and is related to intangible and scarce knowledge. In other words, individuals within the company must share knowledge among themselves.

Understanding the importance of handling the knowledge of the organization properly is an important aspect in improving key organizational parameters such as productivity, creativity and innovation. Choosing the wrong strategy could be counterproductive to these parameters, and vice versa.

The following section will cover an array of correlations between the business strategies, and the type of knowledge strategy, which fits the best.

Some researchers have commented on the correlation between knowledge strategy and business strategy. Researchers published a paper on The Harvard Business Review, and said the following:

*”A company’s knowledge management strategy should reflect its competitive strategy: how it creates value for customers, how that value supports an economic model, and how the company’s people deliver on the value and the economics.”* (Hansen et al, 1999)

The belief is that efficiency is also related to the knowledge and business strategies, and when the knowledge strategy does not support the business strategy, a decrease in efficiency is inevitable. For example, should an organization have a business strategy, which focuses on cost minimizing, and their knowledge strategy does not support that – such as a personalization strategy – then the organization would spend unnecessary time on recycling knowledge, which is inefficient.

The purpose of this chapter is how the organizational best can streamline their knowledge strategy, so that there is a correlation between that and their business strategies.

## 5.1 The interplay between business strategy and knowledge strategy

The role of business strategy is very influential and hence affects the organization in every possible way. Decisions on which markets to engage in, products to develop and general day-to-day activities of the business is influence. The business strategies consequently also affects knowledge sharing and in particular, how it is shared, created and used within organizational context.

### 5.1.1 Knowledge strategies

The knowledge strategy the organization chooses must allow for knowledge to travel freely among employees, so they can access it for whichever purpose they need. One must consider how to ensure this free movement of knowledge, and how to facilitate it.

To ensure this, the organization must be able to implement a strategy, which facilitates knowledge creation, and knowledge storing. The purpose of the chosen strategy, besides encouraging knowledge sharing, is to involve the employees, and for that to succeed, the aforementioned map to creating and storing knowledge must be adhered to. In order to walk this trail, the organization must contemplate on some success criteria such as culture, trust and motivation.

Furthermore, the chosen knowledge strategy must be an extension of the organizations values, strategies, goals etc., as stated as follows:

*"…a mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information…"* (Davenport and Prusak, 2000).

In other words, management must ensure that the knowledge strategy complements the organizations core competencies, and further builds on their mission and vision. This further builds on the notion of the correlation between knowledge strategy and business strategy. In essence, an organizations knowledge strategy is not only an extension of the business, but the strategy itself builds on top of the pre-existing knowledge resources and skills that are in the organization. This is of course to attain a competitive advantage. This is obviously not achievable unless the organization targets and employs the right people with the right skillset.

However, an organization will only go as far as its skilled employees will take them, and the amount of knowledge they possess will directly dictate the organizations decision making in an array of areas such as technology or products:

”A given strategy requires a firm to know a particular set of things in order to execute that strategy; and what the firm knows, in turn, limits the set of strategies that it can effectively execute” (Zack 1999)

Naturally, this means that in order to gain competitive advantages, the organization must seek out new knowledge, while simultaneously properly applying the current existing knowledge to the best of their capabilities (Zack 1999). This paints the picture of a relationship existing between the market, market position and knowledge. The following figure displays that.

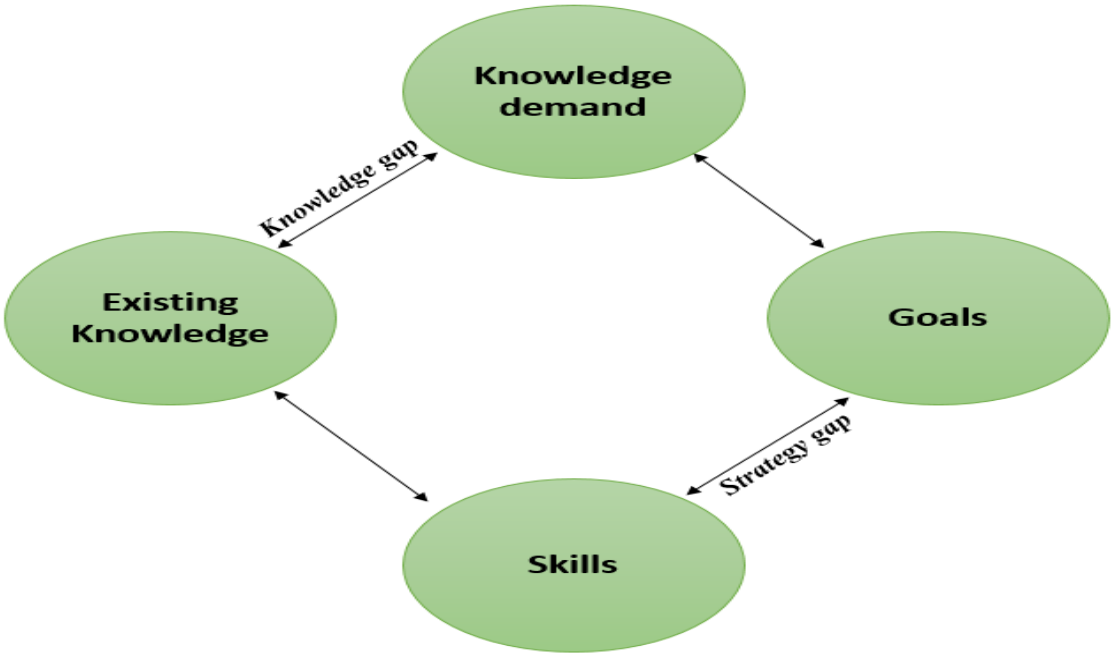



**Figure 8:** *Interaction between strategy and knowledge*

The self-constructed figure illustrates the relations between strategy and knowledge. There are four factors. Knowledge demand, existing knowledge, skills and goals. Depending on what the organization wants to achieve, the type of knowledge needed for that goal can vary. For example, if an organization wants to reduce cost and standardize production, then different knowledge and skills are required in contrast to a customized product or service. The gaps displays the scenario if organizational goals do that does not match its capabilities, then a gap between need knowledge and already existing knowledge exists.

The overall point is that organization can have either surplus or deficit of knowledge, depending of their situation.

The following section emphasizes on creation of knowledge strategy.

### 5.1.2 Creating a knowledge strategy

According to (Aagaard 2005), a knowledge strategy is comprised of four levels, which all support one another, and provides a common strategy and activities for management and employees to adopt to knowledge sharing. The following outlines the four levels.

**Level 1:** In relation to the direction, the organization chooses to go represents their products, specifically how customers benefit from its value and its characteristics.

**Level 2:** Management will inevitably face challenges that relate to knowledge and how to deliver, whatever the knowledge sharing dictates. Furthermore, it also refers to the overall goals, strategy and mission. Some of the challenges that management can face could be issues regarding the knowledge culture, the system, communicating efficiently with their customers in terms of their needs and the knowledge on certain trends, and lastly their competitors.

**Level 3:** The effort refers to the array of challenges management will inevitably face, and how it is broken down to practical approaches and activities. The purpose of these activities is to combat the challenges. This will affect the knowledge resources of the organization, which are employees, customers, processes and technology.

**Level 4:** The last is called ”indications” and refers to the documentation of the activities set out to combat the challenges management are facing. This is a documentation of the status quo, but also how things are evolving.

### 5.1.3 Knowledge sharing requires knowledge culture, trust and motivation

A key premise for knowledge sharing is trust. Without trust, no one would be sharing or accept any shared knowledge. Trust is believed to be the factor, which explains why employees are willing to share knowledge, and receive knowledge, as stated as follows:

*”The study results suggest that the “magic ingredient” that links strong ties and knowledge sharing is trust”* (Levin et al, 2002).

Furthermore, the study makes a distinction between benevolence-based trust and competence-based trust. The first one refers to trusting that someone will not harm you. In the context of a workplace, that would typically be in the form of mass firings or poor management decisions, and will usually result in a more challenged knowledge sharing experienced (Ibid.)

The second one refers to someone trusting another employee to be competent, and trusting the knowledge, which is being shared with him or her. In an organizational context that would typically

result in minimal or no knowledge sharing, as no one would trust the knowledge, which is being shared (Ibid).

Moreover, an employee may know that his colleague is competent (competent based trust), but may not believe they will provide the knowledge needed (benevolence based trust). This is typically evident in older workers, who come from a culture, where the amount of knowledge an individual possessed, the more valuable they were.

To facilitate trust, the organization must work towards establishing a culture, which benefits the entire organization. Everyone must be on board in terms of understanding that sharing knowledge will benefit them all.

The culture is important for the organization to run smoothly. It dictates and decides if any knowledge will be shared, and to what extent. For example, should employees be rewarded for conducting themselves in a specific manner, such as being open to questions, it will automatically send a message throughout the organization that this is the way management wants employees to conduct themselves. Eventually this will become the norm, and become a part of the company culture. Management creates that framework

### 5.1.4 Knowledge sharing and motivation

As humans are different, there is no one right way to motivate them. There is no template that works in all contexts, and on all people. Consequently, it is necessary to apply different approaches to motivate people to share knowledge. However, as different as people may be, there still exist some motivational factors that can be applied, and thereby increase knowledge sharing.

**Benefits**

Employees must see and feel benefits of sharing knowledge. It could be benefits such as:

- Easier access to the knowledge in demand
- Reduced task completion time
- Easier work process
- Better collaboration and team spirit

The aforementioned benefits are only some examples of benefits, and could include many more. It must be made clear that these are benefits that are attainable through formats such as storytelling. This motivates and inspires employees to engage themselves with the new knowledge sharing culture that is being implemented and rooted.

**Recognition and rewarding**

In terms of recognition and rewarding knowledge sharing. One way to dictate behavior and change culture, is to use rewards, and recognize employees for their behavior. When an organization rewards people for a certain type of behavior, it sends a message to the rest of the organization that this is, what management wants. These rewards can be in different formats, both monetary, and non-monetary rewards, such as sponsoring education, promotions, recognition or monetary bonuses.

**Employee involvement.**

Involving people, who will work under the new strategy typically increases motivation and promotes knowledge sharing, as the employees now are a part of the process, and are aware of it. Furthermore, involving employees will engage them in a far better way, as they feel like they created it.

**Education**

The education in applying knowledge sharing tools is a motivational factor, and at the same time a necessity, if the organization wants to achieve the best kind of knowledge sharing.

The above outlines tools, in which management can apply in relation to creating an overall knowledge strategy.

## 5.2 Codification and personalization strategy

According to the article *'what's your strategy for managing knowledge?'* Hansen et al (1999), different approaches to knowledge sharing are described. The authors of the article studied knowledge management practices in companies in different industries. The first focus was to study the management consulting companies such as Ernest & young, Anderson Consulting, Bain, Boston Consulting Group and McKinsey. Because knowledge is the core asset within their field. In addition, the consulting companies were the first to explore the prospect of managing knowledge, as well as implementation of IT solutions to capture and disperse knowledge. Their founding, which is relevant to any organization or company employing knowledge workers and smart people, provides a window into effective and ineffective practices. The roles of consultants differ a lot, and their approach to managing knowledge is quite different. Some are more reliant of face-to-face and one-on-one interactions and dialogues to manage and acquire knowledge, while other are placed in front of a computer and solving task. This scenario does not only concerns the consulting industry, as the article also outlines that computer companies and health care applied different approaches, because of the diversity (Hansen et al, 1999). They found that there is two ways to deal with knowledge, which we

shortly described earlier. That is by codification and personalization strategies. These will be described further in the next section

The organizations that apply the codification strategy views knowledge from a recognition based perspective. Hence they are abiding the codification approach, as described in the previous chapter. The belief is that knowledge is something that can be extracted from individuals, and become available to everyone within the context of the organization. After it has been extracted, the knowledge is made available to other employees. Sharing knowledge within this perspective happens through formats such as memos or policies, and allows for easy access, as stated:

*"An important means to effective management of knowledge flows is the codification of organizational knowledge. When organizations codify their knowledge they package it into formats which facilitate knowledge transfer. Codification can be accomplished in a number of ways such as encoding of organizational knowledge in formulas, codes, expert systems, "spect sheets", or budget information; expressing knowledge in natural language formats, such as reports, memos, or policies; embedding knowledge in physical objects, such as prototypes or technologies, or even depositing it in employees who visit or rotate between different subunits"* (Schulz & Jobe, 1998)

In reference to the aforementioned article, the authors find that consulting groups such as Andersen Consulting and Ernst & Young were pursing the codification strategy. They developed elaborate ways to codify, store, and reuse knowledge. Their approach was referred to "people-to-documents" approach, where knowledge was extracted from the person who developed it, made independent of that person, and reused for various purposes. According to the director of Ernst & Young's Center for Business Knowledge,

*"After removing client-sensitive information, we develop 'knowledge objects' by pulling key pieces of knowledge such as interview guides, work schedules, benchmark data, and market segmentation analyses out of documents and storing them in the electronic repository for people to use"* (Hansen et al, 1999).

This approach enables the company to achieve scale in knowledge reuse and expand businesses.

In contrast, organizations that applies the personalization strategy views knowledge from an experience based perspective. Contrary to the codification strategy, the purpose here is to encourage and facilitate knowledge sharing through interaction. This will create a network within the organization, where people know, where to go to get answers to questions.

*"The personalization strategy refers to the type of a knowledge which an individual develops, stores and shares it in a person to person contact; the main task of IT in this strategy is to help people interact the knowledge rather store it"* (Nouri et al, 2013)

Interacting with colleagues allows people to achieve a deeper insight in to the issues. This is because discussing a problem with others typically will provide different views on the same problem, which makes it crucial for management to provide the means to interact.

In reference to the same article, the outcome was that other consulting companies such as Boston Consulting Group and McKinsey approaches the personalization strategy more. Their focus was primality on dialogue and meetings between individuals, and not codified explicit knowledge. In their case, knowledge could not be codified or at least is very challenging, was often transferred by brainstorming sessions and one-on-one conversations. That approach ensured that consultants collectively arrived at deeper insights to case and problems, as the process facilitated ongoing interaction (Hansen et al, 1999).

The following table illustrates the different characteristics of the two approaches. It accounts for their overall perspectives on knowledge, knowledge sharing aspect and the strategy (Hansen et al., 2005).

| | **Personalization** | **Codification** |
|---|---|---|
| **Knowledge** | - Experience creates knowledge<br>- Knowledge is individual based<br>- Knowledge is tacit | - Knowledge can be codified<br>- Knowledge is objective |
| **Knowledge sharing** | - Knowledge is shared through social interactions | - Knowledge collect, organized and shared |
| **Strategy** | - Personalization<br>- Gather employees and encourage dialogue<br>- Create relations and networks | - Codification<br>- Recycling knowledge<br>- Stocking it and sharing it through IT |

**Table 3:** *Codification and personalization strategies*

### 5.2.1 Choice of knowledge strategy

As we mentioned before, choosing a knowledge strategy is closely related to choosing an overall business strategy. Consequently, the two strategies should be complementary to one another. For the organization, they must explicitly outline in, what way the knowledge strategy is supposed to support the business strategy.

When reaching a point, where the knowledge strategy must be defined, it must be based on the business strategy so that they work together. The knowledge strategy must reflect how the organizations creates value for customers, an economic model supports the created value, and finally, how employees delivers this value to customer (Hansen et al., 2005).

The first aspect is to consider the competitive advantage. According to Porter (1980), there are three main strategies that organizations can apply to achieve competitive advantages. These are the following:

- *Cost minimization*
- *Market focus*
- *Product differentiation*

**Cost minimization strategy**

Cost minimization strategy refers to lowering the cost of products in order to enable a price reduction. This, if done correctly, will strengthen the organizations position on the market, and enable them to excel compared to their competitors. This is achieved by standardizing the products, so that their product or products are standardized or with minimal varying. The competitive advantage occurs due to the correlation between standardized product and standardized knowledge for production. Standardized products means that the organization will manufacture the same product repeatedly, and can then reuse a lot of knowledge in their production. Reusing knowledge results in better and more quality products, which could lead to competitive advantage. However, this does not mean that the organization can remain content and passive with the status quo. The market is constantly evolving, and organization must adapt. Employees can use knowledge as building blocks, and combine it with their skills to create new solutions. This process ensures that the explicit knowledge is constantly being modified, which indeed is necessary in order to maintain a competitive advantages. Therefore, if an organization is based on a cost minimization strategy, their focus must then be codification strategy, as explicit knowledge is the main asset. (Hansen et al., 2005).

**Product differentiation and market focus strategy**

These two strategies are associated with production of customized products and services. This provides the fact that the relevant knowledge needed to produce the customized services can vary a lot. It is often a combination of explicit and tacit knowledge. Consequently, organizations that applies the mentioned strategies will only have little benefit from reusing knowledge, as the knowledge generated in relation to production will be very specific, which thus decreases the value of reuse. Production of customized products is based on a creative and innovative approach and hence the utilization of tacit knowledge. In order to share tacit knowledge, it would necessarily have to happen through dialogue, brainstorming, meetings and other socialization methods. These methods would allow employees to share worldviews and thought on specific issues, where different perspective will occur. Then new knowledge is created and eventually applied in the future production process. This approach is suited to the personalization strategy.

The next section looks at knowledge types.

### 5.2.2 Knowledge types

The organization must consider which type of knowledge will fix their problems. If an employee lack the relevant knowledge to solve a particular case, it is then necessary for that person to acquire it. The organization is the key provider of that knowledge, and with managerial initiatives, this is possible. The management simply have to have a clear strategy of how to acquire it, and the knowledge types needed. That knowledge can be attained from different sources, and management must investigate the knowledge type the primary sources have (Hansen et al., 2005). To this extent, two main considerations in relation to determine the overall strategy must be answered. These are the following:

- What kind of service or product does the organization offer? (standardized of customized)
- What types of knowledge are employees dependent on? Tacit or explicit knowledge?

The following table displays, which knowledge strategy to apply depending on how the above stated considerations are answered:

| | Codification | Personalization |
|---|---|---|
| Product type | Standardized products | Customized Products |
| Type of knowledge | Explicit knowledge | Tacit knowledge |

**Table 4:** *Overview of strategies*

When choosing a particular strategy, it is important to have the full focus and not applied the other one. Applying both would likely fail. However, it is still possible, and in some extent necessary to follow both. Hansen et al, (2005) recommends an 80-20 split, where 80% of the knowledge sharing follows one of the two strategies, and the remaining 20% follows the other (Hansen et al., 2005). Furthermore, the decision of, which knowledge strategy to apply should be taken by management, and applied to the rest of the organization. In other words, a centralized decision, which reaches all units of the organization. This is to ensure that every branch applies the same strategy. This is to avoid an organization, where departments have varying strategies. Finally, it is important to provide the tools to establish an environment that supports the chosen strategy, as discussed earlier in this chapter.

The following section describes the physical infrastructure, and in particular how it affects knowledge sharing, and why it should it be included in the decision making process, when choosing a knowledge strategy.

## 5.3 Physical infrastructure

The physical environment plays a key part in knowledge sharing. Once management has chosen the right knowledge sharing strategy, it is not their job to provide the tools to make it successful. The next step is to account for the physical framework of the workplace, where knowledge sharing takes place.

Organizations exist due to the desire to maximize profit – only with a few exceptions. There are different ways of maximizing profit, but one theory is to retain employees, who possess a great deal of knowledge. This ensures efficiency, as they know how to complete certain tasks the best way possible (Mosbech, 2003).

Mosbech suggests four elements, which need to work in unison in order for the organization to function at its best. Those four elements are *the organization, work place, IT and knowledge*.

The four elements must harmonize in order to create a good environment in the organization. It is not beneficial to have any of the four elements lacking (Ibid.). Furthermore, three stages of development are further explained.

The first step is not very far ahead in terms of the aforementioned four elements. It refers to organizations, which are driven under a hierarchy structure, typical to a few decades ago. It is characterized by the cubicle office setup, and employee's stock knowledge. This is made possible with a great deal of individual work, and little to no collaborative work.

The second step is characterized by projects, and cubicles are no longer viewed as a standard approach. The organization now provides the means to share knowledge. As the individual assignments disappear, new priorities arise. The organization promotes their new priorities with common databases, and work that requires collaboration and team building, and allowing for employees to meet during work hours for informal chatter. Employees who work across the organization are praised. The informal meetings are expected to yield informal knowledge sharing, so that the organization as a whole unit attains more knowledge.

The third and final step is characterized by widespread collaboration. Employees are becoming mobile, and are moving around from department to department. This will naturally create a network within the organization, should they provide the tools for it. Management act as guides, who motivate and serve as role models for employees. All knowledge is accessible to everyone, which means that knowledge sharing is complete.

The premise that knowledge sharing increases efficiency and is profitable confirms that the third step is the most appropriate goal to strive for (Mosbech, 2003).

There is a clear correlation between knowledge sharing and the physical environment. Informal meeting venues facilitate knowledge sharing as employees can safely share with their colleagues. The exclusion of cubicles, which opens offices, also encourages socializing in the offices, which in turn results in increased knowledge sharing. Furthermore, organizations, which have different options of places to meet will also prosper. Examples are offices of different sizes, libraries etc. (Mosbech, 2003)

### 5.3.1 New office decor

As the requirements of organizations constantly change, a new approach to office decor has surfaced and gained a lot of traction. According to Bjerrum & Bødker (2003), the New Office concept is one suggestion to how an office should look in environments, where things change, such as in knowledge heavy organizations. The theory focuses on all functions and possibilities of the organization.

Compared to traditional office decor, the new view differentiates itself in different ways, such as:

- The offices must contain rooms in different sizes, so it can cater to the different needs there may be

- Traditionally the building was just perceived as a building and nothing more. Now it is perceived as something that *can* affect the employees, and is also considered in to strategy decisions
- Now the building is considered a place that can create a lot of opportunities, and is consequently an important of the organization. Management must consider the building, when thinking of strategy

New Office is not about whether the concept has been implemented, but more so *how* it is implemented. The following are six steps to ensure a positive outcome of the implementation of New Office:

1. The decor must reflect the organizations goals and values
2. Management must be exemplary, and must act as role models to employees
3. Employees are consulted in the decision making process
4. The activities and work processes of the organization must be recognizable in the decor
5. IT must be integrated in the decor
6. It is not limited by time, but rather is an indefinite process

The characteristics of what is stated above is the focus on the process, and a correlation between all entities, such as resources, employees and technology. One of the new aspects of New Office is the expansion of conference rooms and their sizes. The obvious purpose of this is the belief that it will encourage knowledge sharing. The specifics are discussed by the authors Bjerrum & Bødker (2003), as follows:

- Should there be walls at all? No walls would open up the space and increase transparency
- Is it necessary to be seated during meetings? Can standing approach be applied?
- The furniture must be flexible so they can be adapted to, whichever need there is

It is difficult to make specific rules and limitations for New Office. The area and space may differ a lot from organization to organization. The key part of New Office is that it focuses on unity, and an increased focus on the spaces. The opportunity are plentiful, and each individual organization must make their own decision, on how to implement New Office the best, according to their own situations. When the organization has decided, the knowledge strategy, it is necessary to have the right tools.

The following chapter will highlight the technological aspects of knowledge sharing, and how it can be facilitated by IT.

# 6.0 Information technology for knowledge management (KM)

Since there are numerous IT solutions for KM, there is a need for organizations to understand the role of IT. The purpose with this section is to look at the role of information technology (IT) for knowledge management (KM), and outline how IT can be applied to acquire and share knowledge. Nonaka's SECI model of organizational knowledge conversion will create the foundation for reviewing certain technologies and tools that can contribute. To this extent, challenges in relation to implementation of knowledge management systems (KMS) are continuously discussed and reviewed. Afterwards, a description of KMS and their characteristics that supports codification and personalization strategies will be described as well. As the purpose is to have an overall view of KMS, the section will primary focus on identification rather than specific technical system review.

## 6.1 Definition of Information Technology (IT)

Before addressing the SECI model, we will begin by defining IT, as it is relevant to have a clear definition.

From a theoretical point of view, any technology that receives, distributes and stores information can be perceived as IT. This makes the concept broad and difficult to clearly define. However, the concept is primarily related to computer technology and thus computer based systems such as software applications and computer hardware (Christensson, P, 2006). According to a study on "*Information Technology Definition*" from the International Knowledge Sharing Platform (IISTE)[3], there is none generally accepted information technology definition, since various definitions have been used in different academic studies (Choo Wou Onn, 2013). The mentioned study emphasizes on various scholar definitions with the objective to conclude a comprehensive definition to fill in the gap. The purpose is not to examine and outline proposed definitions, but rather choose an appropriate one that relates to the thesis subject. According to Attaran, M. (2003)

*"Information technology is defined as capabilities offered to organizations by computers, software applications, and telecommunications to deliver data, information, and knowledge to individuals and processes".*

To this extent, IT is considered a subset of information and communications technology (ICT), which refers to,

[3] http://www.iiste.org/home-international-institute-for-science-technology-and-education-iiste/about-iiste/ (IISTE)

*"technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies"* Christensson, P. (2010).

The term ICT is mostly related to the current information age, where software and hardware applications are connected to the internet, and hence many IT systems are referred to ICT systems. We will however refer to the concept of IT systems.

## 6.2 Interplay between IT and KM

IT and knowledge sharing are closely linked, as IT provides organizations capabilities by offering sets of technical tools to create, gather, store and distribute tacit and explicit knowledge more effectively, and thus also improve business processes through better knowledge creation and sharing (Fareed Hussein et al, 2004). To this extent, IT is perceived as a significant enabler of KM, as without the capabilities offered by IT in terms of storage and communication, the leveraging of knowledge resources would hardly be unlikely (Alavi et al, 2001). Implementation of IT systems to support knowledge sharing is there for a relevant focus area, as these actions would most likely benefit organizations (Wang and Raymond A. Noe, 2009). This is especially important in the 21st century, where the need for rapid and ease access for relevant knowledge is rising immensely.

However, effective IT knowledge sharing systems are not enough to improve the process, as the human factor, organizational processes and procedures are essentially more important aspects to consider (Bush et al, 2000: p.15). Davenport and Prusak (2000) further support this statement, in which they argue that

*"Effective knowledge management cannot take place without extensive behavioral, cultural and organizational change [. . .] Technology alone won't make a person with expertise share with others. Technology alone won't get an employee who is uninterested in seeking knowledge to hop onto a keyboard and searching or browsing"* p.142

Technology alone is unable to succeed in the transformation, as extensive cultural, behavioral and organizational change is needed. The management is encouraged to clearly define and articulate values and purposes to create a framework and environment for KM to succeed. If this does not occur, KM and organizational knowledge learning simply becomes toolkits (Pasteur et al. 2006). The general issue with knowledge sharing is not to develop and adopt a technological solution, but rather create a framework for motivating individuals to share and exchange knowledge (Bush, 2000: p.17).

KM is essentially a people issue, and according to a study from Johan Lammers (2009) on "*The human factor in knowledge management for development: using theories from social psychology to investigate the predictors of knowledge behavior in development organizations",* some main questions lies within the context of whether an organization for example does the following:

- Supports ongoing knowledge creation, sharing and usage
- Provide motivation to create, share and use knowledge
- Provide incentives and rewards
- Establish values, purposes and a culture of openness and mutual respect and support
- Is very hierarchical where 'knowledge is power' and employee are unwilling to share for their own benefit
- Constantly puts pressure on employees to act with no time for knowledge-seeking and sharing
- Inspires to innovate and learn from experience (mistakes and success) (Johan Lammers, 2009: p.128)

These questions are very important to address, as the purpose is to further understand the underlying reasons why individuals engage in knowledge sharing behavior (Lammers, 2009: p.128). However, IT remains a key factor for KM implementation, and for backing of all human activities in organizations and enterprises (Albena et al 2006).

## 6.3 Knowledge Management Systems (KMS)

This section addresses the characteristic and benefits of KMS, and an analysis of identified specific technologies available for knowledge management systems.

While some organizations perceive KMS as classes of information systems, others sees KMS as any information technologies that enable sharing, creation, and knowledge exchange (Gallupe, 2001: p.63). In general, knowledge management systems are collections of information technologies applied to facilitate the processes of collecting, organizing, transferring and distributing knowledge between employees (Alavi et al, 2001: p.114). The literature on organizations applying KMS identifies electronic network technologies (ENT) such as electronic bulletin boards, websites, e-mail, discussion forums and video conferencing, all that facilitates communication and knowledge exchange. Organizations also use systems such as data warehouse, decision support systems (DSS),

content management systems (CMS), document management systems (DMS), knowledge repository, intranet and groupware, which also facilitate knowledge to be communicated and stored for reuse. The above-mentioned categories cover the vast majority of IT systems that are associated with KMS (Alan Frost, 2010). The overall purpose is to enhance and facilitate organizational processes of knowledge creation, codification, and utilization (M. Earl, 2001). In addition, the information systems research field have identified two models associated with KMS. These models corresponds to KM strategies (codification and personalization), in which they can be implemented by organizations to fulfill different needs (Alavi et al, 1999). The two models are referred to as *the repository and network models.*

**Repository model**

The repository model, which is associated with the codification strategy mostly emphasizes on the aspects of codifying and storing knowledge in knowledge bases. The purpose is to facilitate the reuse of knowledge expertise (explicit knowledge) by providing access to stored information. The model can contain explicit knowledge from e.g. presentations, reports, discussions, memos, experiences, comments and reactions (W. Zmud (Ed.), 2000). Davenport and Beers (1998) argue that one of the main objectives of KM projects is to create a repository, in which knowledge repositories at then used to operate the following:

1. Store external knowledge such as market conditions, products and customers relations. These could eventually enhance decision-making.

2. Structure internal knowledge such as manuals, memos and the abovementioned explicit knowledge examples.

3. Store informal internal knowledge such as reports on discussion, lesions learned and eventually best practice

In its essence, electronic knowledge repositories (EKR) to code and share best practices is the most common term to characterize this strategy (Alavi et al, 2001). Conclusively, the repository model refers to the process of knowledge being transferred from individuals to database and database to individuals.

**Network model**

The network model of KMS that is associated with personalization strategy has the purpose of connecting person-to-person and enabling knowledge exchange (W. Zmud (Ed.), 2000). This model is in particular useful when explicit knowledge is uncertain and unclear, and users prefer social interactions and direct communication that benefits their understanding. There are several ways for individuals to interact, and one way is provide links to location of expertise e.g. through information sources and other sources that contain information about i.e. domain knowledge. According to (Alavi et al, 2001) the network model is primarily characterizes by knowledge directories or as they also are called yellow pages. However, as this is a reference from 2001, the information technology field has since then drastically evolved and provide numerous of rapid, easy accessible and smart applications for social interaction and communication. Social media, apps and other just to mention a few. Even though the information technology has evolved significantly, the purpose of the network model remains the same, and systems are still applicable by organizations. Databases on domain experts and profiles are established, where every individual that wishes to seek valuable explicit information and feedback can access these systems easy and effectively, with the aim of solving both simple and complex issues. Community of Practice (CoP) is also highly associated with this model. According to Wenger (2006), CoP is defined as

*"Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly."*(Wenger, 2006: p.1).

CoP are practical and effective method of enable and engage individuals across the organization to socialize and i.e. discuss certain topics. This is the perfect example of personalization approach, as it motivates individuals to share knowledge, discovering new ideas and providing a forum for discussions (Ibid).

The next step is outlining the benefits and key basic features of KMS's.

### 6.3.1 Benefits of KMS

The benefits of KMS's creates the foundation for organizations to consider a KM strategy and implement an enterprise-wide KMS. This is not an easy process, but the benefits of a well-designed system are significant. The following part emphasizes on the benefits of KMS's.

According to a report developed by Dataware Technologies *"Linking People to Knowledge for Bottom Line Results"* and *"DZone Software Blog"* from 2013, the following benefits are identified.

**Awareness**

The organizational knowledge is stored and every employee is aware where to go and find it. This streamlines the process and saves time and effort (Dataware Technologies, p. 11). This is the overall and most relevant benefit, as knowledge that previously resided within single individual is now made available on-demand for the rest in the organization (Chris Smith, 2013)

**Accessibility**

The information is accessible to all in the organization, and everyone can use the "*organization's combined knowledge and experience in the context of their own roles"* (Ibid, p.11). In addition, there is also a greater information accuracy and consistency. That is when employees are able to access and contribute to a comprehensive internal knowledge base, the quality of information improves (Ibid)

**Availability**

The availability aspect is one of the most relevant. The knowledge is accessible and applicable wherever it is needed, also from remote locations. This process provide flexibility, speed and increases responsiveness to all involved parties such as colleagues, customers and others that are relevant both professionally and privately (Ibid, p.11). Moreover, it also enhances employee satisfaction, as some would like to be recognized for sharing knowledge. New employees are also able to be faster integrated and adapted, as there is a great amount of information stored for answering the many questions they might have (Ibid).

**Timeliness**

In the extent of the awareness, accessibility and availability, timeliness makes knowledge available at any time, also remotely. *"Eliminates time-wasting distribution of information"* (Ibid, p.11).

The information technology has evolved significantly since the late 1990, but as outlined, the benefits nevertheless primarily remain the same.

### 6.3.2 Key features of a KMS

KMS tends to have many similar features, although they are developed differently with respect to the particular organization. According to the same report from Dataware Technologies, they share many basic features.

**Openness and Distributed**

As with every other software system, organization must ensure that the information architecture is flexible and open to meet other evolving needs. With standard protocols and application programming interfaces (APIs), the KMS enable integration with other systems such e-mail, groupware and document management. KMS also allows system administrator to enter from remote location by e.g. ActiveX and HTML, and is connect and be distributed across several host computers and physical locations (Dataware Technologies, p. 11-12)

**Customizable**

This is relevant for any organization that whishes customized products, and as the assumption is that most organizations indeed wants customized products, the KMS should be able to provide that by using tools such as HTML and JavaScript. In addition, it allows easy integration of existing and new applications. APIs and software developer toolkits (SDKs) can link systems to each other. (Ibid, *pp. 11-12)*

**Measurable**

A KMS typically includes several tools to measure the system for its usage, apply data process improvement and locate areas of performance bottlenecks. Organization are only able to determine whether KMS systems have the desired effect, if they can quantify and process the results. (Ibid, *pp. 11-12)*

**Secure**

KMS are typically able to provide secure repositories and preserve security models, and allowing access across the organization for all interested parties" (Ibid, *pp. 11-12)*

### 6.3.3 Technologies for enabling KM

As mentioned, IT solutions that has the purpose of systematically influencing the process of organizational learning, and hence facilitating knowledge transfer is the focus of this section. To do so, it is necessary to explore the literature on KM and the software market in order to identify and classify KM tools. This is rather a difficult task, as the majority of literature goes back two-three decades.

According to a Knowledge Management Research Report 1998 conducted by KPMG Management Consulting, there is a wide selection of technologies and applications that are applicable in KM. The report emphasized on key types of technologies, and the reasoning for their adoption. The following figure display the findings, which was based on 100 respondents (companies).

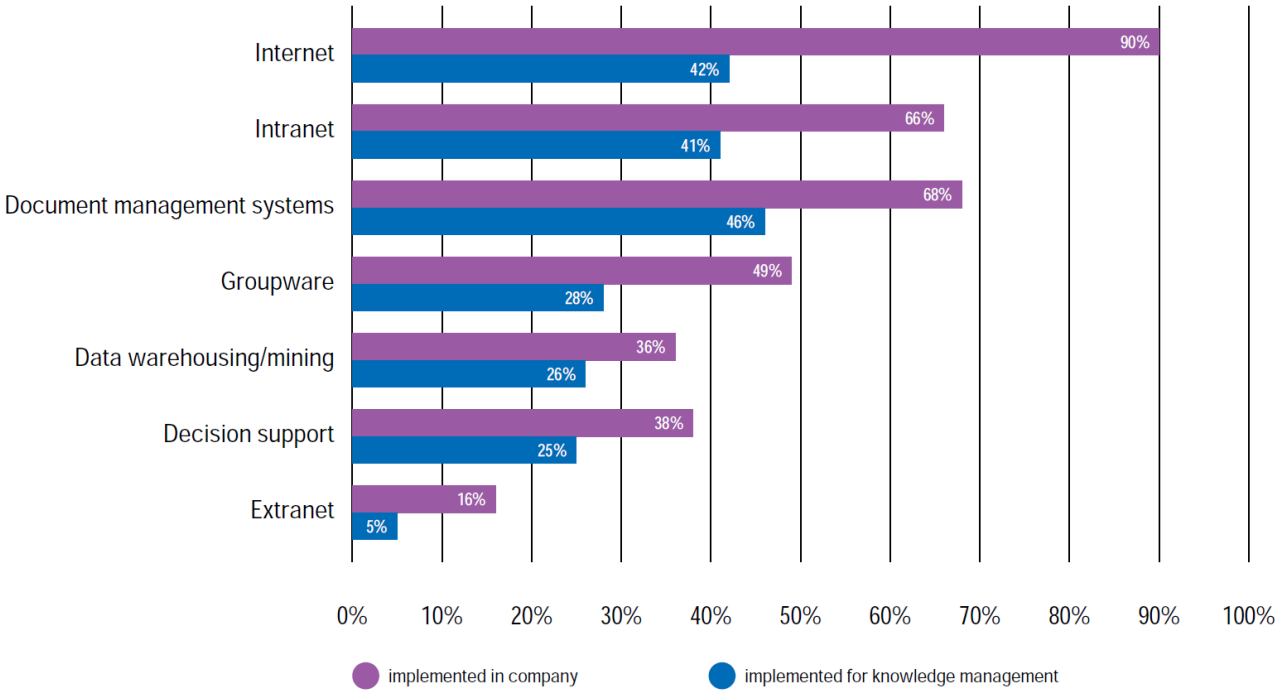



**Figure 9:** *Technological infrastructure*[4]

The figure displays the different implemented KM technological infrastructure both for the particular company and for KM. As the model illustrates, technologies Internet, Intranet, DMS, Groupware, Data Warehousing, Decision support and extranet are weighted high in terms of both KM and the companies as whole. However, in terms of the Internet, 90% of respondents had implemented Internet access for their business, while only 42 % had done so with the purpose of knowledge management. The main take from the figure is the fact that companies are not exploiting the full potential of the technology they have. At that time, much of the technology was new, and organizations began to experiment with different ways of using it (KPMG report, p.11). Davenport and Prusak (2000) argues that investments in technology in terms of both cost and effort should stay under one third of the total knowledge management effort.

[4]The figure is extracted from the Knowledge Management Research Report 1998, pp. 11: http://www.brint.com/papers/submit/knowmgmt.pdf

The main takings from this rather "old" reference is the different KM technological infrastructure or software categories that organizations, at that time had implemented, and the importance of KM in organizations. The assumption is nevertheless that those KM tools remain important today as organizations still implement the solution, but just with a smarter and more refined user interface. The basic key features and benefits remain the same. However, as technology in the last decade has significantly enhanced, modern cloud and web based solutions are popular to apply. That is because of low cost, and none maintenance expense.

The next part look as the Microsoft Office 365 product, as it is one of the most popular cloud based service on the market.

### 6.3.4 Microsoft office 365

Microsoft Office 365 is a cloud and web-based service that is provide by IT company Microsoft. According to Microsoft, Office 365

*"Refers to subscription plans that include access to Office applications plus other productivity services that are enabled over the Internet (cloud services), such as Lync web conferencing and Exchange Online hosted email for business and additional online storage with OneDrive and Skype world minutes for home"*[5].

The product is a service that is subscribed both by private people, but also by small and medium sized organizations. Office 365 supplies the classical and ordinary tools such word, Excel, PowerPoint etc., and most notable cloud and web-based solution such as SharePoint Online and Yammer are also included. The following figure display a friction of the different applications.

**Figure 10:** *Office 365 applications*

[5] http://www.windowscentral.com/what-microsoft-office-365

The figure displays the different application, which all supports knowledge sharing form different views. The interesting applications are SharePoint Online and Yammer, which in this context are technologies for enabling KM. This is primarily because of their ability to facilitate interaction and collaboration between people, and thus enable them to create, store and share knowledge. To this extent, they are perceived as very popular and applied applications by private people, as well as small and medium enterprises.

Yammer is more of a social networking site for organizations, as the tool enhances social workplace for knowledge sharing and social interaction. SharePoint Online is also applicable to enhance social interaction, but the platform is mostly suited to share information and knowledge in codified formats. SharePoint Online simply wot as a cloud based platform, where people or employees have easy access to upload, share and retrieve relevant and applicable information and knowledge. Both Yammer and SharePoint online are applicable and supports both codification and personalization strategies, with Yammers mostly associated with personalization, and SharePoint associated with codification.

## 6.4 The SECI Model

The following part examines how some of the above outlined technologies and tools might be applied to facilitate SECI knowledge conversion processes, *socialization, externalization, combination and internalization,* and in particular the aspects that influence knowledge sharing through these processes.

### 6.4.1 Socialization (Tacit to Tacit)

According to Nonaka and Takeuchi (1995), socialization occur when individual shares tacit knowledge directly with one another or trough face to face interactions such as observations, shared experiences, opinions, ideas, practice and other informal contact. Traditionally this process does not require IT, but with the latest technological emergent, IT can be applied to support the process. Groupware is a well-known and applied software technology to support the socialization process. Its overall purpose is to supplement or completely replace traditional physical face-to-face meetings (Marwick, 2001). It is moreover associated with the field of Computer-Supported Cooperative Work (CSCW), which examines the design, adoption, and use of groupware. According to Ellis and Wainer (1999) groupware is defined as *"Computing and communications technology based systems that assist groups of participants, and help to support a shared environment" pp. 17.* The technology is designed to facilitate group work, while individuals are located remotely from each other. One of the first commercial groupware products was IBMs Lotus Notes, which emerged in the early 1990's with

the purpose of enhancing remote group collaborations. Some other classical groupware services include calendar sharing, email handling, shared database access and collaborative writing (Margaret Rouse, 2005) i.e. Google docs – which lately has obtained great popularity (Wenyi Zhou et al, 2012). According to Ronald M. Baecker (1994), groupware is typically categorized into two primary dimensions - *synchronous groupware and asynchronous groupware.* .

1. Synchronous groupware refers to the applications that allows group of individuals who are remotely separated to interact with each other using "real time". The aspect of real time is fundamental in synchronous groupware, as the user interface provides real time feeling of togetherness through e.g. shared audio channels.

2. Asynchronous groupware is associated with emails, structured massages, file sharing systems, collaborative writing among others. In contrast to synchronous groupware, asynchronous groupware enables and facilitates collaboration between users that are physically and geographically dispersed in different times.

As we know it today, the widespread use of groupware on the internet has helped the development of Web 2.0, which is associated with technologies such as instant messaging, web conferencing and document sharing among others.

Because of the broad definition, groupware software technology is perceived to support all four phases in the model. However, the focus remains on how the technology is related and supports socialization.

The most relevant aspects of socialization are shared experiences and trust (Marwick, 2001). Shared experiences are enabled through asynchronous groupware in virtual environments, where participants can e.g. share documents, discuss various topics and view presentations. These events actually primarily supports the combination process. However, discussions of explicit knowledge is to some extent a shared experience. In terms of synchronous groupware and hence group work, online meetings by video and audio conference, and text-based meeting such as chat forums are very useful and popular. One of the main advantages with text-based meetings is the flexibility aspects. Users are able to respond whenever and wherever, as the massage is delivered and stored. They are also not stressed to deliver instant answer and hence have the opportunity to provide more qualified response. On the other hand, online meeting by video and voice conference are more personal and in real time.

The perception is that they can replace physical meeting and hence provide better condition for the socialization process. However, according to McDermott (2000), these activities cannot entirely replace psychical meetings, as they lack the social and psychical presence. In addition, IT is unable to produce norms for documentation and knowledge sharing, but rather merely strengthen the already existing ones. In addition, to create an effective cooperation between virtual teams, it is important to build a healthy relationship through a mixture of virtual communication and psychical face-to-face interaction (Walsham, 2001). This process requires a trust aspect, which is the second import factor in socialization process. The trust factor is primarily associated with the usage of the IT system, as users need to trust that the system lives up to the requirements and provide information with integrity. Marwick (2001) argues that video conferencing are most reliable and trustworthy, while audio and text based systems lack trustworthiness due to possible misinterpreted knowledge and impersonal interaction.

### 6.4.2 Externalization (Tacit to Explicit)

According to Nonaka and Takeuchi (1995), metaphors, analogues, and dialogue are methods for externalization, and hence the conversion of tacit and human capital into explicit and structural capital. They refer to groupware and annotations as technologies that can support externalization of tacit knowledge. Annotations are considered as one of the most effective techniques for knowledge capitalization. More precisely, annotations refer to protocols of navigation, citation actions, and other interactions with documents related to expertise. When an annotator annotates a document, the person externalize personal and tacit knowledge, making it accessible to others (Azouaou, 2006). Annotations may also contribute to the socialization mode, as the reuse and exploitation of annotations creates new tacit knowledge, which is then shared and discussed (Ibid)

In terms of groupware, collaboration through both asynchronous and synchronous online discussions can support the process. However, there is no indication that groupware technologies initiates and guides externalization processes (Brown & Duguid, 1999). Specialized brainstorm applications that can be integrated into groupware is also a possibility (Marwick, 2001). To make the applications most effective, it is essential that online discussions allow formulation and sharing of metaphors, and analogies. The rhetoric and tone in discussions should be informal, which is mostly supported by synchronous applications such as chat and video conferencing.

Externalization can also be done through online communication tools such as newsgroups and discussions forums. They allow users to view and post messages online, based on common interests

that they may have. Newsgroup is defined as an internet-based discussion, and a repository of electronic messages, which are posted by users and managed by the Usenet system (Christensson, 2006). The process consist of users posting massages to a news server which then relocates the massages to other participating servers. Users are then able to access the newsgroup and read the postings. In addition, users or groups can be become moderated and decide which postings will become part of a discussion. Unmoderated role on the other hand limits users to control the massages, and everything that is posted is included in the discussion. Discussion forums are similar to newsgroup with the exception of users has to register to participate. They are typically allowed to read massages, but a subscription is required if they wants to post a massage (Christensson, 2011). However, these communication tools enables participant to formulate tacit knowledge that can be converted to explicit (Smith and Viégas, 2004). The main difference with groupware and newsgroup is the personal interaction factor, as the participants in newsgroup are usually unknown to each other. They could be incentivized to share knowledge to gain positive feedback and be perceived as a domain expert.

### 6.4.3 Combination (Explicit to Explicit)

Combination process refers to the scenario where explicit knowledge is converted to explicit knowledge. Explicit knowledge is collected from various sources, both internal and external, and combined, edited or processed to form new knowledge, which then is dispersed among members of the organization (Nonaka and Takeuchi, 1995). To support this process, Intranet-Based Systems (IBS) or simply *the intranet* is the most efficient KM software category, as it provides proper tools to structure explicit knowledge that is dispersed through departments. Steven I Telleen. (1998) defines the intranet

*"as an infrastructure based on Internet standards and technologies that supports sharing of content within a limited and well-defined group." The "infrastructure" referred to the organizational and management infrastructure that created, managed, and shared the content. The only technical constraint was that the physical network be based on the Internetworking Protocol (IP)".*

Software applications within the intranet are surrounded by a firewall that rejects unauthorized access and usage. Moreover, the technology is rather appealing and cost effective, as it benefits from the increasing development of Web-based technologies. Microsoft SharePoint is the leading software when developing intranets, and is mostly associated web-based knowledge sharing and document management portals. According to recent poll on *"The technology your intranet is based on"* from

2012, the results estimates that approximately 50% of all intranets are developed using SharePoint (Typepad, July 30, 2012). However, there are numerous other alternative technologies to SharePoint, which this thesis has chosen to neglect. The main pros with the intranet is the hypertext structure that eases the navigation between various information sources, and facilitates the sharing of the dynamic and linked information (Carvalho et al, 2001). The intranet simply enables and facilitates collaboration and communication, and share documents in real time (Eisenhauer, 2015). This further supports the combination process with the help of tools from Microsoft Office (MS) and Open Office (OO) with i.e. work, excel and PowerPoint. MS and OO contain various different, relevant and user-friendly functionalities that enables knowledge to be stored in electronic format (document) and dispersed in organizations through e.g. e-mail, document databases and web portals (Marwick, 2001)

Groupware technologies can also be applied to collect and store knowledge, as posts, files and tacit knowledge, which eventually is converted to explicit knowledge through i.e. discussions, is available for members.

Apart from the above mentioned, collection of knowledge is also possible through video and audio formats. These are more famously referred to as webcast and podcast. In contrast to text-based collection of knowledge, this technology provides opportunities of collecting more tacit knowledge, as participants usually provides more institutive answers and hence more tacit information. The technologies are flexible, free, conveniently and timesaving, which is supported by the assumption that audio and video files are easier and more convenient that i.e. written text. However, one of the major cons is the searching dimension, as it is more complex to search for information in a video and audio file. It is generally significantly easier to search in electronic documents and other formats where the information knowledge is down in text format. The searching dimension is indeed the most important aspect of the combination phase, which substantiates the fact that text based tools are more applicable in this sense. It is therefore important to emphasize on the searching dimension and outline the importance.

According to a study conducted by McKinsey Global Institute on "*The social economy: Unlocking value and productivity through social technologies',* knowledge workers use 28 percent of the working week to handle e-mails, and 20 percent to search for information and collaboration across the company. The purpose of the study was to test the assumption that social media technologies i.e. (communication, collaboration and knowledge sharing inspired by social media) is one way of streamlining collaboration and communication. About 4200 managers participated in the study.

The overall conclusion from the study is as following:

- *"Skilled knowledge workers spend 28 % of time each week to write emails and search for information and collaborate internally.*
- *By adopting social media technology (SMT), organization and businesses are able to increase productivity level for highly qualified knowledge workers and managers by 20 - 25 %.*
- *2/3 of the potential benefits of social media technologies can be found in the collaboration and communication alone.*
- *20 % of working time spent to search for internal information and colleagues*
- *SMT can reduce searching time by 35 %*
- *90 % of companies that use technology from social media report gains"* (pp. the article)

The study concludes that companies and organizations can increase employee productivity level by 20-25 percentage if they fully adopt social media technologies. This includes both high skilled knowledge workers and managers. The study also displays the importance of providing user-friendly technologies to increase employee productivity and knowledge sharing. In relation to the combination phase, searching for explicit knowledge is enhanced by social media technologies, where the knowledge is converted and extracted effectively and rapidly.

Another study conducted by IDC's Global IT on the importance of searching for information concluded that there is a relative significant waste of time searching for information. According to the article "*The High Cost of Not Finding Information*" by (Feldman & Sherman, 2004), the survey began in 2001 by gathering data on the cost of not finding information, where the purpose was to explore knowledge worker productivity.

In relation to the subject, the most important outcome from the survey was as follows:

- *"Knowledge workers spend 15% to 35% of their working time searching for information.*
- *50 % of the time or less, searchers manages to find what they seek.*
- *40% of corporate users replied that they could not find the information required on the intranet to perform jobwise"* (pp. the article)

The study also shows that great amount of time is spent for information search, and to streamline this process it is required that time waste is reduced. This can again be addressed by adoption of KMS, and also apply an improved search engine that supports various different search options such as local search, department specific search and team specific search.

### 6.4.4 Internalization (Explicit to Tacit)

The internalization process refers to newly created explicit knowledge conversion into tacit knowledge. It is indeed closely related to the concept of "learning by doing". According to Jane Henry (2001), when experiences and practices through socialization, externalization and combination are internalized into individual's tacit knowledge, they become valuable assets. Solutions enabled by IT to facilitate the internalization process are very valuable to organizations, as the acquisition of tacit knowledge is a necessary factor for constructive actions (Marwick, 2001). The internalization and externalization processes have different purposes, but they nevertheless are supported by similar IT solutions such as E-mail, MS and Open office tools, electronic discussion forums and groupware.

Apart from the mentioned IT tools, internalization can also be facilitated through modern web solution such as e learning and distance education. A study on "*Distance education and e-learning: Not the same thing*", states that the two terms are being used "*interchangeably as synonyms, emphasizing the continuous blurring of boundaries between conventional and distance education"* (Sarah Guri-Rosenblit, 2005). The idea of distance education is to assemble students from dispersed locations in one place, and reach out to others wherever they live or wish to study. This definition emphasizes on the aspect of learning remotely without interacting physically and face-to-face in the same environment. In addition, this is perceived of a modern way of acquiring the needed knowledge, which further is supported by ICT and independent of internet connection. The participating parties are interconnected and the transmission is in real time. E-learning is on the other hand a relative new concept and relates to usage of electronic media for learning various subjects independently of others, time and space. The only requirements needed are electronic media and access to the wanted course. Organization can apply these services and internalize knowledge cost-effectively, as it is cheap, simple, quick and effective.

### 6.4.5 Summary of the four phases

This part summarizes the section and emphasized on the KM software categories, and some tools, techniques within the categories that supports different phases in the SECI model.

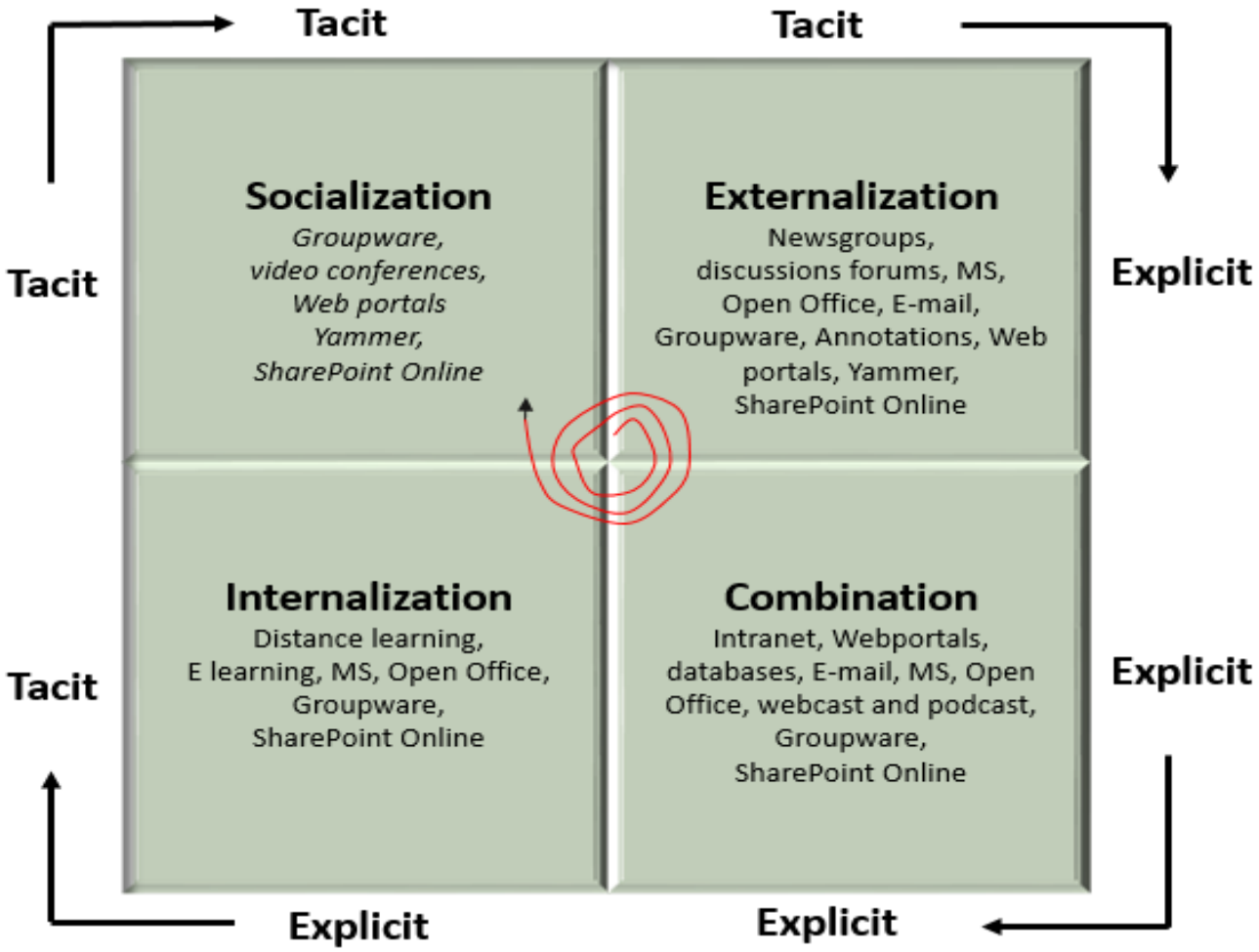



**Figure 11:** *SECI model containing technologies and tools*

As the model displays, KM software technologies such as groupware is positioned in every phase, as it can support the phases through services such as video conferencing, calendar sharing, email handling, electronic meetings, collective writing (Google docs) and shared database access. SharePoint Online is also positioned in every phase, and it is the basis for intranet solution. Otherwise, there are several tools to apply in every single phase.

## 6.5 How to manage knowledge with IT

The above review of SECI model phases are important in relation to creation of organizational knowledge, and IT has to be adopted to support, manage and maintain the process. However, to manage knowledge is not solely to collect, store, document and distribute. It is rather significantly more important to manage and facilitate the process of generating new knowledge, in which is primarily done in a social interaction process between individuals (Bush et al, 2000). As mentioned, this process is enabled by a structured use of IT systems, where a combination of asynchronous communication and search facilities makes it possible for individuals to supply knowledge at specific time, and for others to apply this produced knowledge at any time (Bush et al 2000: p. 13). Without the use of IT, this process would not be possible, which further more supports the emerging importance of IT adoption for knowledge sharing. According to Bush et al (2000), knowledge management can be divided into three parts, *collection of external knowledge*, *internal knowledge management, and generation of new knowledge.*

**Collection of external knowledge**

From a historical perspective, external knowledge has not been prioritized when developing new IT systems for knowledge storage and classification of internal data. However, external knowledge is important for the development of organizations, and a structured process is required to effectively exploit knowledge resources. The internet has enabled an easy and effective road to collection of explicit knowledge, and at the same time created an unmanageable environment due to the endless information sources. Experts who searches for the needed explicit knowledge are encouraged to use recognize scientific journals or specific community cites, as the information has a higher level of reliability. The collection can be done through ether automatic extraction or news feeds/overviews from the sources. It is afterwards important to assess the extracted knowledge whether it is useful and relevant, and eventually integrate it as internal knowledge resource (Bush et al, 2000: p. 21),

**Internal knowledge management**

Managing internal knowledge resources refers to picking up produced knowledge and information, and the ability to use it when needed. Moreover, it is also important to sustain the internal resources with useful and updated information and knowledge. The following table outlines processes, which IT systems have to support, in order to effectively manage knowledge resources.

| PROCESS | CONTENT |
|---|---|
| *Pick up* | IT has to support the aspect of identifying and extracting external knowledge, and support by provide tools for documenting when the knowledge was generated |
| *Classification and structure* | IT acts as automation process on the intranet, and provide supporting tools to facilitate the choices of classes and structure |
| *Formatting* | IT provide different independent media formats for reuse |
| *Storage* | In relation to security, backup, quantity |
| *Maintenance - Tracking and Review* | The knowledge owner has to continuously and automatically be notified on updates in relation to context, validity and applicability of the knowledge |
| *Search* | Advanced, limited, specific, free and structured searching |
| *Distribution* | Availability and flexibility in terms of geography |
| *Contact* | Overview of the contact information |
| *Communication* | IT enables facilitation of real-time and asynchronous communication |

**Table 5:** *Processes that must be supported by IT systems* (Inspired by Bush et al, 2000: p. 21)

The effectively level depends on the well the IT system support the process. The better the processes are supported, the better chances of increased effectivity.

**Generation of new knowledge**

Knowledge tends to become outdated, which emphasizes on the importance of generating new knowledge. Knowledge is very valuable, and if organizations are to sustain competitive advantage, they have to generate and acquire knowledge progressively. By innovation, organizations enables to generate new knowledge primarily through social interaction between individuals. The role of IT in this particular scenario is to facilitate meetings and other social interaction activities, which supports the fact that IT acts as a supportive tool. IT tools such as chat and discussion forums, brainstorming applications and other communications channels exemplifies the innovation process (Bush et al, 2000).

# 7.0 Summary

The purpose with this chapter was to create a theoretical framework for the case analysis, where theories and concepts on knowledge sharing, knowledge management (KM) and knowledge management systems (KMS) was outlined. Because knowledge is perceived as an essential asset for organizations, it was rather important to clearly define the concept of knowledge, information and data, and provide a correlation between them. The interpretation of data and information creates knowledge, which then can be applied in decision-making process. Tacit and explicit knowledge are both relevant in the creation of organization knowledge, which can be supported by Nonaka's and Takeuchi (1995) SECI model of knowledge conversion. The model clearly explains how tacit and explicit knowledge are converted into organizational knowledge by distinguishing four knowledge dimensions - *socialization, externalization, combination, and internalization.* This process can primarily be supported by KMS, which are collections of information technologies applied to facilitate the processes of collecting, organizing, transferring and distributing knowledge (tacit/explicit) between individuals. To this extent, some of the central and popular KMS are groupware and SharePoint. However, it is rather important to identify and propose a clear KM strategy. Codification and personalization strategies are two different approaches within KM, but theories recommend that they complement each other to become more successful. An 80/20 strategy split is recommended, where 80% of the knowledge sharing follows one of the two strategies, whereas the remaining 20% follows the other. In addition, theories also suggest centralizing one particular strategy for the entire organization.

The following chapter takes on the introduction to the case organization and the analysis of the collected empirical data.

# 8.0 Introduction to case organization

Before taking on the analysis section, the perceptions is that it is necessary to outline a short description of the Copenhagen municipality and the Technical and Environmental Administration, in order to understand the complete case context. The building application process and the processing time will additionally be outline in order to have the full overview.

## 8.1 Copenhagen municipality

Copenhagen municipality is publicly administrated and Denmarks biggest and most populated municipality. It consist of the districts of Oesterbro, Vesterbro, Noerrebro, Amager (Cph S) among others. In recent years, it has experienced strong population growth and is expected to proceed to the year 2031, in which it will rise to 714.550 citizens. It is also Denmark biggest working place, as it employs approximately 45.000 employees (Appendix 2: Population projections)

**Administrations**

Copenhagen municipality has seven administrations in which every administration solves tasks within their respective areas. These are the following:

| Administrations | Focus areas |
|---|---|
| *Employment and Integration Administration* | Responsibility to help the unemployed in jobs and education. |
| *Children and Youth Administration* | Operates and develops day-care facilities, schools, leisure activities, and special and health services. |
| *Culture and Leisure Administration* | Within the city's sports facilities, swimming and skating halls, cultural centers, libraries and museums. Citizens are also part of the management. |
| *Social Administration* | We take care of socially disadvantaged, vulnerable and disabled people in the capita |
| *Health and Care Administration* | Offers health care. Caretaker for citizens over 65 years. |
| *Finance Administration* | Has overall responsibility for finance and urban development |
| ***Technical and Environmental Administration*** | ***Has the responsibility of managing and developing the city for the benefit of citizens, users and industry.*** |

**Table 6:** Administrations[6] (Content inspired by the source)

[6] http://www.kk.dk/indhold/forvaltninger?nm_extag=et%2Clink%2CCFLB

In our context, we will focus on the *Technical and Environmental Administration.* The administration consist of four service areas which are *Center for Parking, Center for Traffic and Urban Life, **Center for Buildings** and Center for Environment Protection* (Appendix 3 & 4).

## 8.2 Center for buildings

Center for buildings (CFB) is a department within the *Technical and Environmental Administration* in Copenhagen municipality. The primarily purpose of the center is to process or casework all incoming building and construction projects applied by citizens of Copenhagen municipality and companies. The department is divided into six units with different focus and geographical areas. These are outlined in the following figure.

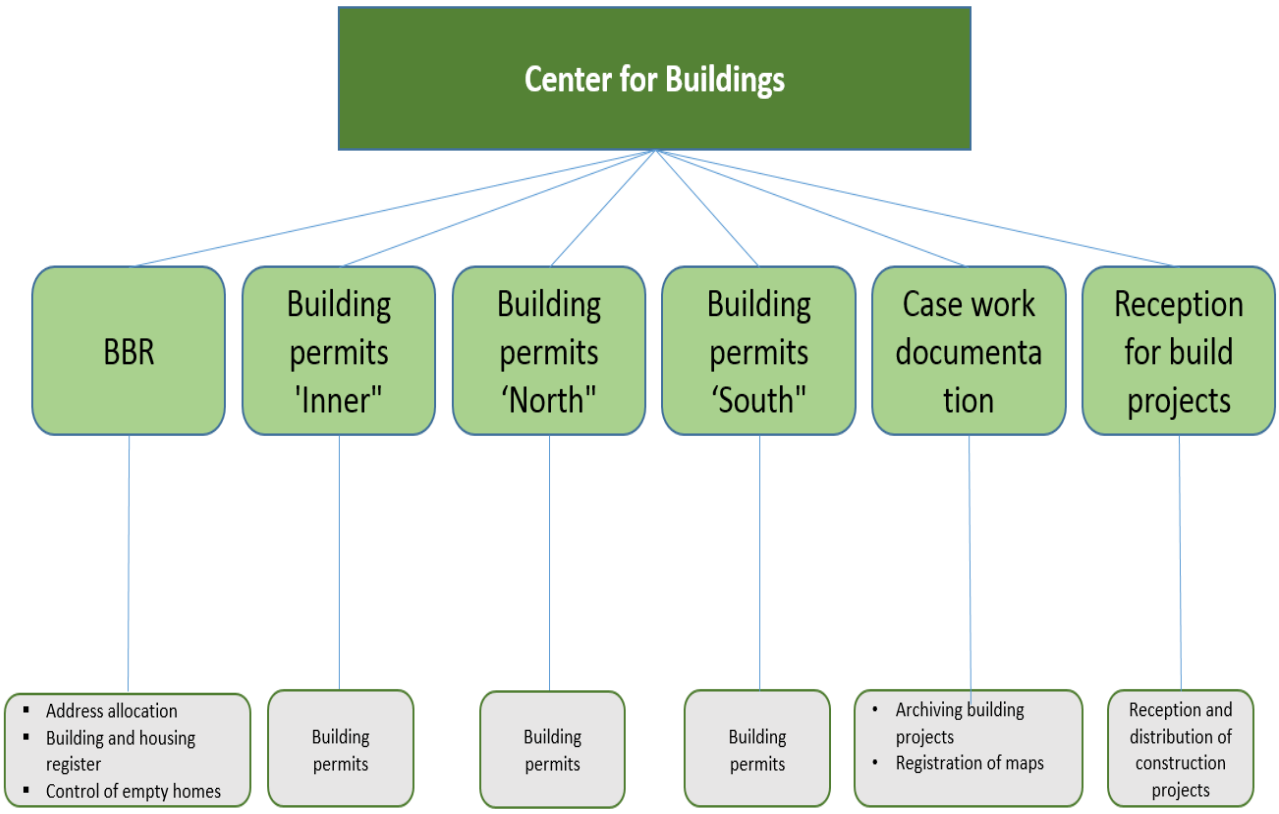



**Figure 12:** *Center for buildings*
*(Inspired by appendix 3: Departments and Units)*

As the figure illustrates, there are six units, but with three overall focus areas. The units for building permits '*Inner, North and South*' deals with case processing of incoming building projects, and more precisely, providing permits for constructions (building permits). All the incoming applications from citizens and companies are reviewed and proceed by employees within the units. The employees are typically architects, engineers and lawyers. The unit for building permits 'Inner' operates within the

central Copenhagen. The unit for building permits 'South' operates in the southern district of Copenhagen, which is primarily Copenhagen S and Amager, while the unit for building permits 'North' operates in the northern district of Copenhagen. This is primarily the areas of Oesterbro and Nordhavn. The other three units *BBR, Casework documentation* and *Reception for build project* are more of administrative manner. BBR for e.g. process address allocation, and the building and housing register. The entire center employs about 250 people (Source: Interview 1).

## 8.3 The building application process

In order to understand the entire context, a short description of the general building application process is provided.

Before starting the building process, the applicant has to have a building permit, which can be applied digitally through Byg and Miljoe. It is a self-service system supports the application process and provides an overview of the required document and information needed to case process the building or environmental application.

The following figure illustrates the application process.

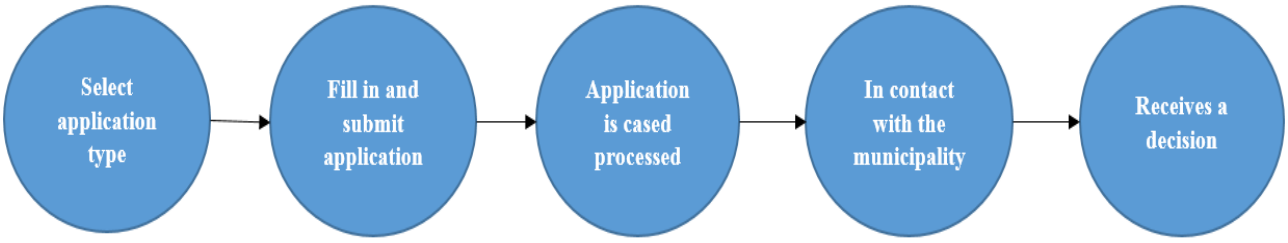



**Figure 13:** *Building application process (Inspired by Byg and Miljoe)*

As the figure shows, an applicant have to select an application type, which could be extending a carport, rebuilding, new building etc. Once tan application type is chosen, the system provides a list of information and documentation that the municipality needs in order to case process the application. Afterward the application is processed, but only if the needed information and documentation are submitted. Then the caseworker will contact the applicant for further information. Finally, a decision is made on whether there is issued a building permit or the application is rejected for some reason.

### 8.3.1 Case processing time

Case processing time is relevant to consider. Knowledge sharing is an important factor when looking at the case processing time, because if the caseworker does not know how to case process or lack information and knowledge, that it is important to equip him or her with the relevant information. Copenhagen municipality has outlined some general service goals in terms of processing the incoming application. The processing time is an expression of the expected total time needed to process the case until a decision is provided.

**The following service goals are outlined:**

- *The service goal in relation to new building, extensions or rebuilding.*
  For example if the application is about a new carport, balcony or a completely new house, then the case processing time is 40 days.

- *The service goal for housing and condo building (construction)*
  If the application is about a housing apartment or a condo, where the applicant wishes to renovate, then the case processing time is 60 days. This is in relation to private citizens.

- *Service goal for apartment building from company and industry perspective.*
  If the application refers to building apartments for companies, then the case processing time is 55 days. For industry and warehouses, it is 50 days[7].

The most important aspect in relation to the case processing time is the deficient application, which always will extent it. However, this is an external factor. From the Units perspective, adequate and improved knowledge sharing can have a positive effect on the case processing. If that occur than it is less stressful and the case process is facilitated.

[7] http://www.kk.dk/artikel/sagsbehandlingstid-paa-byggesager

## 8.4 Case description - *Unit for building permits 'North'*

As mentioned in the problem area, the *unit for building permits 'North'* will serve as a case study, and the following part intends to provide a more in-depth description of the case.

The Unit consist of so-called knowledge workers, as almost every employee is highly educated, self-driven, goal oriented and focuses in delivering at the highest level. Employees are divided into groups of professionals, which in this case are architects, engineers, lawyers and administrative employees. Presently there are about 55 employees of which 25 are architects, 20 are engineers (building constructers), 3 are lawyers and 7 are administrative employees. They all have the purpose of case processing the incoming building application from either citizens or companies within the Copenhagen municipality. Applications may relate to either rebuilding, extensions or new building projects. Subsequently it is assessed whether the application can be approved, where a building permit then is issued. If not approved, the case is either completely rejected or put on hold for more information from the applicant. In order to threat this process and provide the best possible service, a standard set of knowledgebase combined with experience and best practices is required. The groups work together but mostly within their own professional group. In many cases architects and architects are working together to solve a particular case, and only if needed e.g. legal help, which they themselves not can solve, than a lawyer is advised. To support this process they are also reliant on a limited knowledge sharing system, which in this case is composed of word documents in a folder structure. The documents contain information and knowledge, which can be applied to case process the application, where e.g. standard building laws and basic procedures among others are written down. When cases have similar characteristics, then this process is applicable, and the system often contain enough relevant information and knowledge. However, the content is very often outdated and unstructured, which results in an ineffective navigation process. Employees can use mush of their working time navigating throughout word documents in searching for the needed information, often resulting in either not finding anything or finding outdated information. That is in particular within the building legislation, where lawyers are finding it hard to locate the relevant information that matters today. The system is therefor perceived as very simplistic, ineffective and hard to apply. Only 'the document owner' can access the relevant document, as they normally know where it is placed. Otherwise, there is none structure of how things are done, documents placed or who has the right to place updated or new information and knowledge. In general there is no clear strategy of how to administrate the current folder structure.

However, another aspect to the case process is that cases often can vary, depending of its form. There are many different types of cases ranging from ordinary family housing to big constructions, where a citizens e.g. wants to extent their house, build a carport or even unsubscribe an oil tank. In this case, to case process and eventually provide a permits, requires collaboration and instant knowledge sharing. A knowledge base, where information and knowledge is stored, is often very applicable to find relevant standard information, but as cases evolve and get more complex the knowledge sharing system is then challenged, as other factors are needed to continue the process. This brings us to the fact that both the knowledge sharing system and the knowledge sharing factors influencing the case process need to be revised.

The following part addresses the role of employees at the Unit, with the purpose to better understand the context in which they work in. Moreover, an organizational structure will be displayed to outline the hierarchical position.

### 8.4.1 Employees

The unit consist of groups of professionals, where employees are permanently employed, and most of them are between 30-50 years old. Currently there is a major employee turnover, which always is an issue, and in particular when considering the knowledge dimension. When certain employees leave, then a lot of knowledge is in danger of leaving as well. According to the head of unit:

*"At the moment we have a lot of new and young employees, which is nice, but as there is a major turnover, we need make sure that the knowledge they have stays with us"* (Interview 1).

The Unit is experiencing challenges in terms turnover, but also in terms of adopting new employees to the job function. This aspect emphasizes on the fact that much knowledge has to be stored and be accessible, so newcomers easily can adapt, become self-driven and know "what to do". The head of unit also expressed the great desire of the young and new to collaborate when case processing.

*"I think the new employees and especially the young ones are very good at adopting and learning quick. They are very good at socializing and easily gets into groups, where they talk and help each other. But they also use the system to find much of the basic information, in which they need"* (Interview 1).

Respondent #2 also supported this by stating*:*

*" I think that the new generation is more willing to collaborate then to compete, which is nice. The older ones could be more reluctant to share and collaborate. That's just how I see it"* (Interview 2).

The working environment between employees is flexible, as some like to work more for themselves, while others, mostly new comers, are more into socialization and collaboration.

**Working roles**

The roles of the employees reflect their education, experience and interest areas. As mentioned, they are more or less all highly educated and working within their respective interest areas. In its broad context, all employees are caseworkers, but with different tasks and perspectives.

- **An architect** who is categorized as a "builder" processes cases regarding building projects and provides building permits. His or her job is to review and asses the application regarding the building plan and drawings, and assess in relation to e.g. the building law and requirements.

- **An engineer** who in this case is categorized as a construction engineer provides construction permits to build. He or she often supports architects, but also case process applications. Their function is more related to static measurements, where math and other static knowledge and expertise is required.

- **A lawyer's** function is to provide knowledge with the latest legislations on different cases. They often assist the other groups, which is their biggest contribution.

- **A supervisor's** role is to check on the constructions processes and assess whether it lives up to the requirements, legislation and in general the permit given. Either architect or engineers often occupy a supervisor role, because they usually provides the build permit, and then they are responsible that the building process runs according to the agreement.

- **Administrative workers** make sure that the newest received data is registered and maintained. In addition, they also put together the case and write a professional letter to the applicant.

- **A project manager** is external, but in some cases involved in projects within the Unit. They are often one of the group members.

### 8.4.2 Structure of the Unit

The structure of the Unit is flat. According to the head of unit, *"There is no hierarchy. There is flat structure. Everyone has different tasks" (Interview 1).* There is none hierarchical position, besides that opinions and recommendations from more experienced employees often has higher weight. However, they are not formally positioned within the Unit, which is displayed in the following figure.

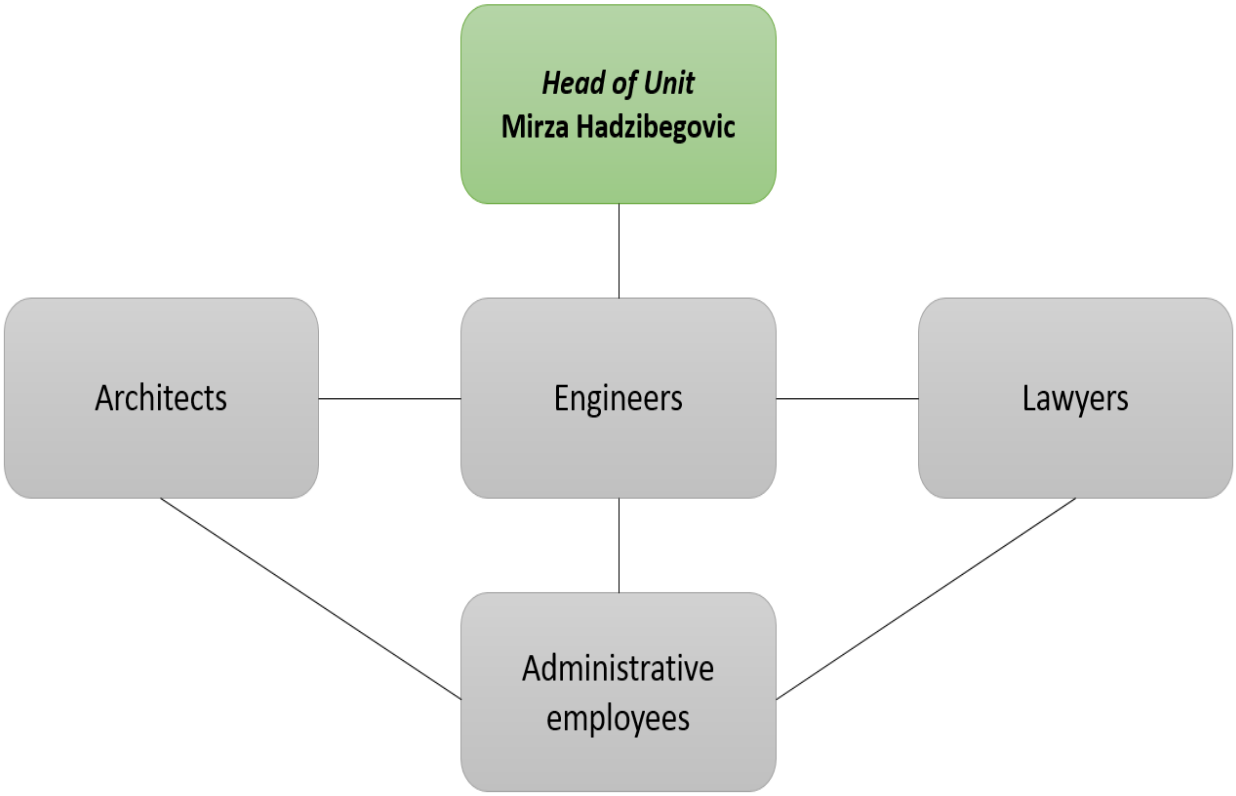



**Figure 14:** *Unit structure (self-constructed)*

The figure displays how the Unit is organized. As outlined, the head of unit is on top and responsible for the entire building permits process (within 'the north' area). Otherwise the groups of professionals (architects, engines and lawyers) are positioned a on the flat line. Administrative employees are in this case positioned below, as they act as a supportive group, which then is perceived as less important. Because of the anonymous roles, no specific names are outlined, but rather a group. The groups are assigned free space and room, and decision rights to case process and eventually provide a building permit. Essentially, they are working under the principle of "freedom with responsibility". If anything complex and unauthorized, then the head of unit has to be informed and eventual approve.

# 9.0 Analysis

This purpose with this chapter is to analyze the collected empirical data. The theoretical framework described and outlined in the former chapter will form the basis for answering the overall problem formulation. By analyzing the conditions within the unit, we will be able to explore what knowledge sharing strategy is most applicable in the given situation, and in addition able to point out the IT system that is best suited to facilitate the process.

At first, the data collection process is explained.

## 9.1 Data collection

As mentioned in the method section, qualitative semi structured interview will be applied to collect subjective data that needs to be interpreted. Additionally, internal and external document for the case organization has been retrieved.

We have conducted nine interviews, which ware based on an the interview guide. The interview process lasted over three periods, where the head of unit was firstly interviewed to get an introduction to the problem area and identify the problem. The approach was to get the head of unit's perception, and form a structure and theoretical framework to address the problem. The interview took place on the 13 February 2017, with starting time at 15:00 CET. It lasted approximately 45 minutes.

The remaining eight interviews were conducted in a two time span, where one interviewer firstly interviewed four respondent, and then the other the next four. The first four interviews took place at the unit for build permits office on Njalsgade 13, 2300 Copenhagen S on the 23 February 2017. The starting time was at 10:00 CET, and the four interviews each lasted about 25 minutes each. The next four interviews took place on the 1 March 2017 with starting time at 13:00 CET. Similar to the first phase, they lased about 25 minutes each. For further information, we refer to appendix *Interview 6: Interview transcriptions.*

In terms of data analysis, we chose not to apply any statistical software program. Rather we manually coded them, using Microsoft Excel to organize our concepts and notes. We coded the interviews together, and in unison managed to retrieve data from the interviews, and categorize them in to the corresponding concepts.

## 9.2 Physical infrastructure

The following section will describe and analyze the physical frames of the unit. As knowledge sharing will be facilitated within this physical infrastructure, it is important to analyze, what it looks like, and how it may affect the interaction between employees, and day-to-day activities. The chamber, which surrounds the unit, may have an effect. Consequently, we have included questions on the physical infrastructure in our interviews in order to understand its effects. The physical infrastructure is explained as follows.

The first interview is with respondent #8, which says the following on the physical infrastructure.

*"We are all sitting in this large space, as you can see as well, and there is relatively easy access to everyone very quickly. It just requires you to get up or possibly just ask your colleague across yourself. And so we are not divided into our professional groups. We sit in a very mixed environment, so there are lawyers, HK, engineers, etc. In the same room. I think that's very good because it gives easy access to the knowledge you need, when you need it."* (Interview 8)

The concept of the large space, where employees from different groups of professionals sit closely is further mentioned by respondent #9 in the following quote from our interview.

*"We sit by each other and can ask directly. We do not have to run around the whole house to find something. I have a lawyer sitting right across from me. So I can just lift my eyes up over the screen and just ask. So that's very nice. You have all the help you need close to you."* (Interview 9)

Lastly the head of the unit comments on it as well, but from a management perspective.

"*I think of the good things we did was to get this large space that we have. Before we moved to this building in 2009 it was more closed spaces, of course not cubicles, but definitely more closed spaces. So moving to this building and getting this large space was really good for us. I think just the openness of the space encourages people to be more open. Our culture is very reliant on helping and being open and removing these walls, or barriers, really helps that purpose. And an another thing is the way we have decided to have people seated. It's not divided in to these very old school like sections, like high school cliques, where nerds sit one place and the popular ones sit together. Lawyers sit with other lawyers, but also with people from other groups of professionals. And the same with HK, engineers and project managers. It's a really diverse and mixed gathering"* (Interview 1).

In essence, the unit has one large office space with no noticeable walls or barriers separating anyone. From the main entrance of the building, a set of stairs and a glass door separates the unit from the rest of the building.

The office is designed in such a manner that should one need help, every employee is reachable within a fair distance. They have approximately 50 employees in the unit (see interview respondent #6), which makes that one large room adequate.

*"We work closely together on cases, I mean obviously not all 50-something employees but different people with different skill sets work together"* (Interview 6)

Every desk has a computer monitor as well as extra add-ons, depending on the person. The concept of an open office space has been taken so far that even the managers are present in the same room as their subordinates, as mentioned in the following interview with respondent #1:

*"(...) even the managers sit in the offices with employees. It has just become natural to us now. We try to remove this scary barrier that typically exists in big companies. We want our people to feel like we are all in this together. And it also makes us much more accessible in case one of our employees needs something. And it also makes them much more accessible in case we need something from them. It's a very good approach I think"* (Interview 1)

It seems like management has prioritized this open office concept, which aligns well with the theory of New Office, as explained in earlier chapters. Since the shared knowledge typically is of tacit nature, open office spaces facilitate this approach. However the lack of smaller offices, which is a factor mentioned in the New Office concept, can sometimes be a disturbing factor to certain employees. The following respondent explains how the same question can be asked multiple times during a single day, and how it affects his own focus. Respondent #9 says the following:

*"We are in the big room office. Then the efficiency goes down. You always have turn your brain back on what it was on. And the more you have to do that, the more you will need time to get back into things again. And you should not be pulled away too many times away from your own assignments. It's messed up. And we don't really have anywhere else to go"* (Interview 9).

It is also commented on by respondent #5, who explains it from a different perspective. Respondent #5 explains it from the perspective of experienced employees being in need of somewhere to go to focus, when schedules are tight.

*"I would say that more experienced employees suffer more from the way we are doing it now. They are more affected by it, because I can't always just sit and mind my own business, even if I have a tight deadline or schedule. The big office is nice, when you need help, but when you just need to focus, it is very difficult to remove isolate yourself, especially because of our culture, where we are open and accepting when and if people have questions. I don't really know how to go about this problem, because I like the open office spaces a lot, but I also sort of need somewhere to go, when I really need to focus. Somewhere with just a little amount of noise, and peace and quiet."*(Interview 5)

What seems to be the issue here is the lack of personal space. As great as the open offices are, it will necessarily lack personal space if there is nowhere to go, and that seems to be the case with the unit. Employees seem to have a demand for having personal time and space, whereas the unit has not prioritized that concept fully.

As we now know that the office space affects how knowledge is shared, the following section will dive in to the type of knowledge, which is being shared.

### 9.2.1 How knowledge is shared

The following section will analyze how knowledge is being shared, as well as which type of knowledge is being shared within the unit. In order to conclude, which approach is the most suitable for the organization, it is important to understand the type of knowledge there is, and how it is being distributed. Neglecting to do so will result in unnecessary investments and faulty approaches, which yield little to no results.

The first step is to understand how knowledge is being shared. In order to understand this, we included questions on that in our interviews. We discovered through our interviews that the unit mainly shares knowledge verbally, hence the large open space offices, as stated by respondent #8:

*"Simply talking to each other at the tables and in our areas. Talk to each other via mail and phone. It is a reasonably large house. But also the meetings. We hold weekly update meetings. And then we also share this in the various written procedures or method descriptions we have. That's the way we share knowledge"* (Interview 8).

This claim is further supported by other respondents, such as respondent #9, who answers in a short manner, when asked how he would collect knowledge from different groups of professionals:

" *Then I ask them directly"(Interview 9).*

Respondent #4 reiterated the same point, but added to it with another aspect. The other aspect was that the reason why people have to ask as much as they do, is because they do not know, where to find the knowledge they are looking for:

*"I don't know where everything is. So what I do is I have to ask someone instead of wasting time looking all over for it. So if I need help from an engineer, there is no point in me spending 30-40 minutes going in to drives and folders to find a document. It's much easier to just ask someone." (*Interview 4)

We can now conclude that knowledge is mainly being shared verbally, simply by asking other colleagues, not only on what, but also where certain knowledge is being stored. This points to another issue, which is employees being unaware of, where the knowledge they need is located. This could potentially be a reason, why certain employees are being disturbed as often as they are, as discussed in the previous section.

### 9.2.2 Types of cases

The natural progression is then to investigate the type of cases, which is mainly being completed. If the study shows that the cases are mainly related to tacit knowledge, then that would explain, why it is so difficult to produce standardized knowledge sheets. However if it turns out the type of cases which are being completed are mainly from explicit knowledge, then it does not explain, why the unit is struggling to provide standardized knowledge sheets.

If we investigate and analyze the interviews, we quickly discover that a lot of the job are cases, which need to be treated differently – even similar looking cases. Respondent #9 explains how even similar cases may vary due to the details surrounding it, even though it may look similar on paper:

*"They always vary. Even the smallest little thing that looks insignificant, it may take several years, because there are some who complain about each other. And other big properties can run smoothly because they have professional advisors with whom we are talking to. So one can not say that a small case is a small matter because it does not look as much on paper, but it can go out and be bulky afterwards"* (Interview 9).

When asked if it was only external factors, which affected processing time, respondent #9 responded as follows:

*"Yes, that's externally. If people have met the building permit, as they should, it will go through quickly. Otherwise we have a fight to get it all through"* (Interview 9).

We can then conclude that cases vary greatly, even if they may look similar on paper. This also necessitates that the knowledge used in relation to ”production” (i.e. the service provided) is mainly tacit knowledge, as completion of tasks requires experience based knowledge. This claim is also further supported by respondents #7 and #3 respectively. Both were asked if time varies on two similar cases, and the replies were as follows:

*”Time always varies. Two cases may look the same at first glance, and I might event think it’s the same, when I begin processing it. But there are always details, which make it different. That could be complaints, delays or other things that make one case different from the other. So I don’t think you can have similar cases. And if we do, it happens rarely.”* (Interview 7)

*”Yeah all the time. There is always something about them that aren’t the same. On paper, probably, yeah. But in real life, no. They are often not the same, and can vary a lot. Some cases may be processed quickly, while others can take up to years to process. And that can also be the case for two or three similar cases.”* (Interview 3).

From the above data, we can conclude that the unit mainly operates with tacit knowledge in their ”production”. This will be explained further in the next section. The service they provide is case processing, and as each case varies, it must necessarily be considered a varying service. Since the service is varying, the knowledge reused in each marginal output is limited, as the details surrounding each case varies greatly. In that case, we can conclude that the most appropriate would be to say they mainly use tacit knowledge.

### 9.2.3 Types of knowledge and strategy

This section seeks to clarify the knowledge sharing strategy approach, which is currently being applied by the unit. The reason why this is relevant is because it is important to conclude, whether or not the unit and its employees are aligned with the strategy, which they are applying. The following section will apply our interpretation of the interviews, as the strategy wasn’t explicitly mentioned. It will be a matter of connecting the dots. Respondent #2 says the following, when asked why processing time varies on similar cases:

*”One reason is simply just because someone may know more than me on that topic. If I’m a new employee and I have to do a case, which an employee who has been here for 20 years also has to do – I mean two different but similar cases – that employee will naturally have an edge over me.”* (Interview 2)

This suggests that employees are involved in a lot of work, which requires high levels of tacit knowledge. In cases where one employee has more experience, it is natural to assume that in case work, their processing time will be quicker and more efficient over an inexperienced employee. This point is further confirmed by respondents #5 and #6 respectively:

*"In my own head there is a level of competition. You know, we don't say it out loud, but it's always nice to be the best. And the only way to be the best is through experience. Of course other factors are also a part of it, such as the case you are presented with, your customers, management, your co-workers etc., but experience is key. It gets you through stuff quicker. I'd say our oldest colleagues are not necessarily the most efficient, but they do have some kind of insight, an approach to a case that I don't have."* (Interview 5)

"*Yeah absolutely. I work faster than someone who is new. That's only natural. But it's not just because I know how to do something quick. It's because I have gained experienced in my years here, so naturally I'm going to be more productive."* (Interview 6)

With the given data, we can now conclude that the nature of the work at the unit is best done with high levels of tacit knowledge, as the content of the cases vary. Tacit knowledge refers to knowledge, which is difficult to transfer from one individual to another. On the basis of the data, it seems as if the unit already struggles with transferring knowledge among themselves, such as when respondent #7 says the following:

*"I think you're going to take longer to get started at this work place, than at another place of work. A lot of it relates to your know-how and that is not something you can pick up on from just observing an experienced employee. You need hands on experience. And that can be frightening to some."* (Interview 7).

This indicates that the previous claim seems true. Now we have determined that the unit is tacit knowledge-heavy because they are struggling to transfer knowledge, and that experienced workers are seemingly much more efficient in terms of completing cases.

### 9.2.4 Current knowledge strategy

The next step is to analyze, which knowledge strategy the unit has applied. This will tell us if their knowledge strategy is aligned with the employees. Again, this will be an interpretation of the interviews, as we did not directly ask employees regarding strategy, but still managed to achieve insights regarding it. What we have concluded up until now is that it is a tacit knowledge heavy

organization. However, we also learned that the efforts to improve knowledge sharing by management, has been very explicit knowledge centric. This is proven multiple times throughout almost all of our interviews, where management has either promised a better system to store data, or employees speaking on the need for a new system, such as respondent 5, 3 and 4 respectively:

*"I know that management has been working on a system for some time now. I've heard that it's not the first time they have been working on a system, but what seems to be the general knowledge here is that they are currently working on a new system."* (Interview 5)

*"We have asked for a better system. It's too difficult and tiring to do it the way we are now. And I even believe that the one they are working on now is only a temporary one, because it is in so much of a need. There are visions to invest in an even bigger and better system down the line"* (Interview 3).

*"It's called D4, and it's something other municipalities are using right now. The one we are waiting to be implemented is not D4 as of yet, but the goal is to get this new system rolling in the future. But right now, it's just a quick solution that can fix whichever problems we have now"* (Interview 4).

What we can conclude from these quotes is that the management are in fact attempting to implement a new system, which is supposed to organize and structure organizational knowledge, and make it more accessible. The current one they are using seems to be a problem, according to the employees. Consequently, an update of some sort has been requested, and management has been willing to listen. What is noteworthy is that the problem seems to be so bad that management are investing in a temporary solution first, and then later on investing in an even bigger system, as stated by respondent #1:

*"Yes, the one we are working on now is just temporary because there's a need for it. We are going to get a better system called D4 in the near future"* (Interview 1).

## 9.4 Knowledge perspective at the Unit (SECI model)

This section analysis the knowledge perspective, and in particular how knowledge sharing takes place at the Unit, and how individual learning becomes organizational learning. This is conducted by looking at the working environment, and in particular how it supports knowledge creation and knowledge retention. Additionally, Nonaka's SECI model will be applied to analyze how tacit knowledge is converted into explicit knowledge, and explicit to tacit knowledge.

As we outlined, knowledge is as essential factor, and individual knowledge is enhanced when it is combined with others in organizational context. Employees at the Unit creates and maintains a relevant knowledge base from their respective educational background, working experiences, training, standard procedures and information channels (knowledge sharing system, intranet and the home webpage). These can then be applied to case process the building applications. As the cases can vary, the employees adapts to the situation and interpret the information to its context. This supports the data, information and knowledge transformation, where data is transferred to information through meaning, which then is interpreted to knowledge.

The knowledge is as mentioned shared mostly verbally, and it takes mostly place when through social interacting in the open floor space, but also behind closed doors e.g. group meetings and weekly meeting on case discussions. According to respondent #9, when asked what do you do, when you need some information and knowledge, the respondent replied *"then I just ask them directly".* There is obviously a "just ask culture", which is indeed evident in the data collection, and further supports the fact that the working environment is flexible and open to socialization and collaboration. By that approach, individuals gain and create knowledge, which then effect the process of learning organizational knowledge.

Knowledge is also shared and takes place by informal interaction at the lunch break, coffee break or even when the working day is off. These informal interaction are typical random, where both professional and private information and knowledge is being shared by talking with one another. This mostly refers to the employees, but because of the open office infrastructure, the head of unit and other management ae also involved in the process. As before outlined, everyone is positioned in the same open office room, which enables to informally meet and share experiences and knowledge. Additionally, there is a general common respect and down to earth atmosphere, where the employees are almost on the same level with the head of unit. This is also supported by respondent #7, who said the following:

*"my relationship to all employees is good. At least that is how I see it. There is a great atmosphere, as well with the head of unit. He is very kind and progressive, and also very social and engaged in our working day"* (Interview 7)

The SECI Model will now be applied to analyze the working conditions in regards to knowledge creation and knowledge transformation.

### 9.4.1 Socialization (Tacit to Tacit)

The process refers to tacit knowledge becomes new tacit knowledge through experience and social interaction. At the Unit this process occurs on every day basis by social informal interaction e.g. coffee break, lunch break, small talk sessions. In addition, as the office is open and the employees are positioned closely, there is a tendency to overhead one another, and even interfere in the case processing. They can learn and absorb from these scenarios. New employees are mostly the subject of this, as they work closely with more experienced and learn by talk and social interaction, observation, imitation and training. There is a great culture of sharing knowledge, which is supported by respondent #3 and #4, who expressed the following:

*"Now I think there is a great culture of sharing knowledge here, so that is not a big deal. People a very nice towards one another and often sharing both specific knowledge and case experiences"* (Interview 3)

And

*"We share it after demand. Normally I ask a person of something and get the answer. My perceptions is that most of people in here are good at sharing and are willing to provide the needed information or knowledge"*(Interview 4)

### 9.4.2 Externalization (Tacit to Explicit)

This process refers to when tacit knowledge is converted to explicit knowledge by e.g. methods such as metaphors, analogues and dialogues. The knowledge sharing system contains information and knowledge for best practices and notes, which can be applied by others. This can be referred as tacit knowledge is written down, and hence converted to explicit or organizational knowledge. Architects and engineers are usually "good" at writing specific tacit knowledge from a complex case, which then can be applied, if necessary. In addition, when new employees or others follow an experience one, they take notes and write down valuable tacit knowledge, which then again is converted to explicit. At some point, a screen shot is taken and placed in a document to visualize a case process.

### 9.4.3 Combination (Explicit to Explicit)

The combination process refers to connecting discrete elements of already explicit knowledge and convert it into a more systematic set of explicit knowledge. The knowledge sharing system is again also present in this phase, as bot the tacit and explicit knowledge is written down with the purpose of being available to others within the Unit. However, as the interview data shows, the system is perceived rather unstructured and very hard to navigate. According to respondent #3,

*"My perceptions is that it is very weird and not that effective, because it is not so easy to find the needed information"* (Interview 3).

Even though explicit knowledge is collected both internally and externally from e.g. from building law paragraphs and other sources, it is stored, edited and thus created to new explicit knowledge. However, because of the very simplistic system, many employees do not have access, as it is stored on employee's personal computers. The only way to access it, is by asking verbally or sending the document by outlook. To this extent, employees have been asking for managerial actions to improve this area, and thus improve the knowledge sharing in the Unit.

### 9.4.4 Internalization (Explicit to Tacit)

In this phase, the newly created explicit knowledge is converted into tacit knowledge. This is also the phase of "learning by doing" concept. This is rather evident at the Unit, where e.g. adoption of new employees into caseworker roles is the most significant example. They learn and gain tacit knowledge by processing case with typically help from experience caseworkers. This process is indeed very familiar in many organizations where a lot of explicit knowledge with experience is incorporated into employees. These employees will with time improve and become experienced and domain workers themselves. Most of the older and experienced workers at the Unit have been through this process. Some came directly form a similar role from different organization, while other had to "learn by do". One relevant aspect to this is that some employees intend to ask too much and therefor always disturb, which is one of the main causes related to initiating actions to systematize and centralize basic information and knowledge, and best practices. The knowledge sharing system also support this process, as there is explicit knowledge written down, which can be applied and thus becomes tacit with time. Finally, according to Jane Henry (2001), when experiences and practices through socialization, externalization and combination are internalized into individual's tacit knowledge, they become valuable assets.

## 9.5 IT infrastructure

Information technology is obviously a very important element in terms of case processing, because various systems are integrated, and cooperate to provide all the necessary information for caseworkers to case process the building case applications.

The purpose of this section is to analyze the IT infrastructure at the Unit, and provide an overview of the different technologies that exist within the Unit.

### 9.5.1 KMD Structura

The Unit is applying IT System KMD Structure to case process the building cases. The system is developed by KMD with the purpose of gathering all building case documents at one place, so it becomes manageable and accessible for caseworkers. This provides both an effective case processing and easy communication with citizens. For example, documents on landmarks, properties and building are administered, as well as stakeholders such as owners, applicants and others. In addition the system contains history, which enables a quick overview of the cases related to a given unit. Moreover, the case processing can be reviewed. So employees at the Unit uses this system when they open a sag and wants to process it. They find the needed information and documents in the system and start the process. However, the system provides limit knowledge on how similar cases could be processed, in which they employees furthermore are reliant on verbal knowledge sharing and the before mentioned knowledge book, where limited, outdated and unstructured information and knowledge is placed. KMD Structura is perceived as a knowledge-sharing platform, as according to respondent #8,

*"KMD Structura is of course our construction program, but it contains all our information and knowledge as well. The various phases of the building and all the information and correspondence that has been through a building case is contained within the KMD Structura. So we lead a checklist into the program where we share the knowledge that has once been on the case. But not everybody uses it. It is only the function called supervision, ie. The final part of the construction phase. There are thus two phases. There is an application where they get an authorization and then there is the remaining part where they perform the work and get a permit. And it's only the last part, from after they have received the building permit, till they complete the building and get a permit. That is only the part where you actually write in a checklist of the things that have happened in the case. So it is not to any great extent being written in the first part, and it could also be looked at. So the knowledge sharing also takes place in that program" (Interview 8)*

The system is according to the respondent applicable to share some knowledge and information, but as he mentioned *"not everyone is using it"*. That is primarily because the needed relevant knowledge on how to case process a particular case does not occur in the system. As mentioned cases can vary a lot, in which employees tends to approach each other for a quick and effective knowledge sharing interaction. Most of the knowledge still happens verbally because of ease and availability, and also because of the open ask culture.

### 9.5.2 Intranet

The Unit has a standard intranet page as any other unit or organization. It is common for the entire municipality, where employees can get the needed information and knowledge on various subjects. Additionally, employees are able to access the local intranet for center for buildings, but there is none specific for the Unit. Therefor the intranet work simply as an information source for general information and knowledge on other subjects, and does not support specific knowledge sharing in terms of build case processing. The following figure displays the intranet within the municipality.

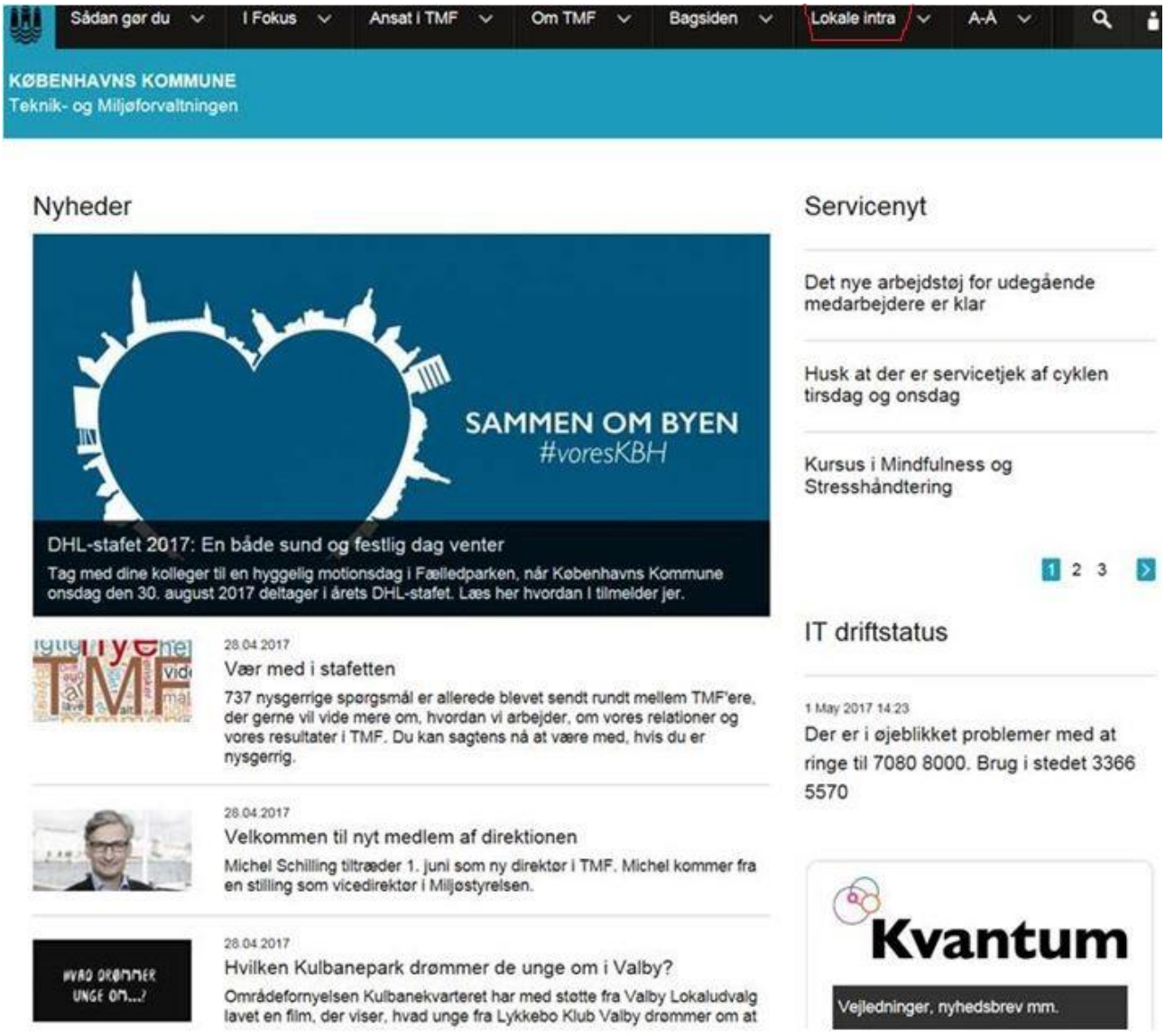



**Figure 15:** *Intranet*

As the figure displays, there is possibility to access local intranet, as in this case it is center for buildings. This is marked with red color.

### 9.5.3 Outlook

As almost any other public authority, the Unit applies Microsoft Outlook as there e-mail client. The system is composed of many different features such as calendar, notes, persons, assignments etc. Employees use outlook to send and receive some verbally agreed assignments, and it that way communicate and share information and knowledge. This is a proper and effective tool to solve and facilitate a case processing, where sharing documents between two or more parties is quick and appropriate.

### 9.5.4 Lync

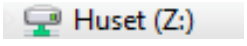
The have installed Lync, which is integrated with Outlook. Lync is a virtual connection between employees within the Unit where is allows them to e.g. communicate, share desktop and applications, while working together in real-time from the computer. This application is not applied often, but the idea is to try the application in relation to unit meetings. This is nevertheless a very applicable tool to facilitate knowledge sharing, but as mentioned is not applied because they are not need for it. They are positioned closely with one another, and applying Lync would case disturbance. It is easier to simply meet in small groups or gather at meeting. If the Unit is positioned differently and remotely from each other, then the tool would indeed be applicable. However, it is for their disposal.

### 9.5.5 Knowledge Book

The knowledge book is the essence of knowledge sharing within the Unit. The official name of the current knowledge sharing system is *Knowledge book*. Otherwise, they refer it as grey book or a FAQ system. Respondents #2 and #9 support that by,

*"It is some knowledge book or grey books, where some is written down and you can try to find it"* (Interview 2)

*"We have had something called knowledge book or sometimes we call it FAQ, where we can look at practical things"* (Interview 9)

The knowledge book is the primary knowledge base that is applied for knowledge sharing. It is composed of a standard file structure on windows computer, where a common network drive is placed under the local drive. 

(See appendix 5: Knowledge book)

This is outlines in the following figure.

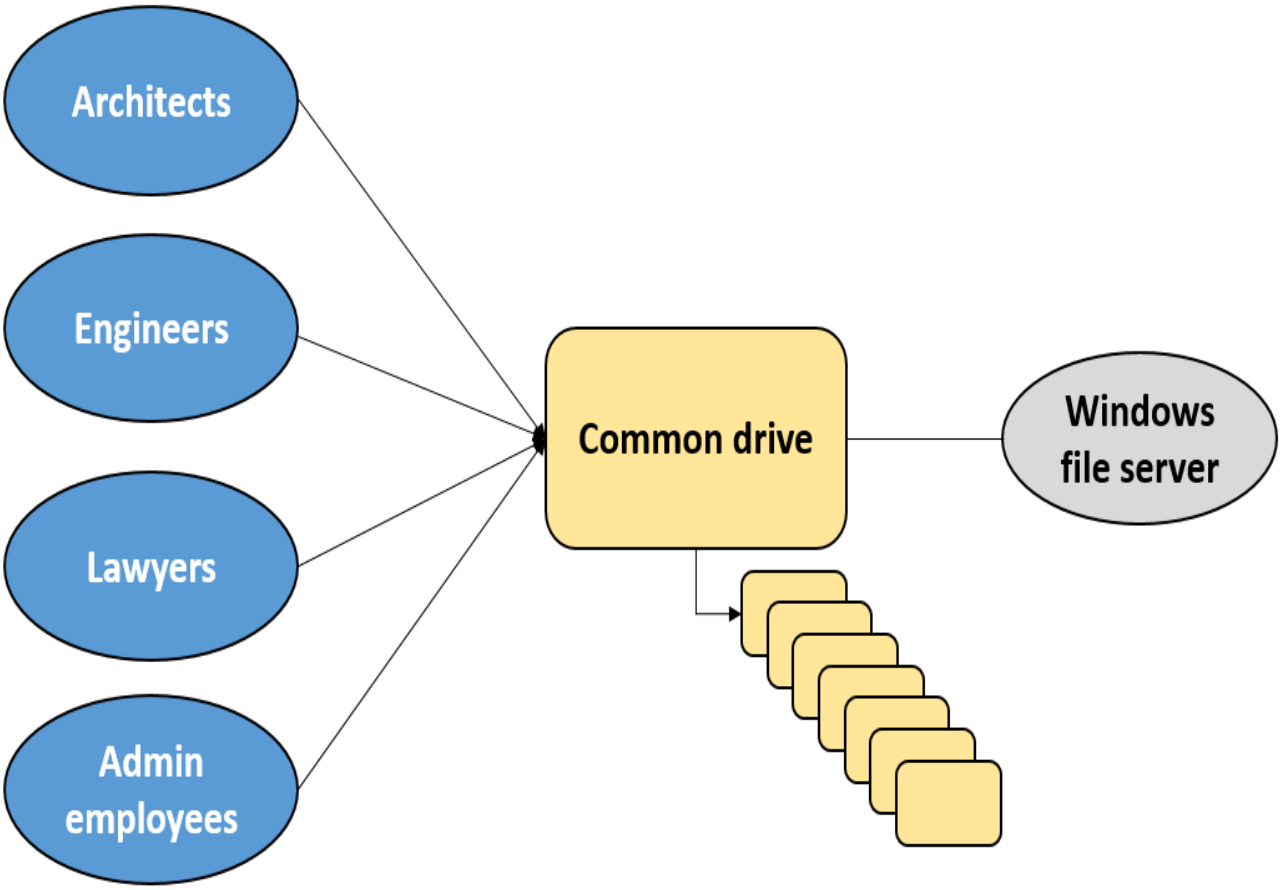



**Figure 16:** *Knowledge Book*

As the figure displays, the groups of professionals are able to access this common network drive on their local computer, and from their use one of the many folders available. These folders are unstructured in terms of content, but are in alphabetical order. This is the only advantage and the fact that it is possible to share the knowledge. In addition, this solution does not provide form for documentation and visualization of the "content" owner. The folders only contain information on document name, changing date, document type and document size. The point is that the structure does not provide an overview of whom is navigating through the system and e.g. adds new information. Nor is there any structure or agreement of who has the rights to do change information in the documents (Appendix 6).

# 10.0 Recommendations

This section will attempt to provide a recommendation for the unit, in terms of which strategies and technologies to apply. This will be based on the data we have collected, and theories from previous chapters, which will be applied.

**The problems**

To understand, what type of knowledge strategy should be applied, we must first understand the type of service the Unit is providing. What is important to note is that the Unit is not manufacturing standardized products. They are doing casework, and as mentioned before, each case varies a lot. This is evident through our data collection in the form of our interviews, as discussed in the analysis section. This data collection allows us to claim they are providing customized services. When the product is varying, the knowledge strategy should be personalization, rather than codification. Management are investing in a codification approach, rather than personification strategies. The relationship between marginal knowledge and marginal output is so varying, meaning that the knowledge used to produce the next service varies from the one before, that recycling knowledge is of little to no benefit.

However, there seems to be elements that are fixed, and has high value in terms of recycling knowledge. This relates to areas such as law, rules, regulations and other aspects of casework, which must be assessed objectively, and applied to every case. However, what also seems to be an issue is the system, which is implemented to facilitate the accessing and sharing of explicit knowledge is also very poor.

And lastly, the big office space seems to be something employees generally enjoy, but still wish they had somewhere to go for a more quiet time, when deadlines gets closer, or when they just need to be alone.

Now that the issues are summarized, we must discuss possible solutions to combat the issues, and eventually better the conditions at the Unit.

**The solutions**

Now that we understand, what the problems are, we can recommend a possible solution. The solutions are all based on the conclusion that the Unit is a ”manufacturer” of specialized or varying services, which is the case process for building permit. These solutions would have a different perspective had outputs been of a standardized nature.

As stated earlier, the service is varying, with fixed elements in it. However, the majority seems to be of varying nature, which suggests that a proper knowledge strategy to apply would be the personalization strategy, because of the experience based knowledge perspective. However, the use of explicit and codified knowledge would always be integral and applicable, which indicates the full KM strategy should be more like 80/20 split, where personalization strategy is the main one. That is, personalization strategy should be communicated, but further supported by codification strategy through a knowledge management system to store explicit knowledge for reuse. The personalization strategy would manifest itself in the form of social interactions, such as events, meetings, forums and other ways for employees to engage in informal conversation, which will encourage knowledge sharing and improve the current situation at the Unit. This should be managerial focus, and should thereby receive much more investments and attention, which seems to not be the case as of right now. Once management puts in the necessary resources to facilitate the strategy, it will yield better knowledge sharing, and thereby increase efficiency.

The Unit must do something about their current system, the ”knowledge book”, which contain unstructured and outdated explicit knowledge. As of right now, only document owners and experienced employees knows where to look for the relevant information and knowledge. However, they too perceive the system rather useless and inappropriate to use. As the analysis showed, the system e.g. lacked certain basic documentation and administrator rights, which would at least enhance it. Documents that are uploaded has no documentation, and when a document is edited with for example new updated content, then there is none notification element to it, as only the person that has updated the content is aware of this.

**SharePoint Online**

What the Unit must do is invest in a SharePoint solution that that allows them to share explicit knowledge on a platform that is accessible to everyone. Employees has at least requested a better solution to the one they apply now, and D4 knowledge sharing system has been mentioned occasionally. Especially in the long perspective. This is a standard knowledge sharing system that is primarily associated with codification strategy, where knowledge is codified and stored for organizational use. However, as mentioned, this particular case and data output combined with theoretical foundation, provided the view to apply the personalization strategy. This means that a codification-based system at this point is contrary. Additionally, the employees did ask for a temporally solution, as they were tired of the current working process and needed managerial

initiatives. They were simply not using the current system because of its inability and complexity, which brings us to the main suggestion.

Based on the analysis and technology presentation, we would suggest the Unit embraces the possibility of implementing Microsoft office 365 SharePoint Online as their main knowledge-sharing platform. This is also because many of the Units current technologies are Microsoft services such as Lync, Outlook and the Windows operating system. Microsoft SharePoint Online is cloud and web based solution/platform that offers several of applications that makes it easy to store, share and manage digital information in organizational context. The platform would in this case be a significant upgrade to their current 'knowledge book' system, as the benefits are obvious. The platform is referred as collaborative software, which further support the personalization strategy and benefits by providing numerous of functionalities and tools for employees to collaborate and share documents. Some noteworthy functionalities are:

- Quick and effective document sharing with team members
- Documentation and editing overview
- Online collaboration and socialization through newsfeed, sites and blogs
- Administrate and customize rights

In addition, SharePoint Online have the relevant and needed functionalities, which was demanded by the employees, as well as he head of unit. It is possibly to search for themes and documents in alphabetical order. Moreover, it is possible search and administrate the content, in which it would provide a flexible and user-friendly approach.

The platform is based on browser access and contains several of different opportunities, which we will not describe. However, it is perceived as the best-suited solution based on the basic needs. A lot of standard, fixed and best practice knowledge that is codified in e.g. word formats can be stored on the platform, where the assumption is that with the more appealing interface, user experience and flexible access would increase user participation and hence improve knowledge sharing.

**New Office concept**

Lastly, the issue of being disturbed must be dealt with. Although every employee were enjoying the open culture, and the open office space, it seemed as if it was a disturbing factor sometimes. This should be combatted by applying the New Office concept fully, where there are offices of smaller

and larger sizes available. This will serve as either a getaway for employees, or as incentive to gather in groups and collaborate even more, which in turn will yield better knowledge sharing.

If these solutions are implemented, the Unit would be able to combat and solve the issues they are facing as of now. It requires constant attention, investments and engagement, but these are the current solutions to their problems. However, what must be noted is that management is seeking a temporary solution, and that we have catered to that need. These solutions are merely a short-term solution, especially the SharePoint.

The next section discusses the possible future of the Unit, and in particular what kind of it system could be applicable.

# 11.0 Discussion

The following section will discuss an alternative solution, which includes an approach, which was only briefly mentioned in the theory section. It relates to the knowledge strategy, which was suggested in the previous chapter, i.e. personalization strategy. This strategy is about encouraging knowledge sharing through social interactions and events. The purpose of those interactions is for people to share their experiences, i.e. tacit knowledge, and thereby transfer their experience to other employees. The question and challenge now is *how* to practically apply this strategy, and to decide, how to create events and such, to encourage the sharing of knowledge.

The approach we suggest in this chapter, is somewhat controversial, as not every scholar agrees that it is a good approach. It is not always perceived as appropriate in the workplace, and that opinion can explain, which segment feels this way, i.e. elderly people.

The solution is to implement, what is called an SNS, or a Social Networking Site internally in the Unit. As of now, there isn't a platform available to the Unit alone, as they share their platform with the entire department. The solution is based on Koch, Gonzalez & Leidners 2012 study, which describes how the implementation of an SNS blurred the traditional lines between work and social life. This blurring of boundaries made employees feel positive emotions towards the system and the workplace, which increased their productivity. The researchers called it an increase in ”personal resources”, which essentially is experience and insight they gain through interacting with their peers across departments.

This is not a solution that will work with any organization, as it highly depends on the type of product or service they provide. As the Unit is providing varying service, the solution is applicable and could possibly work.

The purpose of implementing and applying a personalization strategy is to encourage and increase interaction among employees. However, by adding an SNS, you can achieve that while blurring the boundaries between work and personal life. We believe this is a solution that will fit well with the Unit, based on the data collection. We believe so, as the Unit have all the necessary tools to make such a system a successful implementation, such as the right type of ”production”, the right culture and a management willing to go out of their way to improve the current state.

The SNS will serve the purpose of the ”middle man” between employees, where they can approach their peers and arrange various events, contests etc., which is directly related to the chosen strategy. According to the study, this social aspect increased knowledge sharing, so the assumption will be that it will also improve it in this context. The theoretical section introduced application software Yammer, which in this context could be applied as a SNS.

The issue however, would be to get all employees to use it. The Unit already has a problem of not having all employees use their systems, such as KMD Structura, and could potentially also risk that in this case. The study is based on further elaborates that elderly people are the ones, who are unwilling to use it. As stated in the interviews, there are still older people in the organization, and that could turn in to an issue with the new system. However, the Unit is currently looking for a short term solution, and then a long term solution in the future. The recommendations above would serve their needs for now, whereas the SNS would be a long-term solution. As of now, there aren’t too many older employees at the Unit, and when management believes it is time to invest in the long term solution – the SNS -, there will be very few older people left. The long-term solution in the form of a dedicated SNS comes at the right time, where there is a generation shift in the Unit..

# 12.0 Conclusion

The purpose of this thesis was to investigate how the current knowledge sharing occurs, as well as assess how IT and managerial initiatives can be applied to improve and facilitate the knowledge sharing process. To this extent, it was necessary to define a problem statement, which would address the issues. This has caused the following problem statement:

- ***How can the Unit improve and facilitate the knowledge sharing process?***

In order to address the issues at the Unit, a structured and theoretical framework was created, which entails theories on knowledge, knowledge sharing and knowledge management (KM). Information technology was also addressed, as it plays a significant role in terms of knowledge management systems (KMS). Furthermore, the approach to the thesis was based on two different perspectives, the classical and pragmatic epistemology.

By approaching the case study with a qualitative research method, it enabled us to gather subjective qualitative data on the current knowledge-sharing situation at the Unit. This allows us to view the problem from different perspectives, and enables us to consider different angles to the problem. To build further on these perspectives, we added theories on knowledge sharing first. The sharing of knowledge can be explained by the SECI model, which explains how knowledge is being created and converted. From our interviews, we concluded that the Unit shares knowledge primarily in verbal manner, which also means that knowledge is created in this context. Once the dialogues begin, knowledge is transferred, and that knowledge is applied to someone's existing knowledge, which then *creates* new knowledge. This is their primary way of creating and sharing knowledge. Furthermore, the Unit has an IT structured folder-system, where employees can access explicit knowledge, such as law. However, the interviews suggest that accessing these folders are difficult to the extent, where employees simply stop using them, and ask their colleagues for help instead.

Finally, it was necessary to review the current knowledge-strategy applied by management, and compare it to the data we collected. This was to ensure that management had applied the strategy properly, and that they understood the issue. The two knowledge-sharing strategies we investigated were codification and personalization strategies.

The analysis showed that the management misinterpreted the issue at hand. Management had been asking and attempting to implement a new and more effective IT knowledge sharing system, which had the purpose of storing knowledge for reuse, by extracting it from employees. However, the issue is that the service, the case processing, is not perceived as a service that can be codified and reused. Only practical and standard best practices can be reused. The data collection and analysis showed that the incoming cases intends to vary a lot, which emphasizes on the fact that the initiative to acquire a new and more effective IT knowledge sharing system is based on a misinterpreted basis. The service is determined to have a varying nature.

The conclusion is that the management was far away from the issue to properly interpret it. The following figure illustrates the issue:

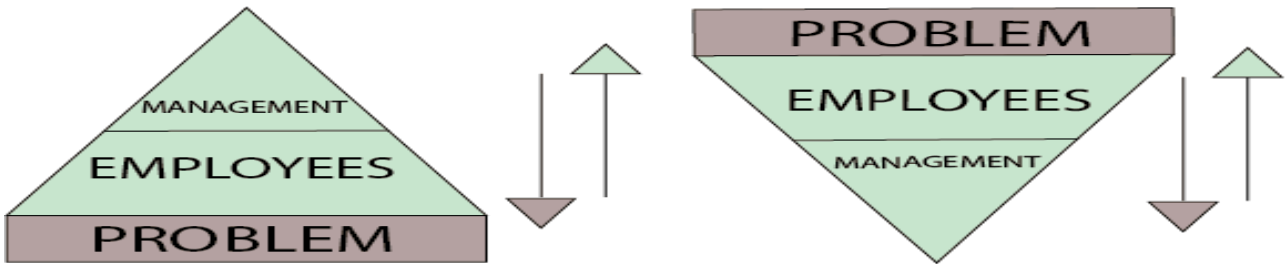



**Figure 16:** *Solutions from different perspectives*

The model above illustrates the reasons, why management has been misinterpreting the problem.

The triangle on the left is a top-down approach, where the management concludes that there is a problem. To that problem, they attempt to accommodate it by applying, what they believe to be the right choice of strategy. As the model illustrates, the management is in this case positioned far away from the problem, but nevertheless still decides the initiatives to solve it. The arrows indicate this top-down process, and how employees first react after management has applied their decisions. Consequently, they risk applying the wrong solutions.

On the right side, the triangle is a bottom-up approach, where employees react to the problem they are close to. In an attempt to accommodate their problems, they approach management for a specific solution. Management then applies that solution based on the employee requests. The arrows indicate this process of employees, who are close to the problem, inquiring about a solution from management, and also the management reaction to this inquiry.

Ideally speaking, the bottom-up approach should have been how management approached the issue. The employees are the ones dealing with the problem on a daily basis, so this approach would have made much sense.

We can conclude that the findings showed that the proper strategy to apply would have been personalization, rather than codification, which is what the Unit was attempting to do. To this extent, our proposal is to apply personalization strategy, where it further is supported by the management in terms of facilitating formal and informal social interactions. However, it must be noted that applying personalization strategy to facilitate the sharing of tacit knowledge does not mean neglecting of the sharing of explicit knowledge. It is suggested to apply an 80/20 strategy split, where the majority of the focus is put on personalization and the remaining 20 is on codification. This will be supported by an upgrade to their current knowledge sharing system by implementation of SharePoint Online platform. With the more appealing interface, user experience and flexible access possibilities, SharePoint Online would support the personalization strategy by increasing user participation, and hence improving and facilitating the knowledge sharing process.

# 13.0 Generalization

The thesis is a case study of knowledge-sharing processes at the Unit for Building Permits. As it is based on a single case study, it already presents a set of challenges in terms of generalization. In order to reference this thesis, as a template for similar situations, it is necessary to ensure that the conditions of, which the thesis has been completed in, are similar. In this context, it means that the organization provides services, which are characterized similar to the Units, i.e. of varying nature. Even in instances, where it may seem applicable, it is still necessary to understand the details of the referenced case, i.e. this thesis.

To combat this issue, we have provided a thorough description of the case, in order for future researchers to refer to, and compare to with their own cases. This holds true to Yin's solution to how a single case study can become generalizable.

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# 15.0 Appendix

## 1. Interview guide

**Step 1: *Presentation***

1. Who are we, and what is the purpose of the interview?
2. Set frames for the interview:
   - Estimated interview duration (No longer than 30 min)
   - Ask if anonymity is needed?
   - Note that the interview will be recorded with a Dictaphone ( if not approved, than take notes)
   - Eventual expectations from the respondents and ourselves
3. Inform that we are here to ask into thoughts and reflections. We are merely here to ask questions and listen. Please notify us, if any questions are unclear and maybe unpleasant.

**Step 2: *Inform the respondent of the structure and overall topics within the interview***

- *Knowledge sharing*
- *Management*
- *Culture*
- *Social activity and collaboration*
- *Technology and physical infrastructure*
- *Knowledge management and knowledge strategy*

**Step 3: *Interview process***

Start the interview with the respondent's self-presentation of i.e. position, age, seniority, education.

- For example: *Who are you? What is your role in the firm? How long have you been employed at the firm?*

Question about the organizational structure (This surround mainly the head of unit).

- How is the unit and department structured? Which kind of background do the employees here have?

**Topic: Knowledge sharing**

A. Can you attempt to define what you think knowledge sharing is to you?
B. Can you attempt to explain what you think good knowledge sharing is? Also bad?

C. Can you explain how knowledge and information is being shared today at the unit? Is there a system or does it primarily happen verbally?
D. What is your experience with the current way of sharing knowledge? Is it sufficient?
E. What kind of knowledge is primarily within the unit?

### Topic: Management

A. Can you attempt to explain what the role of management is in terms of knowledge sharing at the unit? Is the management progressive?
B. How do you perceive a leader? What skills and competences does a leader have to possess?
C. What is the role of your leader compare to you? Are you close to each other?
D. How is yours position structured? Are you dependent on task allocation or do you have freedom to form your own working day?
E. Do you feel this form for working applies to everyone?
F. What values are within the unit, and to the extent, how are they shown?
G. What kind of employees do you prefer to employ?

### Theme: Culture

A. How are people towards each other here?
B. In what way is the culture expressed?
C. Is the culture open, closed or other?
D. Do you work in groups or singlehanded?
E. How do you perceive the level of competences and skills of your colleagues?
F. How is the culture in relation to sharing knowledge?
G. Is there competition between employees?
H. If yes, among who mostly?

### Theme: Social activity and collaboration

A. How can you explain your social activity with the others?
B. Does the social aspect influence knowledge sharing?
C. How would you describe collaboration at the Unit?
D. Is it necessary to have a certain level of collaboration?
E. Are you comfortable with collaboration with other, or do you maybe prefer to work alone on cases?
F. What kind of collaboration do you prefer? Psychical social interaction or other?

G. Do you feel stressed during you work – and can you command to share knowledge?

### Topics: Technology and physical infrastructure

A. How is the current psychical infrastructure or working environment within the unit?
B. Do you think that the open or closed environment is appropriate. What do you prefer?
C. Do you believe the current working environment can strengthen knowledge sharing?
D. How does IT help in sharing knowledge?
E. What system(s) do you use, and how often do you use it?
F. Are you satisfied with the systems(s)? Do you believe that a new system could improve the process of sharing knowledge?
G. How do you else communicate with colleagues when need for information or specific knowledge?

### Topics: Knowledge management and knowledge strategy

A. Are you familiar with the term knowledge management, and if, how do you perceive it?
B. How has the management approached the concept of KM?
C. To what extent is knowledge managed within the unit?
D. Is there a clear formulated a knowledge strategy?
E. To what extent to you feel there is a will and desire is to share knowledge? How does the other employee perceive the concept (do you feel)?
F. Is there a person or instance that manages stores and develops a knowledge base?
G. Now that we have introduced the concept of KM, what is perception, and do you feel that KM is able to increase the effectivity and hence the process of handling cases?
H. Can you see any advantages and disadvantages with KM?

## 2. Population projections

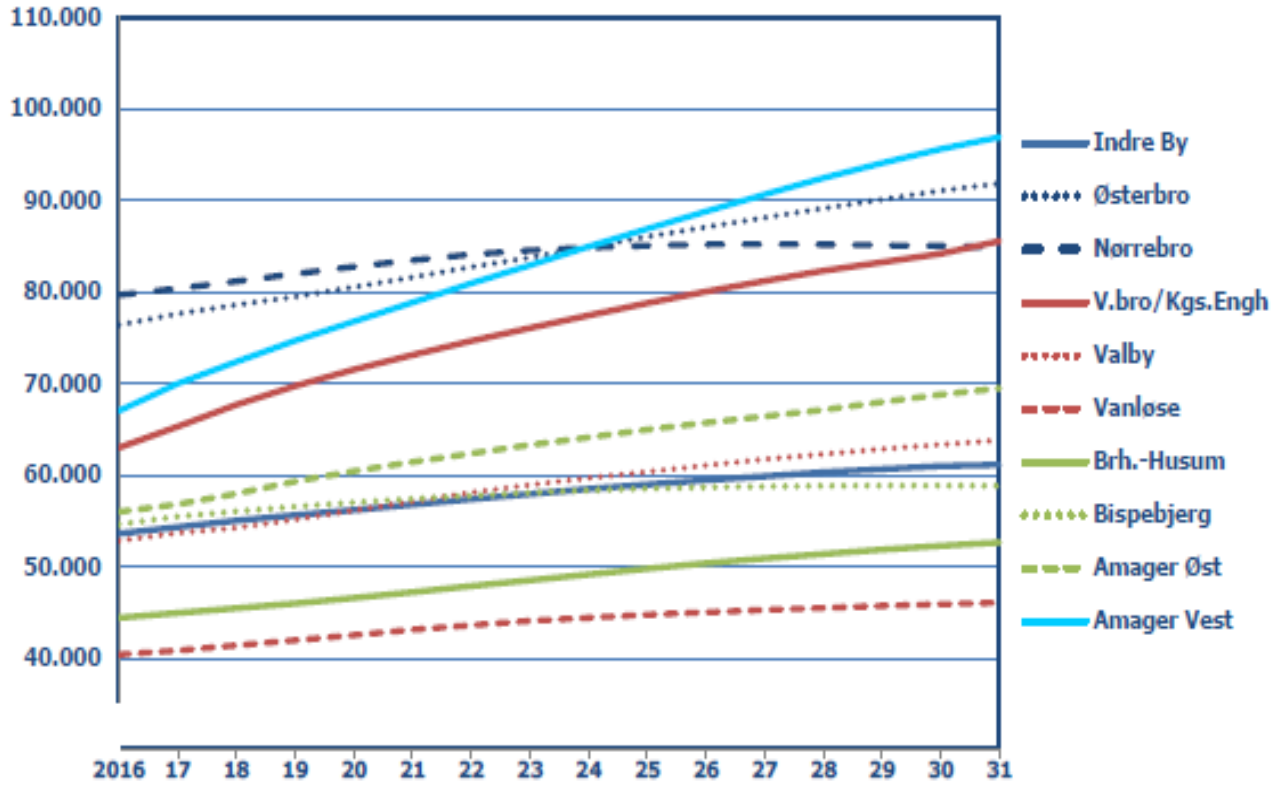
# Faktaark fra Københavns Statistik

Befolkningsfremskrivningen efter bydele,
København 2017-2031

| Bydele | Folketal 1.1.2016 | Fremskrevet folketal pr. 1.1. 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2026 | 2031 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Indre By | 53.596 | 54.301 | 55.023 | 55.593 | 56.178 | 56.762 | 57.338 | 59.430 | 61.117 |
| 2. Østerbro | 76.402 | 77.632 | 78.602 | 79.477 | 80.533 | 81.589 | 82.710 | 87.093 | 91.862 |
| 3. Nørrebro | 79.668 | 80.364 | 81.164 | 81.995 | 82.772 | 83.480 | 84.091 | 85.169 | 84.886 |
| 4. Vesterbro/Kgs.Engh. | 62.962 | 65.283 | 67.682 | 69.727 | 71.495 | 73.128 | 74.643 | 80.030 | 85.551 |
| 5. Valby | 52.809 | 53.658 | 54.237 | 55.126 | 56.117 | 57.110 | 58.057 | 61.023 | 63.794 |
| 6. Vanløse | 40.353 | 40.808 | 41.384 | 41.928 | 42.484 | 43.071 | 43.581 | 45.001 | 46.027 |
| 7. Brønshøj-Husum | 44.376 | 44.910 | 45.427 | 45.942 | 46.534 | 47.184 | 47.846 | 50.332 | 52.631 |
| 8. Bispebjerg | 54.583 | 55.439 | 56.024 | 56.523 | 56.993 | 57.387 | 57.741 | 58.649 | 58.798 |
| 9. Amager Øst | 55.986 | 56.782 | 57.955 | 59.273 | 60.422 | 61.426 | 62.348 | 65.714 | 69.474 |
| 10. Amager Vest | 66.993 | 69.992 | 72.374 | 74.666 | 76.763 | 78.842 | 80.934 | 88.806 | 96.913 |
| Uden for inddeling | 3.757 | 3.624 | 3.599 | 3.607 | 3.617 | 3.623 | 3.614 | 3.587 | 3.516 |
| København i alt | 591.485 | 602.788 | 613.446 | 623.860 | 633.925 | 643.597 | 652.912 | 684.822 | 714.550 |

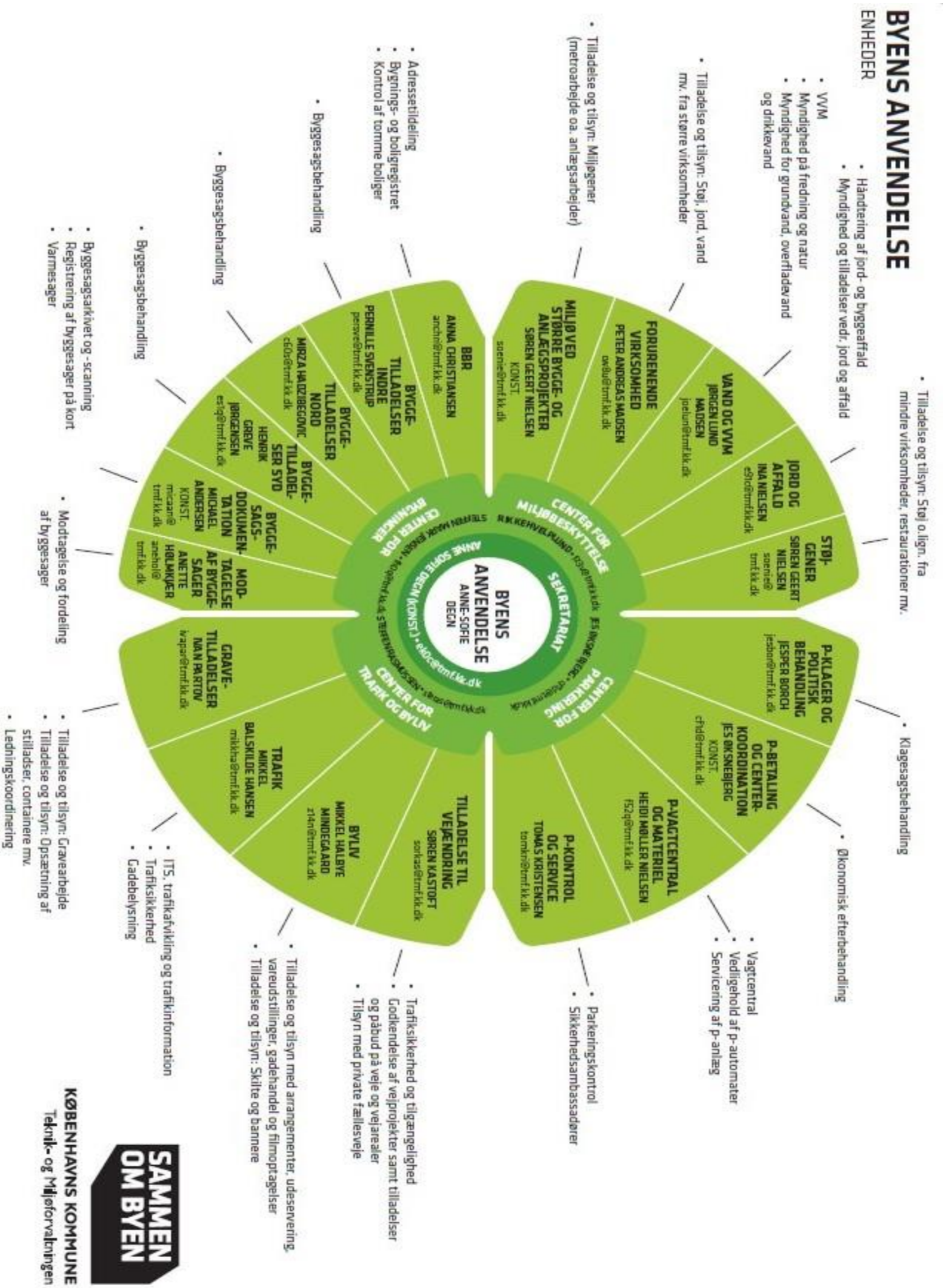
Kilde: Velfærdsanalyse, Center for Økonomi, Københavns Kommune.
Anm: Som følge af afrunding kan summen af de enkelte tal afvige fra totalen.

Befolkningsfremskrivning efter bydele, København 2016-2031



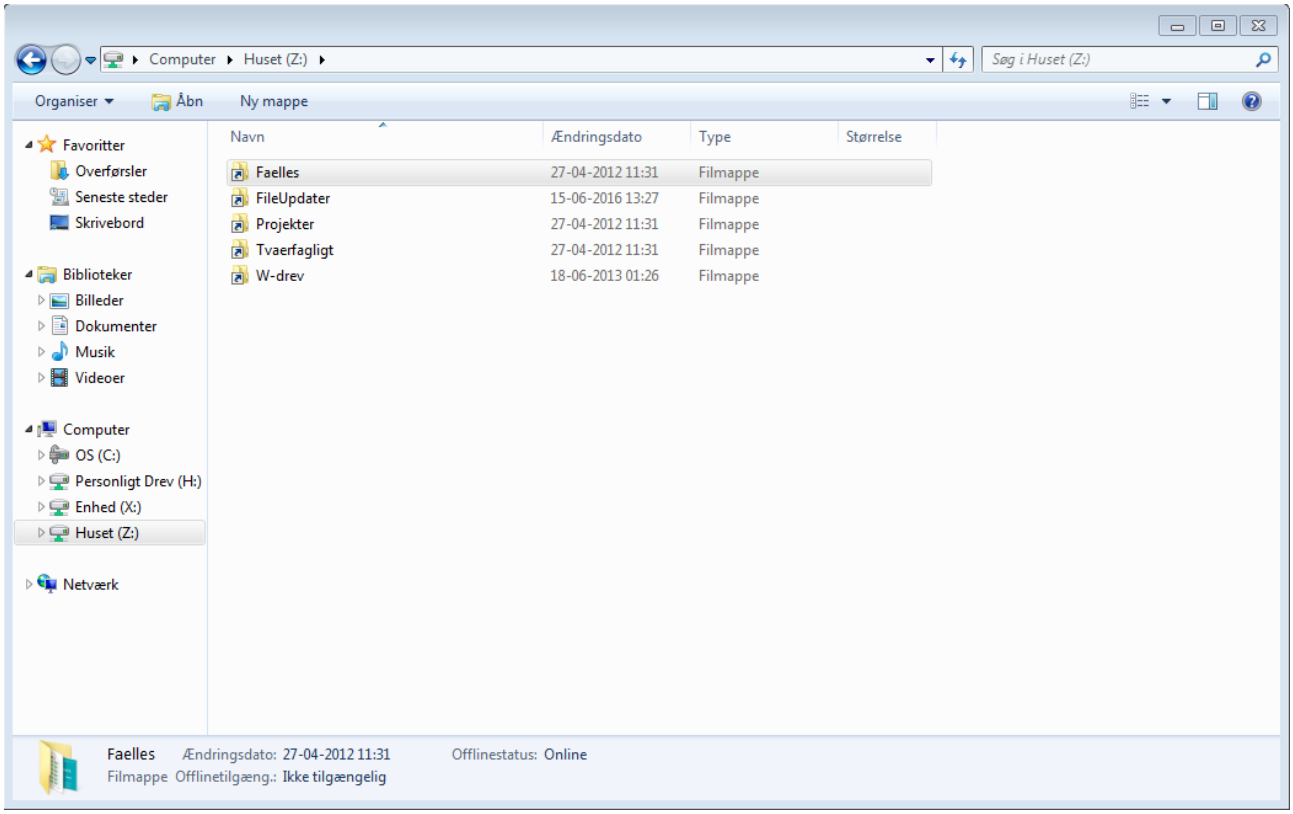

**Source:** http://www.kk.dk/artikel/befolkning-og-fremskrivninger

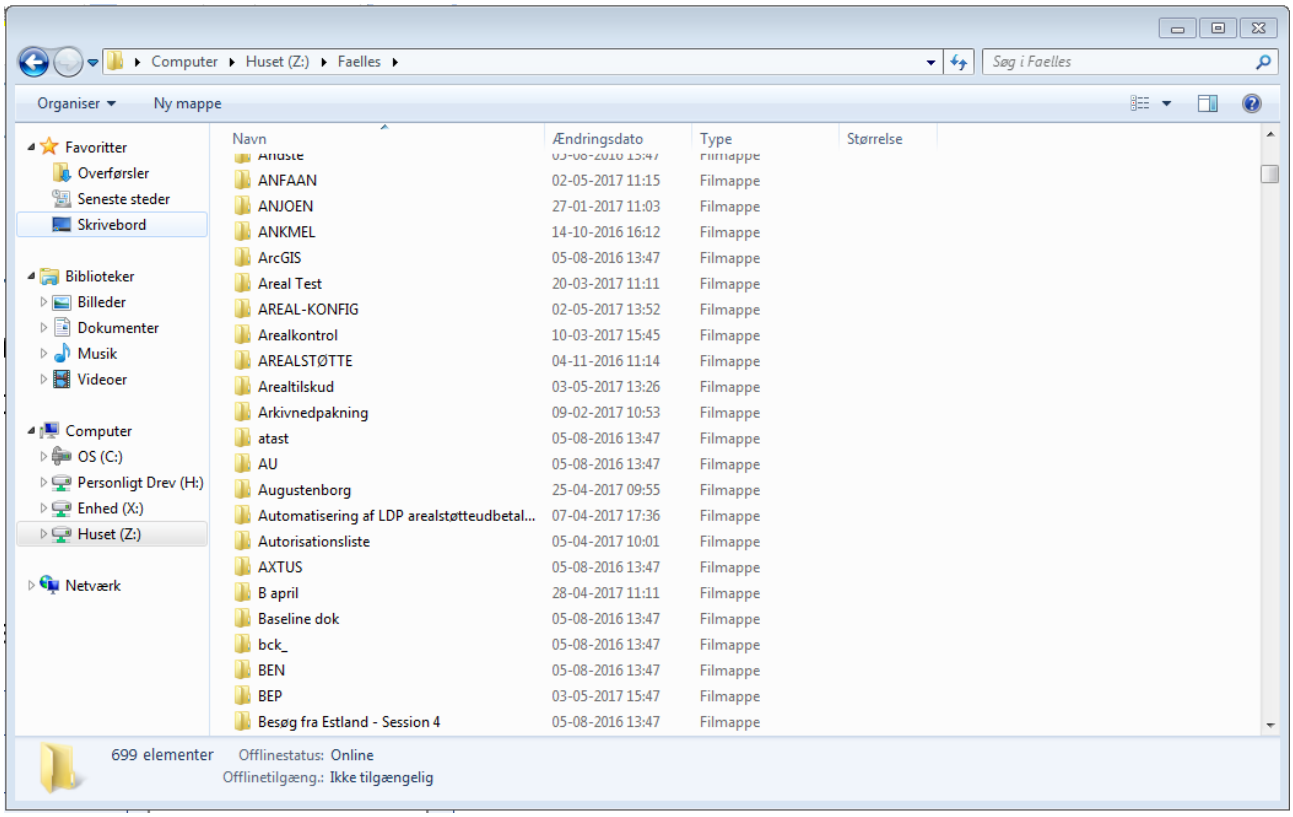
## 3. Departments and units



# 4. Technical and Environmental Administration

# 5. Knowledge Book



# 6. Interview transcriptions

## Interview 1

**Location:** Center for buildings, unit for building permits 'north'

**Date:** 13.02.2017

**Start time:** 15:00

**Duration:** Approximately 45 minutes

**Interview:** Jasmin Suljevic

**Respondent:** Head of Unit. Mirza Hadizbegovic

**The interview content**

**Interviewer:** *Hello. For you information, the purpose with this interview is to introduce to the case organization, and also hopefully identify the problem area from your perspective*. We wish to talk about your role and how it is in terms of the unit and knowledge sharing.

*First question is regarding the organization and about you self. Who are you? What is your role in the firm? How long have you been employed at the firm?*

**Respondent:** I am the head of unit here at North. I have been here for 3.5 years. I have the responsibility of all the cases regarding building projects, all from the little carport to big constructions like the opera house. It is a wide spectrum of different cases. I have just about 55 who are engineers, architects, lawyers and administrative employees

The center for buildings consists of six units but with three overall areas of focus. The three units deal with cases, which is the core of all. And then there are three others who stands for receiving cases, journalizing old cases etc. BBR unit is where you make building and housing records. All the changes that become the registry are there. SKAT can draw information from there.

I have about 55 person under me. Different groups of professionals. Someone who deals with cases, i.e., which gives building permission, all assess whether this can be done. Then they may get a license. Then there are some lawyers who stand for the legal issues. And, some administrative employees who takes care of writing things together. And then there are supervisors who are looking at whether they are doing the right things.

**Interviewer:** *How is the unit and department structured?*

**Respondent:** There is no hierarchy. There is flat structure. Everyone has different tasks. Builders who are either architects, engineers or constructors meets with people who want to build something and investigate whether the legislation on this can be done. If not, you will receive a rejection. Otherwise, building permission. Legislation is being examined to see if it can be done by lawyers. When the architects have made the proposal, HK people put things together, for example formulate it, etc., and supervision takes over the project and supervises.

**Interviewer:** *So your unit doesn't have any formal structure? Do you have someone that is responsible for some areas?*

**Respondent:** Well, no as mentioned there is none structure. Just many employees doing their work. And the most experienced one have some more complex task, and they are also the ones to come to,

when needed help. They are very kind in helping, especially the new ones to solve tasks. Otherwise, in relation to the organizational structure, I can refer to the homepage, where there is a PDF file that illustrates the TAM, Center for buildings and the different units with the areas. I will send it to your email address, and you can use it in your report.

**Interviewer:** *Thanks for that. You mentioned that there are these different groups of professionals and there roles? Are there so a lot of cooperation between them?*

**Respondent:** Yes, there is indeed. It is crosswise cooperation.

**Interviewer:** *What kind of employees do you have and are there some challenges?*

**Respondent:** Well we have good people here and most of them is highly educated, so they are self-driven and do not need to be told what to do. That is very nice. In addition, they are both young and old, so I guess between 30-50 year old. We also have some younger one, and actually, at the moment there is a major turnover, so that is a challenge for me. I also have to sack people at times because they are just not performing well. So "At the moment we have a lot of new and young employees, which is nice, but as there is a major turnover, we need make sure that the knowledge they have stays with us. That is probably the biggest issue now, and in terms of knowledge sharing.

**Interviewer:** *What is the main difference between the young and "old" employees?*

**Respondent:** I think the old ones are more self-driven and can handle more tasks and especially the complex ones. They usually have more experience which is always a benefit, and that benefits also the newcomers. They can help them with information and knowledge on specific areas. But again I think this could be written down, so they don't get disturbed by for example newcomers. The new and young, because many of the new are actually yon gang typical between 25-35, are different and come with a different sharing culture. It is as they are more willing to share everything. Both personal issue and job issues. So they are different in that sense. For me, I think the new employees and especially the young ones are very good at adopting and learning quick. They are very good at socializing and easily gets into groups, where they talk and help each other. But they also use the system to find much of the basic information, in which they need

**Interviewer:** *Which profile do you prefer?*

**Respondent:** I don't know. For me the most important thing is that they do their jobs, but I like the new and open way people talk are collaborate. I just think sometimes we need to be more productive and write things down so there is less talk and meetings. However, I can see they thrive by that, which is though good

**Interviewer:** *I will now address some of the question related to the topics we mentioned in the begging. Can you attempt to define what you think knowledge sharing is to you?*

**Respondent:** When we are as big an organization as we are, and consist of approx. 250 people. Other municipalities, for example, have 5 architects while we have 120. Then there is a need to do things. If you and the other seek permission to make a house two different places in the city. You must experience the same case processing. It does not benefit that one gets permission while the other does not. Then we don't talk well together. There is a need to find a place where we can share common things, for example, how our practical legislation is. It is fixed but can also be interpreted differently. But our practices, our interpretation of the law and our experiences from the city and from cases must be shared somewhere. And make arrangements how they are held.

Knowledge sharing is now passed as follows. All groups all have their own system. So our architects have their own system / structure. Firstly, it has not been updated for the last 3-4 years because it has been neglected because of bustle. Secondly, it applies only to architects. So if they need a professional question, they just go there and look. But it's big and unstructured and can not really look into it. You can only do that if you really know where things are. So that's very outdated system. One can not just go in and see about brick houses, because one has to know that something is in there. So search feature is bad and outdated.

Our admin people has the same system or similar. It is a bit better updated. But there are still no search features. The systems are very simple and consist of Word files. Each group has their own , but the systems are too old and not updated. There is not a procedure for who to update

**Interviewer:** *What you think good knowledge sharing is, and in that extent bad knowledge sharing?*

**Respondent:** As mentioned, we have to share knowledge between each other and have the will to do so. There have to be a great knowledge culture, which enables know sharing in first place. Then good knowledge sharing comes along. And bad is the opposite

**Interviewer:** *What is your experience with the current way of sharing knowledge? Is it sufficient?*

**Respondent:** Well I think it ok, and it is very experience based knowledge because people talk a lot together and share knowledge in that way. I would simply like if we could standardize a lot of the knowledge so we can facilitate the process of case processing. It would make it much easier for the new one to get into the role

I know their challenges but do not use the system every day. They usually share knowledge verbally, and in some extent the

**Interviewer:** *Due to neglect, etc. Have there been promises of an improved system*?

**Respondent:** Yes, in recent years, we have talked about doing something. We have been very attentive, but have we have only down priority.

**Interviewer:** *What was good before the system?*

**Respondent:** When we started, it was new and relatively updated. Now things have changed since. People have not updated and no one has taken responsibility for doing anything.

**Interviewer:** *Do you have any requirements for the system. Some specific changes*.

**Respondent:** We need to gather everything somewhere. We need to clean up before we put it in again. There must be opportunities to search for topics, years, so that as a new employee you can search for e.g. on balconies. There is a need for a clear procedure on who is updating. Who can do it and how do we report to people who have done it.

**Interviewer:** *How do you feel your employees handle the system?*

**Respondent:** Employees constantly demand the system. They are sad. They want to. There is no immediate resistance

**Interviewer:** *How will they affect workers' morals?*

**Respondent:** Think people will be very happy. Because they want to make people more independent. We have employees many new ones who will feel well adapt and self-employed. They will also relieve the more experienced so they can focus on their own work.

**Interviewer:** *Can you mentioned some functionalities the system should have?*

**Respondent:** The knowledge sharing system must consist of hardcore legislation. But we need something else, because there are cases where there is no clear legislation. There is nothing black and white. Here we need to have guidelines for how things are done. We need a section where there is mutual agreement based on experience from previous cases. So it must be based on some professional, some experience and some agreements.

**Interviewer:** *So it should be understood to build a new work culture? Where there are standards, everyone looks for a standard?*

**Respondent:** Well, you need something, then you go somewhere and turn it up. For example, experience has shown that it is etc. So you can see that's what we have and experience has shown that you can do this here.

**Interviewer:** *What are the perspectives?*

**Respondent:** But we've started doing this. There is a project we drive. But we have a temporary model, but we eventually look at something more delicious. So yes, the one we are working on now is just temporary because there's a need for it. We are going to get a better system called D4 in the near future

**Interviewer:** *Do you consider whether to develop or buy yourself?*

**Respondent:** We do not know yet.

**Interviewer:** *You mentioned something with a temporary system. Should it be understood as a short-term solution?*

**Respondent:** Yes, exactly. The big solution we are waiting for because they cost. But right now we just need to update and do something we can use this year. For example, look for features in Word, etc. Just a simple.

**Interviewer:** *ok, so can you maybe express with your own words what you think the current issue or problem is?*

**Respondent:** Yes. Well as mentioned, the 55 employee are dealing with a knowledge sharing system, which in reality is not a system but rather a way of getting information and knowledge from each other in order du proceed in their respective cases That's the problem and I think we can do something to address that. Maybe with a new system.

**Interviewer:** *And, what is the perception of the employees?*

They agree. It is none secret, that the system is bad. So employees are actually tired of the way they work, because the "system" is really difficult and time-consuming. They can use much of their

working time on searching for updated information and knowledge within a specific area that can solve a particular case. So they have asked for improvement. So I certainly think they will easily accept a new and better system.

**Interviewer:** *So is it a bottom up approach?*

**Respondent:** Yes indeed. The management has been aware of the issue in some extent, but as mentioned neglected due to prioritizing case processing than improve knowledge sharing. But in general, my perception is that we have to have a common way of solving cases. Or at least that is what I wish we could do. For example, if two cases are similar, than the case process should be similar and probably have the same output. My view is that we could place a lot of the information and knowledge at one place". It is as simple as that.

**Interviewer:** *Ok, maybe we can move on with other areas. Are you familiar with the term knowledge management, and if, how do you perceive it?*

**Respondent:** *No not really. I can image what it is about. How to manage knowledge right?*

**Interviewer:** *Yeah in some extent. How has the management approached the concept of KM*?

**Respondent:** we have been very active in providing time and place for employees to interact and in that sense share knowledge, but time is precious and we need to solve cases. As mentioned before, the focus has simply been on finished cases.

**Interviewer:** *so, shall I understand that these places have not been provided?*

**Respondent:** well, for some time we had ones a weak one hour of discussing themes and some case, where especially the experienced ones can contribute with some knowledge and expertise. For example, some argue that 31 % of the property should be allowed to build on, while other argues that 30 % is enough. So that 1 %, which of course is important, but much time is used for that instead of just saying, let's go with a standard 30 %, and that is it!

**Interviewer:** *So is there a clear formulated knowledge strategy?*

**Respondent:** Well we have that system, which stores some information and knowledge, but there is so mush experience and best practices that need to be written down so others can used that as well. Therefore, our strategy should be to try to convert that knowledge so everyone should have access to it.

**Interviewer:** *Do you believe there is a will to adopt this kind of strategy?*

**Respondent:** Yeah why not. I think it will benefit everyone if there is a way to increase knowledge sharing by for example storing, creating and converting knowledge, so it is accessible to all. Hence they would be more effective in their working hours and want disturb other with standard knowledge, which they could find in a knowledge base.

**Interviewer:** *So do you feel that KM can increase the knowledge sharing?*

**Respondent:** yes for sure.

**Interviewer:** *can you see any disadvantages?*

**Respondent:** No not really. Of course, there will always e challenges with people accepting a certain action form management, but I think the culture is up for it, and employees have been asking for an improvement.

**Interviewer:** *To what extent to you feel there is a will and desire is to share knowledge?*

**Respondent:** well, very much. We have many new and young employees with a different attitude and will to collaborate and help each other. We had some issues with the old generation, which were more restricted and did not always wanted to share and collaborate. However, I think many of the new ones are different. The will and desire is there if you ask med, but I do not know how they feel. Nevertheless, I am sure.

**Interviewer:** *How about the environment within here?*

**Respondent:** Do you mean the working environment? Well it is good I think. Before we had a more tight place, but it is different know. Lately, I think of the good things we did was to get this large space that we have. Before we moved to this building in 2009 it was more closed spaces, of course not cubicles, but definitely more closed spaces. So moving to this building and getting this large space was really good for us. I think just the openess of the space encourages people to be more open. Our culture is very reliant on helping and being open and removing these walls, or barriers, really helps that purpose. And an another thing is the way we have decided to have people seated. It is not divided in to these very old schools like sections, like high school cliques, where nerds sit one place and the popular ones sit together. Lawyers sit with other lawyers, but also with people from other groups of professionals. And the same with HK, engineers and project managers. It's a really diverse and mixed gathering". Actually, even the managers sit in the offices with employees. It has just become natural to us now. We try to remove this scary barrier that typically exists in big companies. We want our people to feel like we are all in this together. And it also makes us much more accessible in case one of our employees needs something. And it also makes them much more accessible in case we need something from them. It's a very good approach I think

**Interviewer:** *Thank you for your time*.

## Interview 2

**Location:** Center for buildings, unit for building permits 'north'

**Date:** 23.02.2017

**Start time:** 10:00

**Duration:** Approximately 25 minutes

**Interview:** Deniz Erim Cicek

**Respondent:** Lawyer

**The interview content**

**Interviewer:** *Hi. Can you please tell me about yourself? E.g. your position and how long you have been here?*

**Respondent:** My name I Dina and I am working here as a lawyer in the unit 'north'. It is a large unit of 55 employees. We are in the center of buildings where there are about 250 employees. My task is to convey knowledge in principle that you translate legal material into ordinary speech. I have been here for 2.5 years, and came from a municipality where you had a systematized knowledge system, so it was a surprise to come here, where much knowledge is verbally delivered. It is a rather weak way and is vulnerable, if there are few who have the knowledge that is not communicated further. In addition, it is very difficult to keep track of practice; in case of someone who retires, is sick, and than there is challenges. Then the question is, how do you relate to this practice and knowledge of what lies behind it? One thing is that you can read the legislation and other new decisions, but at the same time, you need to be aware of new practices. You are therefore dependent on each other and that is why it is important to convey the knowledge we have. We are in a time where it is not to expect people to work 40 years at the same place, there are major turnovers of workers, and it keeps on going. That's why it's important to anchor knowledge.

The situation now is that people are talking how to gather knowledge, and action is needed, but its like management has not prioritized it, and said it is difficult, and so insure that knowledge in another way. My current management is working proactively to ensure this knowledge. However, things take time, but something is happening. Nevertheless, right now, there has been a lot of focus on templates and processes, but much knowledge is missing and has not been shared, so everyone has that knowledge. Or at least to find and access it, update it, depending on what management and policy decisions may be. And which directions you are working towards**.**

**Interviewer:** *Can you tell me a little about how the system was in the old municipality you are working in?*

**Respondent:** Yes, it was a municipality that had cooperation with many surrounding municipalities. It was a system called D4, oh it's a form of what you can call it. Both processes and templates are written down, and it is actually something that started with the Quality Management Act, which was forced to write down, as you wanted transparency in relation to the practice. For example, if there were some new legislative changes, it is made sure of that is it written down. In addition, if there are some practice changes, e.g. a decision that changes a practice you have had, you can also get it in the system. However, a knowledge sharing system requires maintenance and management support for it to run effectively. But the system was great and I could wich that we had such system here also. But it is not up to me, rather others has to take action.

**Interviewer:** *So what that a culture shock?*

**Respondent:** Yes indeed. I think I experienced it as I came back in time 50 years! The municipality of Copenhagen has never been under pressure on resources, nor is it in contrast to many of the small municipalities. Small municipalities find it difficult to keep an employee and there is a big shift within different municipalities in the surrounding area. And because of the size, you have been in a protected state, saying it is nice to have some specialists, but we need to be generalists because it is important to be strong at 360 degrees as far as possible. What I mean is that you have to have knowledge in different areas, so you can always say yes there is always someone who is better than others in the ideal world. However, there is a lot of silo culture if you do not have knowledge sharing, and that means that it is very easy to get an effective treatment. For example, on sick days and holidays, we have suddenly something for practical reasons that stops os.

**Interviewer:** *What are your personal experiences when you came here?*

**Respondent:** Copenhagen municipality is coming digitally, but the other municipalities have digitalized for several years. There is progress and change, and digital makes knowledge sharing easier. The vulnerability is such that it passes slowly and goes down, etc. But the benefits of digital knowledge sharing is that you don't have to find a folder etc. So everyone can find it digitally and have access.

**Interviewer:** *So right now, are you using a digital system?*

**Respondent:** Not really. It is going in that direction, but the current system is folder structure, where there are some law basis information and knowledge that can be found where you can move on so that you are not stuck. Then there may be more concrete cases where it is relevant that you need more information and asks another more experienced employee. But the system does make you have a base, and some low-tech things are described which are relevant. For example, which groups to work with, and you also know whom to work with.

**Interviewer:** *Is there any structure in what you write down now?*

**Respondent:** No, there is no structure. It is some knowledge book or grey books, where some is written down and you can try to find it. Normally only those who has written something down can find it, otherwise it is so hard to do so. You can look for titles in alphabetic order actually guess. It's not advanced system, so it can by far be made smarter, because other municipalities have it. It requires managerial support and some actions.

**Interviewer:** *Has is management reacting to that?*

**Respondent:** Well, as mentioned there has been some actions and people have been talking about it, but nothing has happened yet. So my impression is that maybe something is ot its way.

**Interviewer:** *Do you feel overlooked by management ??*

**Respondent:** I think it has been said many times, so that is what you can say. It is not something that has been prioritized.

**Interviewer:** *Do you know why?*

**Respondent:** Yes, due to operations. Focus on operation, because in the short run, it is incredibly time consuming to update knowledge. Nevertheless, it is something that scares the experienced employee so they can make cases. They do not have to use their time on sharing knowledge.

**Interviewer:** *How does it affect your everyday life?*

**Respondent:** I have a very busy day. We have many lawyers, and you can wonder why you need so many. I think it is because there are uncertainties if you had written it down, so you might consider using resources differently.

**Interviewer:** *If a project manager or someone else has the same questions, and these go again. Does it affect effectiveness considering you come of your focus?*

**Respondent:** Yes, it surely does. Because if you had an easily accessible knowledge, let say some administrative knowledge base, where you can find some basic and relevant knowledge. Templates also good and make their way. However, it is efficient if you have written down knowledge. For example, if easily accessible, you know where to find it, it is easy to update and everyone has the same foundation to work and speak from. Then it becomes more transparent, predictable and intended for citizens and applicants. This means that trust is still on us.

**Interviewer:** *Do you think a new system can improve this?*

**Respondent:** I am convinced it will.

**Interviewer:** *It says that there have been many initiatives to get a new system?*

**Respondent:** Yes but you cannot make it all at once. You have to take it easy.

**Interviewer:** *Have there been any form for strategy to deal with knowledge? Are you aware of that?*

**Respondent:** No not really. For example, we have been trying to meet one or in some occasion twice a week to discuss some certain cases and it that way also share relevant and actual knowledge. This has been very effective, but I feel that we still need a base or foundation where we can store some basic knowledge that can be used by everyone, and especially by the many new employees. In that way they won't disturb others and especially the experienced ones, which in many situations are on some more complex cases.

**Interviewer:** *Could you imagen that these meetings could improve the knowledge sharing?*

**Respondent:** Well, of course, but there has to be a mix. For example, lets meet some times, because it is also good to talk in person and share information, knowledge and experiences. Many of the old employees have experiences in dealing with cases and that experience is very valuable. Therefore, I think it can both improve the knowledge sharing but it also enhanced our collaboration, as we get closer with one another and that makes is also easier to work with one another.

**Interviewer:** *Ok, so is the social aspect good here?*

**Respondent:** Yes very much. If you mean if we get along, than yes. Of course, some are easier than others are, but in general is fine. At least from my perspective. Actually, it is primarily the new and younger generation that is good at socializing, while the older can sometimes be a bit stubborn and uninterested. By as mentioned many are new, so yes the social aspect is actually good.

**Interviewer:** *So, can I understand it as the social aspect have great influence on knowledge sharing?*

**Respondent:** Yes indeed. People are getting more comfortable when they are good with one another. So that is natural. There is a bit difference between the old and new. I have been here for

couple of years, so I old. But in general I think that the new generation is more willing to collaborate then to compete, which is nice. The older ones could be more reluctant to share and collaborate. That's just how I see it. Maybe because they want higher salaries, I don't know. We are happy when new employee come. It is always nice.

**Interviewer:** *If feeling stresses, because we assume that everyone experiences that scenario. Can you than command to share knowledge?*

**Respondent:** Well it is very difficult to answer. In general, by nature, I am always in a mood to talk and share knowledge and experiences. I am a lawyer, so I like to discuss things, e.g. something new or if one has interpret a law in a very different way. Nevertheless, stressed periods can always be difficult for some to talk to others and help them. In the end, people work for themselves, and thus they have to deliver. This also again support the fact, that it is good to have a knowledge base where some information or specific knowledge, experiences etc. can be applied.

**Interviewer:** *Do you experience competition among employees?*

**Respondent:** Well, no but I guess some will always like to compete. The young ones are very good at talking and helping one another. Nevertheless, there is the say that some will always look first at themselves and e.g. will not share knowledge to lose the expertise positions. However, I do not think it is like that there.

**Interviewer:** *Ok, I will ask into something else now. How is the current psychical infrastructure or working environment within the unit?*

**Respondent:** Well, I think you probably mean working environment here, right. As you maybe notices, it is very open office and it is quite good. I like it that way. This is modern and makes it easier to ask some if needed some ting. In addition, the way things are done here reflects the infrastructure. For example, the culture is open because of how the offices or tables are positioned. So, it is very common way, where you see it in many other organizations.

**Interviewer:** *So do you e.g. think this is an appropriate way of sharing knowledge?*

**Respondent:** I think so. But as mentioned before, there has to be a mix between verbally sharing experiences and knowledge on e.g. specific cases and also a knowledge base and as now a smarter knowledge book, where some standard basic knowledge is.

**Interviewer:** *How would you describe the collaboration level here?*

**Respondent:** I think it is good, especially when needed. And it is often needed, even though many cases are similar, than there is often needed a person to ask one of two question. For example, to simplify some things etc. Nevertheless, there is a good chemistry especially among the same groups, but also across. We need each other, but it is also required to work individually.

**Interviewer:** *So, do you rather prefer this kind of collaboration or for example to search for information and knowledge in a database?*

**Respondent:** My job is always very interactive in terms of meeting with other lawyers and discussing some cases. But, I know my stuff and some very basic standards laws related to the construction. But, by nature I prefer to interact and speak.

**Interviewer:** *Do you feel it is necessary do be more effective to interact and meet?*

**Respondent:** Well, I certainly think that is a good thing. But I can do much of my job without speaking to anyone. It does help in cases that are more complex. However, but in general I can do my job. All of us can, that is my perception. But is meeting, discussion and other forms for interaction are always welcomed, because I think its logical that they could increase the collaboration and knowledge sharing.

**Interviewer:** Lastly, does time vary on two similar cases?

**Respondent:** Yes they do

**Interviewer:** And why is that?

**Respondent:** It's because cases never always look the same. They are rarely actually similar, even though it may look that way. And one reason is simply just because someone may know more than me on that topic. If I'm a new employee and I have to do a case, which an employee who has been here for 20 years also has to do – I mean two different but similar cases – that employee will naturally have an edge over me.

**Interviewer:** *Ok thank you for your time.*

## Interview 3

**Location:** Center for buildings, unit for building permits 'north'

**Date:** 23.02.2017

**Start time:** 10:30

**Duration:** Approximately 22 minutes

**Interview:** Deniz Erim Cicek

**Respondent:** Anonymous

**The interview content**

**Interviewer:** *Hi. Can you please tell me about yourself, and what you are doing here at unit for building permits?*

**Respondent:** My name is Peter and I have been here for almost a year, and I am an architect. Most of my working day goes on with looking at some case that I am allocated to. Now I have been handed some very common, and you can say standard case. For example I am dealing with some family houses, which have standard case process, so in that sense, I is rather appropriate task. Nevertheless, I like it here and people are very good at helping if I need help for something. But as for my position, my overall job is to look at the drawing and asses if it I possible to do this. And often I talk to other architects to asses if this leaves up to the building laws etc.

**Interviewer:** *Ok, so it sound like you have many similar tasks, or tasks that required similar working process?*

**Respondent:** Yes, you can say that, but because I am new, then I need some help. Otherwise, the case processing is similar when the case is normal, e.g. when the application lives up to the requirements and everything is in order.

**Interviewer:** If you received two similar cases, would processing time vary?

**Respondent:** *Yeah all the time. There is always something about them that aren't the same. On paper, probably, yeah. But in real life, no. They are often not the same, and can vary a lot. Some cases may be processed quickly, while others can take up to years to process. And that can also be the case for two or three similar cases."*

**Interviewer:** *Can you explain what you understand about knowledge sharing? What is it for you?*

**Respondent:** It is obvious. For me it is how some knowledge that one person has and how he or she shares it. For example, I have some knowledge through experience here in some particular case, and that knowledge can I, if I wish, to share with others. Now I think there is a great culture of sharing knowledge here, so that is not a big deal. People a very nice towards one another, and often sharing both specific knowledge and case experiences.

**Interviewer:** *So are you saying that the knowledge culture is open, or?*

**Respondent:** That is what I experience at the moment. In addition, because there are many new employees, it is necessary that it is open to talk with each other and in that sense share. So yes I would say that the culture is rather open.

**Interviewer:** *Is the working environment then very hectic?*

**Respondent:** No not that. Of course, we have some more busy periods than others, but in general it is going on a smooth level. Some have more complex cases, while others have less complex. I can see that some of the more experiences architects have busy time, but they also have cases that are more complex. And they are the less ones to want to share their knowledge because they simply don't have time. In general, the atmosphere is great after all.

**Interviewer:** *And when you say complex, what do you mean? More specific?*

**Respondent:** Well it is often some bigger constructions where it is more complexed and requires mores laws and static calculations. Engineers are often allocated to help and actually several architects can be assigned to similar case**.**

**Interviewer:** *Ok, so maybe there are some competition to get the best cases?*

**Respondent:** Well no not really. The experienced ones always get the most "complexed" due to its importance. In general my perceptions is that there are not competition, and especially as we often work in groups than we are on the same case. Therefore, it is all about doing the job.

**Interviewer:** *Are you close with your colleagues, I mean socially as well?*

**Respondent:** I am new and young so I do get very well along with the young ones. I believe it is very important to fit well here, and in general everywhere, if you are to succeed. So I would say that I am very active, and I also se some of the other gays from work in private.

**Interviewer:** *Do you think that contribute to better knowledge sharing, or if you are closer to one another, than it is easier to share knowledge?*

**Respondent:** Yes for sure. Yes, obviously feel more comfortable, are more willing to share, and want to have some from the others. I do not think there is a competition aspects, where some would neglect to share for their own benefit, because my perception is that this is not that kind of unit.

However, I have heard that some of the older ones sometimes can get more quiet and unwilling to answer some questions. However, they also have their own case to focus on. I can understand that

**Interviewer:** *To be more effective, do you then believe it is required to have more collaboration?*

**Respondent:** In some cases. The simple ones where there are standard procedure, there are some best practices written down, and toy do not have to talk and cooperate with none. That is very nice. However, my view is that collaboration is always more effective. I can see that many do not have to always collaborate here, but they still do because it is always nice to hear other views.

**Interviewer:** *Ok, do you know if there has been any strategy from the management to share knowledge more effetely?*

**Respondent:** I know that there has been some initiatives to meet and talk about different cases. In that way, we shared experiences and knowledge.

**Interviewer:** *Do you prefer that strategy?*

**Respondent:** I think it nice, so we can meet and talk thing out. I actually talked about this earlier, but I prefer to meet in person and talk rather than only sitting alone and solving my cases. However, of course you have to have a mixture of the two strategies, as not everyone prefers equally.

**Interviewer:** *How would you asses the most frequent way of sharing knowledge here et the Unit?*

**Respondent:** verbally for sure. Some things are written down, but in general, people share it verbally. If you need something, just ask the other gay. That is the culture here.

**Interviewer:** *You mentioned written down. Are you using some kind of system to share knowledge and information?*

**Respondent:** Yes we have all folder structure which primarily consist of word documents, where people write thigs down. For example, some best practices and basic standard knowledge that can be used to solve some standard cases.

**Interviewer:** *Is that a good system to use?*

**Respondent:** My perceptions is that it is very weird and not that effective, because it is not so easy to find the needed information. So in general in this digital world, I think we could invest in a better and more effective system. Also a better looking, with smart functionalities, because I would say that smart system also encourages people to use them more. But actually, in most cases the system is OK because it provided the needed information, but I feel we still need to talk to other to gain the most relevant and updated information.

**Interviewer:** *So you believe a new and smart system would improve your activity level?*

**Respondent:** I will probably use the system more and if it has a good search function, than it is very nice. We have been talking to improve the way to share and work, and a new system has been on the agenda many times.

**Interviewer:** *Is the current way sufficient?*

**Respondent:** Well I do not know. I some cases yes, but I think in general a new and smart system would of course be better. However, it is up the management to invest and do something. I believe that we could use a better system, yes! I some way I also believe the culture and interactions could also be good for us, because in that way we actually get much information and knowledge shared.

We have asked for a better system. It's too difficult and tiring to do it the way we are now. And I even believe that the one they are working on now is only a temporary one, because it is in so much of a need. There are visions to invest in an even bigger and better system down the line

**Interviewer:** *Thanks for your time. I think it enough now.*

### Interview 4

**Location:** Center for buildings, unit for building permits 'north'

**Date:** 23.02.2017

**Start time:** 11:00

**Duration:** Approximately 20 minutes

**Interview:** Deniz Erim Cicek

**Respondent:** Anonymous

**The interview content**

**Interviewer:** *Hi. Can you please tell me about yourself, and what is your position here at the unit for building permits?*

**Respondent:** My name is Hans, and I have been here for almost two years, and I am educated as an engineer. Therefore, I mostly work with the construction processes and actually mostly cooperate with other engineers and architects**.**

**Interviewer:** *Can you attempt to define what you think knowledge sharing is to you?*
**Respondent:** I think knowledge sharing is when you wish to share knowledge. I think that for me knowledge sharing is when I share my experiences and the knowledge I have to some that want that knowledge. So it is probably very different how people see it.

**Interviewer:** *Are to willing to share your own knowledge?*

**Respondent:** yes I am. I don't know one would not do that. We are here as a team and should help each other.

**Interviewer:** *Ok, but some would not like other to have their let's say expertise view and knowledge, so they won't share that? What is your view on that?*

**Respondent:** I understand that, but it is not that way here. That is my perceptions at least.

**Interviewer:** *Can you give me an example of good and bad knowledge sharing?*

**Respondent:** I would say that good knowledge sharing is when someone wishes to give you that. And bas is the opposite. So also the content of the knowledge.

**Interviewer:** *Can you elaborate?*

**Respondent:** I think good knowledge sharing is, when you get what you want and the right content. Moreover, the will and desire from the person or persons to ask. Otherwise, good knowledge sharing is when the knowledge is there and accessible from every corner, so you do not have to look for it with great difficulties.

**Interviewer:** *How is information and knowledge being shared here today?*

**Respondent:** We share it after demand. Normally I ask a person of something and get the answer. My perceptions is that most of people in here are good at sharing and are willing to provide the needed information or knowledge**.** So I guess verbally is the answer. We also have this system where we store some information and knowledge in some words document, where people then can access it and find what they are seeking for. Now, that is ok, but the system or whatever you can call it is very unstructured and hard to navigate in. You really have to know where things are if it is applicable. Nevertheless, it can help you get most of the basic information needed to solve some basic cases.

**Interviewer:** *Do you think the system is sufficient?*

**Respondent:** I do not know. Maybe in some cases, but if it just was better, more structured, organized and people know where to look, and then maybe it could be sufficient. Because I think a knowledge base is good to have, but our kind of work here I based more on experience and collaboration, where people talk and help each other.

**Interviewer:** *So as I understand it, maybe the focus should not be on improving the system or?*

**Respondent:** No, I think in general a better system would always be more effective, and hence the knowledge sharing would probably be better. However, the current system is to some extent ok but need to be upgraded so people know where to look more specific. I think more interaction and collaboration would also improve knowledge sharing as people like to socially interact and help each other, In that way it is faster, more fun and it actually also increases your competences**.**

**Interviewer:** *Ok is sound like you have some specific type of knowledge here. What kind of knowledge is primarily here?*

**Respondent:** Well yeah, I think tacit and experience based knowledge is everywhere here because people often work on many cases and get experienced. So explicit knowledge is also here. When this is written down like in the system, then many can se that knowledge as well. However, as mentioned it is very had to navigate within the system, so I really do not know how to perceive that system. Nevertheless, from my point of view, I think is ok I we are allowed to get help and interact with the other.

**Interviewer:** *Ok but are you allowed, or how is the culture within that area?*

**Respondent:** yes of course we are allowed, but you know sometimes people don't have time and the management wants to leave especially the experienced that are on more complex case alone, so they don't get disturbed. However, the culture is rather open and people share and talk very much. I like that way, so you do not just sit there by your own table and work alone. I don't know where everything is. So what I do is I have to ask someone instead of wasting time looking all over for it. So if I need help from an engineer, there is no point in me spending 30-40 minutes going in to drives and folders to find a document. It's much easier to just ask someone

**Interviewer:** *What about the management's role. Are they progressive?*

**Respondent:** what do you mean?

**Interviewer:** *I mean is the management doing something to enhance knowledge sharing?*

**Respondent:** yes there has been some talking about getting a new system and I think out head of unit is very progressive and listen to us. But is has been this way for several years now, so I don't expect it to change. To be honest. It's called D4, and it's something other municipalities are using

right now. The one we are waiting to be implemented is not D4 as of yet, but the goal is to get this new system rolling in the future. But right now, it's just a quick solution that can fix whichever problems we have now

**Interviewer:** *Are you familiar with the term KM?*

**Respondent:** No but I guess it is about how management deals with knowledge sharing right.

**Interviewer:** *Can you identify a way the management has initiated to enhance knowledge sharing?*

**Respondent:** I know we have been at this meeting and discussion sections where we discuss some different cases and set some standards. For example in some cases, we discuss if we can give permission to build on 28 or 29 pct. Therefore, that is that kind of discussions we have.

**Interviewer:** *How do you perceive that strategy?*

**Respondent:** I like it because I like meeting and discussions. I also know the head of unit likes it to be more constructive and that we do not waste so much time on these meetings, because in his mind, this can be negotiated and a best practices can be defined determined**.**

**Interviewer:** *Ok so the head of unit is against these meetings or how should I understand it?*

**Respondent:** No, it is, but I think he believes that we are using to mush time on this. But I think it is good, as it helps us get the needed information and also knowledge.

**Interviewer:** *How do you perceive people in here and the working environment?*

**Respondent:** I think is nice and open. As you can see the rooms are large and there is open office, so we are used to talk and interact in that sense. A lot of us actually uses the table and stand up, because we often arise and goes to another person. I personally like that way and this is how I prefer

**Interviewer:** *How is your relationship with other engineers or in general other groups?*

**Respondent:** My is good and we talk a lot. Of course we have our own cases so most of the time we do sit down and work, but I like the flexibility and of course it is healthy to get up of the chair and take a walk now and then.

**Interviewer:** *Do yours think you relationship can increase knowledge sharing?*

**Respondent:** yes of course. With those that I speak, great with, I certainly have better chance of sharing knowledge and feels more comfortable.

**Interviewer:** *Do you then feel there is completion among you?*

**Respondent:** No not really. We like to work together and my perception is that everyone work for the benefit of the organization. Of course, people also think of themselves, but in general no.

**Interviewer:** *For example, when feeling stressed during you work , can you command to share knowledge?*

**Respondent:** Some times it can be challenging and other times yes, because there is a great knowledge sharing culture here, and because someone help you then you also wants to help. Therefore, it is very nice. However, I have experience people being stressed etc. so they don't want to be asked or disturbed**.**

**Interviewer:** *Do you then think a system could be helpful in that situation?*

**Respondent:** yes of course to get the basic knowledge or information, but we do need each other as most is experience based.

### Interview 5

**Location:** Center for buildings, unit for building permits 'north'

**Date:** 23.02.2017

**Start time:** 11:25

**Duration:** Approximately 20 minutes

**Interview:** Deniz Erim Cicek

**Respondent:** Anonymous

**The interview content**

**Interviewer:** *Hi. Can you please tell me about yourself?*

**Respondent:** I have been here for 4 years and is working as an administrative employee. My job is to put thing together after the caseworker has made a draft. I then use my skills and time to write a proper document to the customer and sends a letter is the application is approved, rejected of maybe some additional information is needed.

**Interviewer:** *What is knowledge sharing for you? Can you explain how you perceive knowledge sharing?*

**Respondent:** When people want to give their view and experiences on something and hence want to share information and specific knowledge, is how I see it. In addition, knowledge is there and accessible, so that is nice. Because I for example need that to do my job. Of course, I get some papers from the caseworkers but I need some tacit knowledge too.

**Interviewer:** *And how is bad knowledge sharing from yours perspective?*

**Respondent:** I think it is about the accessibility. If you cannot get it, then it is not properly shared hence bad.

**Interviewer:** *How is knowledge being shared here at the unit?*

**Respondent:** I think most of it is experience based and then people shared it verbally. If the need some information and specific knowledge they just ask. Otherwise, we have this system, where some basic things are written down I word documents where you can get the needed information. Therefore, from my perspective it is nice to have this knowledge base, because I put things together and simply needs paragraphs and some standard writings.

**Interviewer:** You mention that you share it verbally. Is it not time consuming to be running from office to office?

**Respondent:** No, we actually sit in a big office space, where everyone basically sites together

**Interviewer:** So is that not disturbing sometimes?

**Respondent:** *I would say that more experienced employees suffer more from the way we are doing it now. They are more affected by it, because I can't always just sit and mind my own business, even if I have a tight deadline or schedule. The big office is nice, when you need help, but when you just need to focus, it is very difficult to remove isolate yourself, especially because of our culture, where we are open and accepting when and if people have questions. I don't really know how to go about this problem, because I like the open office spaces a lot, but I also sort of need somewhere to go, when I really need to focus. Somewhere with just a little amount of noise, and peace and quiet*

**Interviewer:** *So do you like to have this system?*

**Respondent:** Yes indeed, so I can retrieve the needed information.

**Interviewer:** We've spoken to other colleagues of yours, and what seems to be the general trend is that similar cases always vary, because cases are never really the same. Can you give your best bid as to, why someone may be quicker or better to complete a case, over another employee?

**Respondent:** *In my own head there is a level of competition. You know, we don't say it out loud, but it's always nice to be the best. And the only way to be the best is through experience. Of course other factors are also a part of it, such as the case you are presented with, your customers, management, your co-workers etc., but experience is key. It gets you through stuff quicker. I'd say our oldest colleagues are not necessarily the most efficient, but they do have some kind of insight, an approach to a case that I don't have.*

**Interviewer:** *What kind of knowledge do you see within the unit?*

**Respondent:** I think there is much experienced based knowledge because people is working on many cases and they of course in time get this experience.

**Interviewer:** What is your experience with the current way of sharing knowledge? Is it sufficient?
**Respondent:** As mentioned I think its ok, but I feel that people likes to interact in person because it is quicker and more productive. But of course if you have access to some written then it is good as you can use it.

**Interviewer:** *Can you attempt to explain what the role of management is in terms of knowledge sharing at the unit? Is the management progressive?*

**Respondent:** I am aware that some things has been talking about in recent time. I think they are talking about either developing or buying a system to store more of the current information and knowledge so it becomes more organized and accessible so everyone can use it more effective. Because now its ok, but the system is very unorganized and simple. You can only find things if you exactly know where it is. I also think that our boss is very progressive as he wants think to happen now, because he believed that a new system could improve our way of work and also the case process.

**Interviewer:** *Do you believe a new system can improve the knowledge sharing?*

**Respondent:** A new way would probably be more effective as it would be quicker and nice to navigate within. However, from my views, I would like that, and actually, employees have been talking of new system. But at the moment nothing has happened. I know that management has been working on a system for some time now. I've heard that it's not the first time they have been working on a system, but what seems to be the general knowledge here is that they are currently working on a new system

**Interviewer:** *Do you then believe that an improved system would benefit the case processing?*

**Respondent:** yes indeed, but it is not only the system but also the overall knowledge sharing that can contribute to the case processing. If the knowledge sharing is great than it will contribute to the overall process.

**Interviewer:** *How do you see the knowledge sharing culture here? Is there one or?*

**Respondent:** Yes, I think there's. Because we have a very mixed types of employees the need is also to have a culture to share knowledge. So my experience is that there is one and people are very open about it. My view is that they like to have this kind of strategy, so its nice.

**Interviewer:** *So how are the employees towards each other?*

**Respondent:** I think there is a great spirit and everybody is very open to help. So the collaboration is actually very good and in many cases necessary of the case is to be processed best possible way.

**Interviewer:** *Are people socially active?*

**Respondent:** I think so. Not everyone of course but in general people are. Not this is a working place and the job is the priority, but it is also important to get along an especially the younger ones are most social with one another. While the older do not have time, are more focused on their jobs, and get back home, I guess. But personally I don't have time, so for me it is not that relevant.

**Interviewer:** *Do you believe that if having a good relationship, and being socially active would increase knowledge sharing?*

**Respondent:** I do not know. Maybe. It depends on how people are. However, I think the new are always more into getting in some groups and interact in that wat. Because even though cases are divided in singly, group collaborations are frequent and hence often required to solve the case within the limit, which is about 40 days for a typical family housing case.

**Interviewer:** *So this strategy, is it something that the management has initiated?*

**Respondent:** I mean that there is the strategy or whatever they call it, where people are allowed to share, meet to express their knowledge and experiences. We also had meetings to discuss and share knowledge.

**Interviewer:** *Do you think this can be good for the knowledge sharing culture?*

**Respondent:** I think there is a good culture and if we can collaborate even more and socially interact, and then it would be even more open. However, that is just my view**.**

**Interviewer:** *Do you think there is a general will and desire for it?*

**Respondent:** I think people would like that. I personally are indifferent because I would like the system to be better and hence I can get the needed information. However, this system is a very normal "problem" as it simply has to be better. Nevertheless, as this is a unit where people often collaborate, and socially interact, it can be good to enhance that as well.

**Interviewer:** *Thank you very much for you time.*

### Interview 6

**Location:** Center for buildings, unit for building permits 'north'

**Date:** 01.03.2017

**Start time:** 13:00

**Duration:** Approximately 25 minutes

**Interview:** Jasmin Suljevic

**Respondent:** Anonymous

**The interview content**

**Interviewer:** *Hi. Can you please tell me about yourself, and what you are doing here at unit for building permits?*

**Respondent:** Yeah of course, I'm Ellen and I work as a lawyer in this office, where I deal with anything related to the law in terms of building permits, and new construction.

**Interviewer:** And how long have you been here?

**Respondent:** I have been here since 2012, so coming up on almost 5 years now. Came straight out of school.

**Interviewer:** *Can you tell me what a typical day at work looks like for you?*

**Respondent:** Yeah, so I come in to the office in the morning, and I usually start my day off by going through my e-mails just to see if anything important has happened. And that usually is the case, you know, I'm working on a case now, where we are trying to get it completed quick, because it has been going on for a while now, and the city needs less construction sites. But because of that case a lot of things happen and I usually spend a good hour in the morning understanding, what has happened, what my coworkers have discovered and things of that sort. Then the next step for me is to dive in to a case, and work out any legal issues that may arise, and that can span from everything from laws regarding balcony sizes to ensuring every shareholder in a case knows their rights, and so on. I guess if you don't like law, you probably think it's just studying the laws, but that's not true. I work a lot with people and because no person is the same, no day at work is the same either.

**Interviewer:** *How does your cases differ? Do they differ at all?*

**Respondent:** They do. Even in the context of law, it is very rare that you see two similar cases. Let me give you an example actually. Last year I was on a case, where the construction site was making noise past the hours, which they were allowed to. So we received complaints and I had to go solve that legally with the site. And that was very simple. But when I first got here almost 5 years ago, I had a similar case with noise complaints, but the solutions weren't as simple, because the site was behind schedule so they had to work overtime. And so different cases have different circumstances that change the dynamic of the case. So even if you have 10 cases that from the outside looks the same, it rarely is.

**Interviewer:** Does experience play a part in how quick you process a case?

**Respondent:** Yeah absolutely. I work faster than someone who is new. That’s only natural. But it’s not just because I know how to do something quick. It’s because I have gained experienced in my years here, so naturally I’m going to be more productive

**Interviewer:** *Can you explain what you understand about knowledge sharing? What is it for you?*

**Respondent:** Sharing knowledge to me is about me being able to transfer what I know to someone else and vice versa. It's the experiences I have gathered here since 2012 that I can give to someone who just started working here. And similarly, someone who has worked here for 20 years, or more, can transfer their knowledge and know-how to me.

**Interviewer:** *And how are you sharing knowledge in the unit today?*

**Respondent:** We just ask each other. We work closely together on cases, I mean obviously not all 50-something employees but different people with different skill sets work together, so right now we're just asking each other. We have this large office too, as you probably noticed. So everyone is very accessible. You just walk over and ask.

**Interviewer:** *You mention a large office space. Can you explain what that does to your collaboration in the unit?*

**Respondent:** Yeah it makes it easy to ask for help. The help you're looking for is close to you and you don't have to walk in to a private office of an employee if you need anything. It's makes everything much more accessible, and I guess it supports the style of how we share knowledge. It would make it a lot more difficult if it was in cubicles or multiple offices. We work closely together on cases, I mean obviously not all 50-something employees but different people with different skill sets work together.

**Interviewer:** *Are there any downsides to having this open office space?*

**Respondent:** It's sometimes very disturbing. I would say that more experienced employees suffer more from the way we are doing it now. They are more affected by it, because I can't always just sit and mind my own business, even if I have a tight deadline or schedule. The big office is nice, when you need help, but when you just need to focus, it is very difficult to remove isolate yourself, especially because of our culture, where we are open and accepting when and if people have questions. I don't really know how to go about this problem, because I like the open office spaces a lot, but I also sort of need somewhere to go, when I really need to focus. Somewhere with just a little amount of noise, and peace and quiet.

**Interviewer:** *It sounds like you guys are very close in your work environment. Are you also all social together outside of work?*

**Respondent:** Yeah with some. Obviously it's with the younger employees, as we have more in common, but we do go out sometimes after work and grab a beer or if we stay in working late, we might go out for a quick dinner or so. But that's about it, I think.

**Interviewer:** *Do you think that contributes to better knowledge sharing?*

**Respondent:** I think it would on some level. It's always easier to ask an employee, who you are friends with for help, rather than asking someone you haven't really spoken to. So on some level, I'm sure there is a benefit. I haven't really thought about it like that before, but I guess it makes good sense. But it's hard to make that a reality. You can't be friends with everyone, because there is not enough time. We have cases to get through, and most of us have families or boyfriends or girlfriends or spouses at home too. It's hard to do your job and befriend everyone in about 8 hours a day. We have lunch break, where you can get to know people, but it's not optimal.

**Interviewer:** *Do you think more collaboration would yield higher efficiency?*

**Respondent:** oh of course. We already need each other's help a lot since we always ask each other. And the opposite would be less of that. And since we already ask each a lot, reducing that element of our work would definitely make efficiency worse. Yeah, more collaboration would definitely increase efficiency.

**Interviewer:** *Are you aware of any actions by management, which is to increase efficiency in terms of knowledge sharing?*

**Respondent:** Well, they are working on a new system. I mean, to be exact, they have been working on that for quite a while now.

**Interviewer:** *What do you mean?*

**Respondent:** Well, when you ask around the office, the ones who have been here for some years, including myself, they have tried to make our current system better. Right now, it's just asking each other and then we have this thing called knowledge books, where we can look up stuff. But you have to know, where to look and that's really a big issue. But they have tried to replace that approach for a while now and I don't know if it's more serious this time around, but I guess we'll have to wait and see.

**Interviewer:** *Do you want a new system?*

**Respondent:** Yeah I do. It's just a little too difficult to find the information we are looking for right now. The knowledge books are not that good, and I would like to see a digital platform that is much easier accessible.

**Interviewer:** *So, do you also have other ways than the verbal approach in terms of sharing knowledge?*

**Respondent:** Yeah, we share stuff through e-mail and we also have a system called KMD Structure, but it's very minimal. We also have this simple Word file approach, where we just put documents in to folders. But that gets confusing very fast. But the vast majority of knowledge sharing happens verbally in our office. And maybe that's because the system doesn't work very well. However, I can't say for sure.

**Interviewer:** *You mentioned written down. Are you using some kind of system to share knowledge and information? Do you believe a new and smart system would improve your activity level?*

**Respondent:** Yeah I think it will just because it will be easier to find the information you need. But I don't see a way to make that system, where it can remain organized. We have a lot of cases, and eventually that will add up to so much information that I am very skeptical about how we would keep that organized so that we can also use it in the future.

### Interview 7

**Location:** Center for buildings, unit for building permits ‘north’

**Date:** 01.03.2017

**Start time:** 13:30

**Duration:** Approximately 21 minutes

**Interview:** Jasmin Suljevic

**Respondent:** Anonymous

**The interview content**

**Interviewer:** *Hi. Can you please tell me about yourself?*

**Respondent:** My name is Jacob and I'm a project manager. I work closely with our customers and act as the middle man between the unit and construction sites.

**Interviewer:** *And how long have you been here?*

**Respondent:** I have been with this department since 1999, but that was before the unit moved in to this building. I believe they did that in 2009, but I've been here for around 18 years, and 8 of those years in this building.

**Interviewer:** *Can you tell me what a typical day at work looks like for you?*

**Respondent:** There is no typical day. The tasks vary so much. Sometimes I spend a week in the office, and then spend the next 10 days out in the field. It varies a lot. But when I am in the office, I start off by slowly logging on to my e-mail and checking if I have any unread mail. And then I continue my agenda, depending on what I need to do. And as I said that varies a lot.

**Interviewer:** *Can you give me an example of how it has looked this week?*

**Respondent:** Sure. It's been more or less an indoor week for me. There hasn't been any reasons to get me out of the office, but as I said I go to check my mail and then I have been keeping check on whether or not the right people have completed the right tasks. I put the right people together, organize whatever needed to be organized and ensured that everything went according to the plan we put out.

**Interviewer:** *Let's talk a little about cases. Do your cases vary or are they more similar?*

**Respondent:** They vary.

**Interviewer:** *What if you receive two similar cases?*

**Respondent:** Time always varies. Two cases may look the same at first glance, and I might event think it's the same, when I begin processing it. But there are always details, which make it different. That could be complaints, delays or other things that make one case different from the other. So I don't think you can have similar cases. And if we do, it happens rarely.

**Interviewer:** *Can you explain what you understand about knowledge sharing? What is it for you?*

**Respondent:** Knowledge sharing to me is as the word suggests. I share knowledge with my colleagues and they share with me. I have knowledge that they might want and they are able to download that data from me, if that makes sense. That's knowledge sharing to me. Now is the question is, what is good knowledge sharing, then of course the answer is different. Good knowledge sharing to me is having the information you need available and accessible whenever and wherever you are. If that means you have to use different technologies, then so be it. But having access to the right data at the right time is essential to me. And also, we need to be able to share and upload data from the system.

**Interviewer:** *And how are you sharing knowledge in the unit today?*

**Respondent:** We have knowledge books, where we have some knowledge stored. It's Word files saved on drives.

**Interviewer:** *Is that accessible to everyone?*

**Respondent:** Yes and no. Everyone has access to it, but not everyone knows, where to find it. And that's the difficulty we are facing today I think. You need to know, where everything is, and as the amount of cases we process increases, it's going to get significantly harder to find what you need. I think you're going to take longer to get started at this work place, than at another place of work. A lot of it relates to your know-how and that is not something you can pick up on from just observing an experienced employee. You need hands on experience. And that can be frightening to some.

**Interviewer:** *Is that the only way you share knowledge in the unit?*

**Respondent:** No, not at all. The knowledge books is a minimal part of our knowledge sharing to be honest. The day to day activities are more run by verbal sharing. So it's basically just asking whoever you need to ask, to get the information or knowledge you need.

**Interviewer:** *Is that not disturbing to employees?*

**Respondent:** I am sure it is on some level. But it also has its benefits. I don't know where everything is. So what I do is I have to ask someone instead of wasting time looking all over for it. So if I need help from an engineer, there is no point in me spending 30-40 minutes going in to drives and folders to find a document. It's much easier to just ask someone.

**Interviewer:** *What about the practical aspect. Is it not time consuming to run around from office to office to find the people you need to find in order to answer your questions?*

**Respondent:** We sit in one big office actually. Therefore, it isn't that much of a hassle to ask. There are not any real walls that separates us

**Interviewer:** *Interesting. Can you explain what that does to your collaboration in the unit?*

**Respondent:** It makes it easier right. I mean, everyone is right there close to you, so it's just a matter of speaking up. It's very spacious and easy to navigate through the office. So all the help we need is there. We have a lot of skilled people in the unit, so knowledge is easy to attain.

**Interviewer:** *Are there any downsides to having this open office space?*

**Respondent:** I think it can sometimes be a little annoying to some people - especially the older ones. In general, I think it's a blessing that we have a big office, and a culture that aligns with it. Everyone really likes helping here, and if anyone asks, people are very helpful. But when it's time to buckle up and finish jobs for a deadline, it can be annoying having new employees continue to disturb and ask the same questions over and over again. But that isn't to say I don't want to help. It's just that I think we need a better way to integrate new employees so they receive the right amount of knowledge, and the type of knowledge that they need.

**Interviewer:** *You mention that everyone is helpful and seems to like helping out. Does that ever translate to friendships outside of work?*

**Respondent:** I have been here for just over 18 years. If I didn't make friends here for 18 years, I would be very worried. I have been here long enough to have friends who don't work here anymore, and friends who still work here. I love my job and part of that is because we have great people working at the unit. And they are not just great because they are skilled. They are great because we get along outside of work too. I can easily call someone and go out for a nice dinner. It's just the culture here. In general people are very nice towards each other, and personally my relationship to

all employees is actually good. There is a great atmosphere, as well with the head of unit. He is very kind and progressive, and also very social and engaged in our working day

**Interviewer:** *Do you think that contributes to better knowledge sharing?*

**Respondent:** Oh yes. It definitely does, I think.

**Interviewer:** *how?*

**Respondent:** You just become more comfortable with them. Imagine coming in as a new employee, straight out of whatever school you went to, and you meet people who have worked here longer than you have lived. It can be intimidating. It just removes that formal barrier that exists between colleagues.

**Interviewer:** *Do you think more collaboration would yield higher efficiency?*

**Respondent:** Yes it does. The more we get to be around each other, not just sit around each other, but actually communicate and get to know the people on a personal level, the better we will be at asking for help. And sometimes listening to someone else's perspective on an old case, can help you with a problem you might have with yours.

**Interviewer:** *Are you aware of any actions by management, which is to increase efficiency in terms of knowledge sharing?*

**Respondent:** They are working on a system, but they have been doing that for years now. I'll sit back and wait and see how that unfolds.

**Interviewer:** *Have you lost trust in management in terms of this system?*

**Respondent:** Well. Yes and no. I trust management because it's a great management. But they have been talking about this system for so long now, and have tried to implement it so many times now that it is hard to get excited about it again. Like I said, I'll just wait it out.

**Interviewer:** *Do you want a new system?*

**Respondent:** Of course. We can always optimize our approaches and the way we conduct our day to day activities. I've spoken to some of my colleagues who have been in other organizations, and some have mentioned that we're operating in a very old school fashion, and that there are better solutions out there. So yeah, I would definitely like to see a new system that works.

**Interviewer:** *Do you believe a new and smart system would improve your activity level?*

**Respondent:** Mine? I suppose it will on some level right. But I've been doing this for 18 years. It's become a natural habit to me now. I don't think it will affect it too much. At the end of the day, we are professionals who are paid to do a job, so I don't know, I don't think it will affect it too much.

## Interview 8

**Location:** Center for buildings, unit for building permits ‘north’

**Date:** 01.03.2017

**Start time:** 13:50

**Duration:** Approximately 20 minutes

**Interview:** Jasmin Suljevic

**Respondent:** Anonymous

**The interview content**

**Interviewer**: *Can you introduce yourself and tell us what you do here?*

**Respondent:** My name Kevin, I'm project manager for what we call ABS team - that which settles old building cases. We have about 4000 old construction cases that will be settled within the next 2 years. I am leading and it is my daily workflow. It is a supervisory role in building too, which means that it is building projects already under way to be completed. I've been here since May 2014.

**Interviewer**: *Can you tell me something about your background?*

**Respondent:** Yes, I am building engineer and engineer. I am a process engineer essentially.

**Interviewer**: *How does a normal working day look like you?*

**Respondent:** What it is about is to finish these construction projects. So the first step is to address where you left off. You meet up and check your mails and phone, and answer unanswered calls, which are unfortunately always plentiful. And then just address the various building projects and checking out what we've got in response to them and what has colleagues and the team found out in the meantime. And then you just get settled as efficiently as possible. There is also a structure as to how we look at the different things. We hold weekly meetings and follow up on the construction issues with the various people in the city.

**Interviewer:** *Now you mention that you deal with various construction issues. Is there a fixed time for how long the case processing can last?*

**Respondent:** Yes, so we have some service goals and we intend to follow them. But rarely are being adhered to because it is only the service goals that we can promise and we can stand for. But if the customers out of town change their projects or do not submit the documents we need, we cannot keep the goals we intended to keep. The service targets are different with the different phases of the construction, for example, if we receive an application, we have 40 working days before a building permit can be issued. But as I said, if they change their applications along the way, it will take longer obviously.
What we are looking at is that of course we want the buildings to be completed within a realistic time frame. Also, that Copenhagen is not always one big building site. What we are looking at is that we try to oversee the buildings. If the construction is about to finish, we can contact the right people. We can see it either by looking at our file archive system and see what stage the construction is at. And then we will address the customer and inquire when they expect to finish it. And if they come to a completely unsuitable conclusion - you could imagine a larger building in the inner city that you do not want to stand for a long time - you will try to get in touch with them and make them finish it within a certain time frame. But it's hard to set standard times because it depends on customers and citizens.

**Interviewer:** *Are there only external factors that play a role in treatment time?*

**Respondent:** Of course, there are also internal factors that play a role, but exactly with the project I have, we are pretty much on top of it because it is --(what? 5:04) construction services, in the construction case already under way . And it is the citizens themselves who have the ball because they are the ones who have to finish the construction work - they simply have to finish it. So we wait for it to be done, and then we take the last necessary steps before they can get one (what? Leave one or another permission 5:18).

**Interviewer**: *Can you comment on which internal factors may explain not being able to live up to the service goals?*

**Respondent:** Of course, there can be many different things, but the biggest is if you are understaffed. There are many building cases to be addressed. And if you're understaffed, it can put you behind schedule. But it may also be our IT system that does not allow us to see the correct information, or the information that is necessary to see before the case can be completed. And it may also include, that the IT system goes down. It happens rarely, but has big consequences when it happens. But it can also be because the IT system is building in a confusing way. And maybe that's something I bother with daily. I think it's a bit too inconceivable, the way it is set up to access the cases. So it is clearly something that can give a stress moment to some employees. There is a lot to do and it can be hard to keep track of.

**Interviewer**: *Does the system have a name?*

**Respondent:** Yes, we have several systems, but the one we use the most is called KMD Structura

**Interviewer**: *What do you understand about knowledge sharing?*

**Respondent:** Knowledge sharing is, as I understand it, that the knowledge building up through its experience, it becomes a part of company so new employees can attain it. And knowledge sharing is of course to give a certain amount of experience to another individual. The way it is used now you are sitting in the unit, we are very close. And one can ask colleagues around for advice and thus share knowledge thereby. Meetings are also held weekly where you get and give information. And then there are also some letters that are being put in place to accumulate some of this knowledge. So that's the way I understand the sharing of knowledge, but also how we share knowledge.

**Interviewer**: *And you share knowledge how?*

**Respondent:** Simply talking to each other at the tables and in our areas. Talk to each other via mail and phone. It is a reasonably large house. But also the meetings. We hold weekly update meetings. And then we also share this in the various written procedures or method descriptions we have. That's the way we share knowledge.

**Interviewer**: *If you as a project manager should have some law, some legislation. Is that knowledge available to you in some places, or would you have to ask someone?*

**Respondent:** It depends on which legalities you are looking for. If it's law for buildings, planning or building, we'll have it memorized. We have the books and I personally use online material. And it is more or less constantly updated. And there are direct links to the respective entities that have issued the laws. So we use the law directly from there. If there are some things in which we are in doubt, not so much about the construction technique when it comes to law, but when it comes to understanding some of the phrases that may have been written in a little quirky language in the jurisprudence of the world, we'll take Grab one of our lawyers, who might explain what is meant. And then we can relate that to the world of construction. And then there may be some controversy

between companies. We have many other types of cases. Complaints and such matters. There may be discrepancies with some decisions we have made. That way, companies can also contact us to get a clarification of something legal. And we also use our lawyers. There may be two neighbors who are in conflict with each other and then get them in at a table. And it can quickly become a mess, and it's very good to have a lawyer who can keep hold of the legal aspects of what can be said and to be reckoned with in relation to legislation. That's the way we use the law in our daily lives

**Interviewer**: *What do you think is good by the current approach and can it be improved?*

**Respondent:** You can definitely do something better. There can be almost always. What I think is really good by the way we use it now is that people are very open to talking to each other and they are very helpful. We are all sitting in this large space, as you can see as well, and there is relatively easy access to everyone very quickly. It just requires you to get up or possibly just ask your colleague across yourself. And so we are not divided into our professional groups. We sit in a very mixed environment, so there are lawyers, HK, engineers, etc. In the same room. I think that's very good because it gives easy access to the knowledge you need, when you need it. We have a really good culture in helping each other. And that's what makes our workplace really good. And we have a relatively high level of well-being, compared to other workplaces, which we can look at in the various measurements. So it is clearly one of the things I think is really good the way we do it now. We are very open to each other and the management is also very open. They listen a lot - it's not always that they do what they have asked for, but they listen at least.

**Interviewer**: *Have you previously asked management about something that has not been met?*

**Respondent:** Yes, it happens almost daily. But it is also very normal. There are weekly meetings where we come with our ideas. Each unit ventures their ideas for what can be done better. The leaders take notes of it and collect it in a couple of weeks or months, and then they look at what they can do better. They can never ever put all the ideas or actions in the way we wish, and it is also understandable. But they may take those who, at their own meetings, find the most relevant and give the best meaning. And that's good enough. But it can always be better. I think that is being listened to what we say.

**Interviewer**: *You mention the good thing about the way you do it. Are there any disadvantages of the way you do it now?*

**Respondent:** Yes it is there. I think the worst, the biggest disadvantage is that much of the knowledge we transfer to each other is verbal. And even if just by mail, all of the time ends with a person who either forgets it again or knowledge disappears in his mailbox because there are so many mails. So knowledge disappears again. And I really want to see how to standardize some of the knowledge we have, and have it brought it into some systems so that you can retrieve it and new employees have access to it. So I think that knowledge is lost. And that is of course a big problem.

**Interviewer**: *So, are we talking about a database?*

**Respondent:** Yes, it is not because it has not been tried before. But it is about a management, who needs to put some resources behind it and have delegated some individuals who need to update these different descriptions of the method. And so far, it's not something that's been successful. So that could be something of what you could look at. Unfortunately, this is something we struggle with once in a while - it is to maintain the knowledge that is now, especially from experienced employees.

**Interviewer**: *You mention that it has been tried before without success. What is the attitude of it this time?*

**Respondent:** I have been for 3 years. I have colleagues who have been here for longer than I have lived. I have heard of various things about what has been done. The biggest upheaval was when they entered this building on Njaldsgade in 2009, I think that was where they actually collected the so-called inspectorates. It is the building authority that was previously split into smaller inspectorates around Copenhagen. And then it was gathered under one roof. And that's fine. But since they have come in, there have been so many different actions to get standardized and restructured things to a better level. And there are very divided opinions whether it has become a better level or not. But I think that there has been some form of restructuring annually in order to make things work better than before. If that has happened, maybe it may to some extent - but what I can feel about some of the elderly who have been here for a long time is that it has not had a big impact on their working day. So it's just my idea about it.

**Interviewer**: *What are the expectations of the upcoming system? What is the general attitude in the department?*

**Respondent:** I want to say that the new ones expect a lot of things because it's the first time they've heard about it. But those who have heard of it before they have not seen the big things happen, of course, there is not much support behind it. So what you do is, what you probably did with the other times, and that is to wait and see what happens. So you're not a very big active part of it - neither is it required.

**Interviewer**: *How many are in the department?*

**Respondent:** In the unit north, we are around 55 people

**Interviewer**: *How is the balance between younger and older employees?*

**Respondent:** When I started in 2014, I was the youngest. I was 31. And there were probably at least 50-60% of those who had worked here for 25-50 years. It was a little older generation that was in here, but today it has changed dramatically. And it's not because of layoffs, but because many of the older retired the last 2-3 years. I would say that percentage wise in the North unit today, we may be 60% of 25-35 year olds. And then maybe the rest up to around the retirement age.

**Interviewer**: *In another interview, it was mentioned that they were working on a new knowledge sharing system. What features do you think it should have for it to work better than now?*

**Respondent:** First of all, I think it should have a function where you can accumulate and categorize knowledge. A system that can be updated. It must be some form of database. It has been tried before, but a database where you can get the different things in a structured environment so you can easily find it. That's what I think will be the best.

**Interviewer**: *How do you think it would affect the working environment?*

**Respondent:** It will obviously ease many things. Because as you do now that you talk more colleagues around the same issues compared to if you could just look it up quickly. If you could almost google to it within seconds. It makes it clear that the workflow becomes a bit more sluggish in it. It may also be more slow if you look at it from the customer's point of view. They may also feel that when they sign up in here, it takes a long time before they get an answer. It will obviously also improve customer service to our customers and citizens. But it would also make our work

easier and thus less stress if we can get an overview of something faster. It will definitely reduce stress and we will have a higher level of well-being.

**Interviewer**: *What do you use KMD Structura for if you share knowledge verbally?*

**Respondent:** KMD Structura is, of course, our construction program, but it contains all our information and knowledge as well. The various phases of the building and all the information and correspondence that has been through a building case is contained within the KMD Structura. So we lead a checklist into the program where we share the knowledge that has once been on the case. But not everybody uses it. It is only the function called supervision, ie. The final part of the construction phase. There are thus two phases. There is an application where they get an authorization and then there is the remaining part where they perform the work and get a permit. And it's only the last part, from after they have received the building permit, till they complete the building and get a permit. That is only the part where you actually write in a checklist of the things that have happened in the case. So it is not to any great extent being written in the first part, and it could also be looked at. So the knowledge sharing also takes place in that program.

## Interview 9

**Location:** Center for buildings, unit for building permits 'north'

**Date:** 01.03.2017

**Start time:** 14:15

**Duration:** Approximately 25 minutes

**Interview:** Jasmin Suljevic

**Respondent:** Anonymous

**The interview content**

**Interviewer**: Can you start by introducing yourself?

**Respondent:** I am Jonas and I'm a building inspector, which relates to supervision of the things we are doing out in the field, things such as whether things are legally listed, complaints about construction, and all that relates to that.

**Interviewer:** *How long have you been here?*

**Respondent:** 18 years

**Interviewer:** *And what is your background?*

**Respondent:** building constructor

**Interviewer:** *Can you explain how your day looks from, when you meet till you leave?*

**Respondent:** I have x number of building projects in an area that I look at what is reported as finished. And I will make some plan for it and then go out and look at them, make some arrangements with customers and looking their cases through, possibly give them what is called a "temporary stay" if there are any shortcomings. And then we throw the case out of the door. That's the short version. And then suddenly something unexpected can happen, and then we have to turn around 180 degrees, and

then we'll take a look at something that may collapse where the fire service has blocked the street . And then we have to decide what is going to happen there.

**Interviewer:** *So you spend a lot of time outside of this building?*

**Respondent:** More like 25% of my time is outside of the building. The rest is administrative work.

**Interviewer:** *Now we're going to speak about knowledge sharing. How do you share knowledge in this unit?*

**Respondent:** Firstly, the supervisors are sitting together so if we have some problem, they may ask some of us others about what we usually do here. And then we meet every 14 days where all the supervisors are gathered and where if there is someone who has a special case, it will be discussed, and also discussed what we do in individual cases. That's the way we operate right now.

**Interviewer:** *We now know the unit consists of different groups of professionals. What do you do if you need something related to law?*

**Respondent:** *Then I ask them directly*

**Interviewer:** *Is it always all verbal?*

**Respondent:** Yes

**Interviewer:** *Do you have a system, where you are sharing knowledge*?

**Respondent:** No, but they are working on one

**Interviewer:** *Have they been working on one before, or is it the first time?*

**Respondent:** On the building side of things, we have had something called knowledge book or sometimes we call it FAQ, where we can look at practical things. And we still have that. It just has to be made more visual so people can access it from anywhere, regardless of where you are seated.

**Interviewer:** *Can you elaborate?*

**Respondent:** If you take me for example, then you have some supervisor related things that I know of, which means it's easier for me if I access the supervisor box. And then different subcategories can be there, even though it all points to the same direction, rather than me sitting at the building side of things in order to access the things I need.

**Interviewer:** *So there's no direct access to other groups to the system?*

**Respondent:** No, we know there is one, but cannot access it. It is rather strange. Other than that, it is very unstructured and we don't know where the lawyers information is and how it works. We don't know that, so we ask them directly.

**Interviewer:** *Which kind of system are you using now?*

**Respondent:** Right now it's just word documents.

**Interviewer:** *So you don't have a system with a name?*

**Respondent:** Not right now. Maybe a knowledge book. I don't know. Think they are looking in to it.

**Interviewer:** *How do you think you can improve the sharing of knowledge in the unit?*

**Respondent:** That you have a system that can handle things in one place and that you maintain them in one place, but you can access them from several ways, visually on your computer. You do not think alike, depending on where you are, in which department you are at things. Therefore, the same point may have several different approaches, but should only be in one place

**Interviewer:** *There's been quite a few attempts to improve knowledge sharing systems. What are your feelings and expectations towards the new one?*

**Respondent:** I would say that it is too slow. I am a bit like a pessimist at the moment. And why should we reinvent the wheel even if it is invented. Why do not we go out and see what the other municipalities have done, and then we find the wheel they have used that suits us best. I do not think we do that.

**Interviewer:** *Does that have to do with lack of resources, management or something else?*

**Respondent:** We have employed people to take this function and how far it has come, I have no insight in that. But we were some, who investigated a while ago to see how the other municipalities did, how they building it up . And how it ended, I do not know.
I have been in the system and showed management it. It seemed as though I went into the municipality's own network - I just did not. I had a guest entrance, which they forgot to close. Then I could come in and look at Kalundborg, Ringsted, Holbæk.

**Interviewer:** *Are there any benefits of sharing knowledge the way you are now?*

**Respondent:** Yeah, it's an existing system, which you can adapt to how you want it

**Interviewer:** *I meant the way you are doing it now?*

**Respondent:** I don't know what we are doing now

**Interviewer:** *The verbal approach?*

**Respondent:** We sit by each other and can ask directly. We do not have to run around the whole house to find something. I have a lawyer sitting right across from me. So I can just lift my eyes up over the screen and just ask. So that's very nice. You have all the help you need close to you.

**Interviewer:** Can the same question repeated affect your work mood?

**Respondent:** Yes, because we are in the big room office. Then the efficiency goes down. You always have turn your brain back on what it was on. And the more you have to do that, the more you will need time to get back into things again. And you should not be pulled away too many times away from your own assignments. It's messed up. And we don't really have anywhere else to go

**Interviewer:** *Are processing time on two similar cases varying?*

**Respondent:** They always vary. Even the smallest case that looks insignificant may take several years because there are some who complain about each other. And other big kaareproperties can run smoothly because they have professional advisors with whom we are talking. So one can not say that a small case is a small matter because it does not fill the paper much, but it can go out and be bulky afterwards

**Interviewer:** *Is it only external factors such as complaints that delay a case?*

**Respondent:** Yeah, it is external. It's about whether or not they have lived up to the building permit. If they have, it goes through quickly. If not, we have a fight in order to finish it.

**Interviewer:** *I can sense that you aren't quite satisfied with the way things are being operated now. Correct?*

**Respondent:** Not in terms of knowledge sharing. There I think you could have had (what? 7:36) just go and look what they are doing. Buy it if that is what suits us, instead of us to reinvent the wheel, which is already invented.

**Interviewer:** *Does it affect your work morale?*

**Respondent:** No, it does not. My job is quite free. I actually plan my day from A-Z. Except if there is an ad-hoc through the door. It's just fun in my job. Even though you have planned it, you should be able to turn around yourself and do something completely third and still make it work. That's what I think is cool about this job. It can be really varied. Right from you think you have an office day and you end up doing everything else in the field. You can ask Mirza about the metro station at Nørrebro. A house was falling down. We spent just 3 days there. Everything was lifted out of the calendar because we had to make sure that the house was standing and before the residents returned. That will change your day-to-day.

**Interviewer:** *Do you enjoy that?*

**Respondent:** Yeah, take it as it comes. Too much office work, just sit and do the same and the same. It sounds sad. It should vary. Then we have the advantage that if the weather is good, then it is to get out the door and be outside. But we also do it when it pisses down. It is all year round.

**Interviewer:** *Can you sense around the office that it is affecting others?*

**Respondent:** No because they have actually chosen that job because they like it. Building management looks at drawings and sets all the requirements. I like to talk to people and hear their problems and usually get them in place within the limits of the law

**Interviewer:** *Which specific functionalities do you expect the new system to have?*

**Respondent:** I have some boxes visually building on a user interface that is active when I click on them. And then I dive down into a submenu while I have the customer on the phone. And then that path traces me into what I'm going to find if I cannot even remember it in my mind. Something with quick access to the PC and that I should not be looking for too long.

**Interviewer:** *You mentioned earlier that management has been told to do something about the system. Do you feel overlooked by them?*

**Respondent:** No they are busy

**Interviewer:** *So is it related to lack of resources?*

**Respondent:** At the end of day, yes. However, we also have to know that we are not just hiring people for 2 months, and them kicking them out again.