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Implementation of the Intranet from a Knowledge Management Perspective

—A Case Study

Master's Thesis in Information Systems
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Abstract for Master's thesis

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Abstract:

Knowledge management has been described as systems and processes that enable organizations to create, share and utilize knowledge and information. With the rapid development of technology, organizations need to manage increasingly more knowledge and data. However, with effective knowledge management, organizations are able to make even better decisions and act more productively and innovatively. Technology has also enabled the development of various information systems in support of knowledge management and the intranet is one of these.

This thesis studied the implementation of the intranet as part of an organization's knowledge management. The study was conducted as a case study to determine how the case company intranet should be implemented to support the company's knowledge management initiatives as efficiently as possible.

Data for this thesis were collected using a questionnaire, as well as interviews as the mixed method. All data were collected from the staff of the case company. The theoretical framework of this study followed the theory of needs and gap analysis and knowledge audit, which provided a comprehensive picture of the current situation of the case company, mirrored to the desired situation. Solutions to differences between the current and desired situation were sought through interviews.

The study resulted in a comprehensive picture of the case company's needs for the intranet to be implemented. As a tangible result, this thesis provided a site map for the intranet, which the case company will plan to implement. In addition, the study found substantial number of reasons as to how the intranet can act as a support for knowledge management in the organizations. Although the results of the study are detailed and precisely reflecting to the case company, other organizations would be able to use the framework used in this thesis to examine their own situation should they have the intranet implementation needs and desire to implement it as a knowledge management supporter.

Keywords: Knowledge management, intranet, knowledge sharing, knowledge creation, knowledge utilization, knowledge storing, information retrieval, information architecture, information systems

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LIST OF ACRONYMS

CoP	Community of Practice
IA	Information Architecture
ICT	Information and communication technology
KM	Knowledge management
KMS	Knowledge management system
SME	Small and medium -sized
URL	Uniform Resource Locator
VCoPs	Communities of Practice

1 INTRODUCTION

In today's world, companies across the world demand knowledge significantly more that they can operate efficiently and thrive in the market. At the same time, the world is undergoing a digital transformation in almost every aspect of human life. People receive knowledge about everything with the help of technology daily and are able to utilize it in their actions. In the same way, companies are able to take advantage of the benefits that technology brings in their operations (Vitez, 2019). Companies should also manage its knowledge in order to gain the full benefits from it. The intranet, made possible by technology, is often one of a company's means of managing knowledge. This thesis explores the implementation of an intranet for a case company from the knowledge management perspective. This chapter will first present the background of the study. In the following paragraph, the aims and objectives of this study are proposed. In addition, the main research question and supporting questions are introduced.

Knowledge management (KM) is often described as the systems and processes that organizations have in place to publish, manage, share, and capitalize on knowledge and expertise. This definition refers to the external and internal sources of knowledge. The development of technology has forced companies to deal with large amounts of data and information that require management. Knowledge management provides companies with better and more efficient decision-making capabilities. In addition, it helps companies to be more productive and innovative (Buniyamin & Barber, 2004).

The development of the Internet, e-business, as well as enterprise information systems has increased interest in research related to the technical side of knowledge management, the way it is considered to see knowledge as a resource that can be exploited using technology (Lönnqvist, 2007). One of the most significant challenges of exploiting data is that information in digital forms is located in many different places. The normal situation in companies today is that by far, most of the data held by a company are stored on different users' computers, and no one other than a computer user has access to use data. One of the essentials of making a better business is to be able to recover information in such a way that it can be accessed without delay and without any extra storage (Tiirikäinen, 2010, pp. 122-124).

According to previous research, conducting a knowledge management strategy for an organization is proven to better its productivity and decision-making. While starting to conduct a knowledge management strategy, the first step is usually implementing an intranet for the organization. With intranet all the knowledge and data of the company can be stored in one easily accessible place which is effortless to use. Intranet as a knowledge management tool is also a practical way to share knowledge within the organization and create new knowledge that the company and its employees can benefit from (Buniyamin & Barber, 2004).

Over the past 10 years, the intranet has become one of the most broadly distributed organizational technologies and, at the same time, it has emerged as a new research site. A common topic is how to build a working intranet into an organization (Lintilä, 2001). Studies related to the design and deployment of the intranet within the organization have been conducted by Wachter and Gupta (1997), Bhattacherjee (1998), Damsgaard and Scheepers (1999), Bansler et al. (2000), Stenmark (2002), and Pedley (2003). Intranet research can have different perspectives. Intranet has been studied as a knowledge management tool (Curry & Stancich, 2000) (Edenius & Borgerson, 2003) and concerning organizational culture (Ruppel & Harrington 2001, Stenmark 2004). Studies depict that the intranet can add value to organizational information distribution, preservation, and management of information, and overall development of organizational communication and unity. Studies have generally focused on positive effects.

1.1 Objectives and purpose

The aim of this study is to implement an intranet for the case company. To reach the goal of implementation of an intranet, this thesis will research what kind of knowledge and information should be included there. The intranet is usually a crucial knowledge management tool for organizations. Currently, the case company's information and data are dispersed across in different locations. The aim is to collect and share the data and information that are important and necessary for daily working tasks, in one place that all employees have easy access to.

This research examines what kind of information and knowledge a small and medium-sized (SME) accounting company should include in its intranet in order to be as useful as possible to its end-users and improve the efficiency and knowledge management of the company. Additionally, this study aims to determine which characteristics the intranet should contain in order to increase information sharing and cooperation between employees. In addition, this study aims to investigate how all the necessary information will be organized on the intranet to make it accessible and easy to retrieve.

This thesis contains main research question and four supporting research questions. By answering the supporting research questions, the main research question is answered. The main research question is as follows:

What are the qualities and information that the intranet should contain to make knowledge management as efficient as possible?

The supporting research questions are:
What kind of information do employees need in their daily working tasks?
Which characteristics of the intranet would serve best the collaboration and knowledge sharing among the employees?
How can intranet be a part of knowledge management?
How should information be organized into an intranet to best serve the needs of the company?

These research questions will enable the investigation to establish how an intranet should be implemented for the case company. Even though this study focuses on how the intranet distributes the knowledge management of the company, information systems and information architecture perspectives should also be considered as part of the implementation project. The information systems and information architecture perspectives will be introduced in this study quite briefly, even though they are quite a large part of the implementation of the intranet in general. As previously mentioned, the main focus of the research is to study the intranet from a knowledge management perspective, which is why information systems and information architecture objectives are limited in this study.

2 LITERATURE REVIEW

This chapter is a presentation of the academic literature and existing research was done regarding intranets, knowledge management as well as information architecture. It covers the definitions of the main concepts of this study and presents the observations and findings made from previous research.

2.1 Intranet

The Cambridge Dictionary (Cambridge, 2020) defines Intranet as *"a system of connected computers that works like the internet and allows people within an organization to communicate with each other and share information".* Sayed, Jabeur, and Aref (2008) state that in a technical sense, an intranet is a branch of the internet that shares many common functionalities with the internet. Furthermore, only people from within their company are organizationally connected and accessible to the intranet. Intranet provides a powerful networking and coordination tool that provides information and data and the means that produces and exchanges knowledge, all in one conveniently accessible location (Sayed et al., 2008).

Intranet can be defined by three key properties. Firstly, intranet is a network whose operation is based on the intranet protocol TCP/IP, and it uses general applications that are already familiar from the internet. Secondly, and intranet is a private network to which access can only be limited within the organization. Thirdly, intranets do not address a specially defined need, like many other organizational information systems. Intranet as a term also covers various mobile and remote working environments. The intranet can be considered both a tool for knowledge management and a strategic management tool. Large amounts of information can be stored in an intranet in a short period of time, including news, statistics, business plans, contacts, forms etc. Generally, intranet connects employees of an organization through its ICT into a single entity that generates and integrates knowledge (Edenius & Borgerson, 2003).

Stenmark (2002) defines four distinctive characteristics for intranet in his doctoral dissemination that are quite similar to Edenius and Borgerson. Firstly, the intranet is hyperlinked. Hyperlinks are familiar from the internet, which allows to create hyperlinks

to other resources, through which users gain access to a huge amount of information that is readily available. Hyperlinks allow individuals and large organizations in the intranet to share information easily. Secondly, the intranet is networked. The client/server architecture and the Uniform Resource Locator (URL) provide the possibility that information can be placed on any network and thus the physical whereabouts of the data are transparent to its user. Moreover, the network differs, for example, from the library model in that the web does not have a central wire or a predefined hierarchy structure of what can be published there, but anyone can publish anything. The users of the web are therefore not limited to consumers of information but might as well be equally informants. Thirdly, the intranet is open. The web leverages bottom-up technology based on completely open and accessible standards. Using the HTTP protocol, you can also use proprietary formats without standardization. Websites are not just limited to specific data types or the amount of information. Transparency also provides adaptability and access to formats and types not yet available, which therefore improves knowledge richness. Data can be displayed regardless of network or server topology, for which a standard web browser as well as a TCP/IP connection is sufficient. Lastly, the intranet is organizationally delineated. In addition to the third first characteristics shared by the intranet and the internet, the intranets have users only from their own organization or company. Intranet allows an organization to share more freely information that should not end up with competitors, so this feature is also important from a KM perspective (Stenmark, 2002).

Kuivalahti and Luukkonen (2003, pp. 23–24) divide the development of the intranet into five different stages. The first stage was defined as "*unit-specific pioneers*". The first intranets arose as a handprint of enthusiastic individuals in different organizational units. An upgrade of the initial intranets occurred by a few employees. The second stage was "*a group-level static implementation*". For the first time group-level intranets, layout and structural design were ordered from an external supplier. The content update was made by few content equivalents. The third stage was "*a content management system deployed*" that allowed content production to be decentralized more broadly into the organization. In this stage, topics such as content management responsibilities, rights specifications and acceptance practices were raised. During this stage, the content structure quickly began to sprawl, and information retrieval became progressively more difficult. The fourth stage was defined as "*personalization and processes*". As a result of the sprawling of content,

personalization of intranet, became important. Descriptions of work processes and accompanying instructions were introduced into the intranet. As the final stage, Kuivalahti and Luukkonen (2003, pp. 23–24) define the intranet as being "*the dashboard of the company*". This stage involves integrating intranets into operational systems that the key measures of company activity could be seen up to date via the intranet. Business management should engage closely with the digitalization process, as at this stage it is about enhancing the work of the organization through the intranet (Kuivalahti & Luukkonen, 2003, pp. 23–24).

From the early days, intranets have expanded from a few standard pages and few bulletins to increasingly diversified channels of in-house information distribution. Today's intranets can include multiple types of discussion boards, blogs, and solutions for managing the operational operations of the company. New solutions that have rapidly expanded on the Internet, such as user-kept encyclopedia Wikipedia, social networks e.g., Facebook, as well as various blogs, are rapidly emerging as in-house solutions as well. A key goal with these solutions is to share the knowledge, know-how and insights held by the company's employees to be utilized by the entire enterprise through continuous interactive content production (Tiirikäinen, 2010, pp. 53–56).

For organizations, intranets provide a platform in which they can grow their business and develop knowledge management initiatives by incorporating information stored in emails or discussion forums so that it can be viewed, compiled, and built into a knowledge store via the intranet (Kalman, 2003). Intranets can allow employees to cooperate on business processes such as the development of products or order fulfilment and generate value for the organization and its clients. Precisely, the intranets centralize the corporate process in a readily available, platform-independent web-based environment. Effective intranets enable staff from several divisions to apply their diverse expertise to a specific process (Kalman, 2003). Intranet also provides organizations with the ability to create knowledge. Employees in different departments are able to use the intranet to work in one common platform and create new commodity for the company. Intranet provides the organization with collaborative tools such as discussion boards as well as shared knowledge repositories. Intranet also helps the organization gain full efficiency from its own specialists and departments, despite where they are located (Scott, 1998).

2.1.1 Benefits of an intranet

According to Denner and Diaz (2013), the most significant benefit of intranets is that it keeps employees updated and help them make better and more informed decisions, which supports the increased knowledge within the organization. Other benefits include savings in costs, better time management, better production, and performance (Denner & Diaz 2013). There are many advantages of the usage of intranet systems, e.g. employees to locate important knowledge and up-to-date documents and offer access to other peers and sources of expertise There are three key reasons that organizations find appealing about intranets: access to a global corporate system regardless of location, sharing information and knowledge easily and connect easily with resources, colleagues and expertise within the organization (Hustd & Vikstol, 2014).

An intranet has many benefits and offers a wide range of solutions to support the operational activities of the organization. The key goal of the intranet is to share knowledge, insights and expertise to the whole organization and contribute to interactivity and documentation of informal interactions. It collects fragile information in one channel and is well designed to clarify knowledge management. Different tools provide opportunities for communication, document sharing and finding the origin of the knowledge as well as for finding persons behind it. (Tiirikainen 2011, p. 54, Fichter 2005). Intranet also helps transfer the quiet information within the organization to the electronic network. It helps bring out relevant documentation, allows for easy communication and feedback in two ways and makes the skills of the staff visible (Stenmark 2001). Researchers have widely documented many benefits of intranets, such as fast and efficient data transmission, efficient knowledge storage and retrieval, interactive collaboration, cost-effective communication and technical combability. These are also reasoning how businesses can overcome some problems that are related to communication, with the help of intranet (Lehmuskallio, 2006).

When examining the benefits of intranet from an IT business perspective, it can be noted that intranet reduces the cost of a company when the company can move into “paperless office” with the help of intranet. In addition, intranet shortens systems development cycles, as it allows many systems combined into one. Intranet has also been studied to improve company efficiency, reducing costs, and speeding up processes. Moreover, with

the intranet, improved efficiency also yields intangible benefits such as more efficient communication and collaboration. Intranet also eliminated geographical boundaries, as it can be exploited in multinational companies from anywhere in the world. Employees can cooperate independently of location using intranet (Scott, 1998). From a management perspective, a successful intranet implementation means higher return on invested capital, low risk, short payback, more business opportunities, and lower training costs. However, these benefits of the intranet may be difficult to look at, as their effects may take a longer time for an organization to be seen (Leung, 2001).

2.1.2 Social aspects of intranet

According to Gillis (2011 p. 195), from an internal communications point of view, organizations exist for one reason which is that people can accomplish more when they are working together as a team, compared to what they can as individuals. The future of the workforce is evolving all the time, and most of the new employees entering the workforce today have been grown up in a digital world (Gillis, 2011, p. 203). This group, also known as *digital natives,* are raised surrounded by technology and are inherently fast and good at using and exploiting the opportunities that technology offers (Boddie, Contardo & Childs, 2008). Digital natives are comfortable sharing information with friends through different social media platforms and staying connected at all times (Gillis, 2011). Subsequently, they expect the availability and use of networking technology and skills in the workplace to improve their competitiveness and fit their lifestyles (Boddie, Contardo & Childs, 2008). Digital natives expect the organization's IT infrastructure to be as gradual as the platforms they are using outside of work. Today's employee demands access to knowledge and information about the business and industry and communicates comfortably to be able to succeed in the job, which is changing the whole formula of communications in organizations (Gillis 2011 p. 203).

The communication of the organization has changed greatly with the advent of digital natives, social media, as well as Web 2.0. These factors are allowing organizations to be more interactive and conversational if the organization can take advantage of the tools. Small and large businesses are beginning to take advantage of their intranets to do more two-way contact, create culture, and allow employees to connect. They also use digital platforms to inform, educate, and amuse their employees. These kinds of features and

functions are will able an organization to develop a social intranet (Gillis 2011 p 219). Ward (2012) describes the term social intranet as *"an intranet that features multiple social media tools for most employees to use as collaboration vehicles for sharing knowledge with other employees"* (Ward, 2012).

Web 2.0 is primarily a concept that brings together a series of new successful ways and models of the internet. It does not offer a single model for success and change, but a set of traits that each operator can adopt as appropriate and combine them into a new business or diversify their existing operations. One of the main directions of Web 2.0 is the development, production, and sharing of user content and services on a communal basis. From this perspective, Web 2.0 can be utilized in the development of the social intranet (Hintikka, 2007).

Early intranets and social intranets have the same goal to improve organizational performance and efficiency. Both aim to facilitate internal communication, collaboration, and information and knowledge sharing. However, social intranet, instead of centrally aggregating and disseminating knowledge, aims to engage users with Web 2.0 resources that allow employees to openly communicate with each other and to add content to an intranet (Kim, 2009). Kim presented that it is important to notice that the Web 2.0 tools are social by its nature. Web 2.0 tools can enhance the social relationships between employees and that facilitate and improve their communication, knowledge sharing and collaboration at the organizational level. Kim researched the organizational and social factors in the adoption of a social intranet as a case study. In the study, he found that while Web 2.0 tools were intended to facilitate internal communication and reduce information sharing by email, employees were not able to adapt to change in their organization; instead, employees continued to use email in information sharing. In conclusion, Kim stated that Web 2.0 tools in themselves, however, do not create or improve social relationships in a work environment. At the organizational level, it is necessary to encourage interaction and active participation between users in order to get the most out of those tools (Kim, 2009).

Especially during the COVID-19 pandemic, the importance of communication within the working community has become more pronounced. In the spring of 2020, much of the workforce moved to remote work and that became the new normal. In remote work and

in a change situation, the importance of communication is further stressed. In the context of the COVID-19 pandemic, it has been important for companies to ensure that digital operating modes and channels are in order. The company's use of its own internal social media provides greater transparency within the working community, enhances knowledge sharing, and improves networking and collaboration. In this exceptional situation, the importance of social intranet has also been greatly emphasized (Niemi, 2020).

2.1.3 Available technologies

An intranet is usually a section of a public web page that is limited only to the use of the organization's employees. The most straightforward way is to implement the intranet to be a part of the organizations internet pages and protect the intranet part with a password. This way it can be delivered to the desired persons only. Often the intranet can be divided into even smaller parts and user groups can be used to determine which groups of staff are eligible to see what content (KWD, 2020).

In 2016 North Patrol ltd. conducted a survey of intranet services in Finland. According to the survey there are several different platforms that organizations use for the intranet implementations. According to the results companies use services such as SharePoint 2013, Office 365, Yammer, SharePoint 2010 or older, Atlassian Confluence, Liferay, Episerver, WordPress, Drupal, Google Apps for Work or other services. SharePoint remains by far the most popular intranet platform in Finland. Over 70% of organizations that responded the survey, use one version of SharePoint as a platform for their intranet. In particular, the cloud version of SharePoint (as part of Office365) has grown in popularity as assumed. In addition, the survey shows that individual mentions of exotic platforms and implementors' own CMS products have dropped considerably. Organizations have moved predominantly into the world of SharePoint, but the movement towards Confluence can be seen as Atlassian's Confluence has doubled its market share from 2014 (Korhonen, 2016).

Microsoft SharePoint is a collaborative platform that creates different markets through multiple users and partners (Weldon, 2012 p. 23). SharePoint platform enables easy management of teams, information storage and allows the use and management of business processes. SharePoint has many capabilities, including the ability to trace

content generated by other users, and the application allows other users to be monitored within a company, in relation to the content they produce (Terek, 2013 p. 5). SharePoint provides consistent and simple interfaces for user experience, which is the main benefit of the platform (Suganya & Tamije, 2016 p. 176). SharePoint has the potential to strengthen an organization's information sharing and cooperation, which will enable an organization to successfully complete its projects (Khumalo & Mearns, 2019). SharePoint can be used for various purposes such as content management, communication, knowledge sharing, and collaboration. SharePoint platform creates a variety of Internet or intranet sites on which the above operations can be performed. SharePoint's functionality can also be extended through programming, allowing SharePoint to be considered a software platform as well (McKenna, Laahs & Vanamo, 2011).

No wonder SharePoint has maintained its popularity as the most popular intranet platform among Finnish organizations. SharePoint, due to its customizability, is bent to many different needs of different organizations (Korhonen, 2016). On a general level, the best intranet platform is almost impossible to determine, as the need of organizations vary so much. Therefore, it is important for each organization to accurately define its own needs, after which the choice of the intranet platform is easier to do. However, it can be noted that SharePoint is a fairly safe choice for a wide range of different needs due to the ease of customizing the platform. SharePoint is also a truly diverse platform that gives many opportunities for business. (McKenna et al., 2011).

2.2 Knowledge management

The Cambridge dictionary (Cambridge, 2020) defines knowledge management (KM) as follows *"the way in which knowledge is organized and used within a company, or the study of how to effectively organize and use it."* Lönnqvist (2007) advises to look at knowledge management as a term, thus it can be defined more objectively. The term is formed from two words "*knowledge*" and "*management*". After these terms are defined, a rough understanding of the content of knowledge management is obtained (Lönnqvist, 2007). *Knowledge* is, by the traditional definition of knowledge theory in philosophy, a well-founded true belief. The definition is derived from Theaetetus dialogue of Plato. According to the alleged weak definition, a claim is a knowledge if it is true (Goldman, 1999). *Management* means managing and organizing things. With management, a bunch

of people does things more efficiently, more result is generated, resources become efficiently deployed and workloads are evenly distributed. According to these definitions, knowledge management is therefore related to the management of knowledge and the utilization of knowledge in management (Lönnqvist, 2007). However, there is still no clear established definition for knowledge management, as it is still a relatively new discipline. The term knowledge alone can be defined in many different ways when viewed from different angles. Because of the complexity involved in the definition of knowledge, the definition of knowledge management is difficult. (Al-Hawamdeh, 2003, p. 18–21).

Knowledge is quite extensive as a concept, but it can be structured in different ways. One method of classification common in the field of KM is to use three different concepts to describe different levels of knowledge. The concepts describing these levels are data, information, and knowledge. Data can be defined as unstructured facts, information as structural data that can be used in analysis and knowledge as human knowledge that is often based on experience (Laihonen et al, 2013, pp. 17–18). The complexity of the definition of modern KM can be seen as a result of the relationship of knowledge to information and data. Obviously, the change from data to information is clear, but the transition of information into knowledge is more difficult to explain (Al-Hawamdeh, 2003, pp. 18–21). This transition refers to the refining of knowledge which is made through KM processes that enables the transition from one level of knowledge to another. For example, data can be turned into information as it has been created a structure. Turning information into knowledge is more complex, but it can be created as one interprets the information (Laihonen et al., 2013, p. 18).

Karl Wiig (1999) defined knowledge management as *"the systematic, explicit, and deliberate building, renewal, and application of knowledge to maximize an enterprise's knowledge-related effectiveness and returns from its knowledge assets."* However, the definition of KM is affected in what context it is considered. Different interpretations of KM can emerge from the context in which the term is defined. The definition may differ when dealing with KM as a discipline, research area, business management assignment, education program or major subject, or as research trends in business economics. All definitions are valid when looking at it from a particular point of view (Lönnqvist, 2007). Käpylä and Salonius (2013) describes that knowledge management refers both conducting knowledge and conducting with knowledge. Conducting knowledge means

conducting human knowledge and knowledge. This involves sharing, learning, new dissolution and creation of new knowledge, as well as the managing different information flows. Conducting with knowledge refers to using knowledge appropriately in decision-making, i.e., making conscious and reasoned choices. The effort is to lead the process in which knowledge is created and refined to meet decision-making needs and applied in decision-making (Käpylä & Salonius, 2013, p. 7). An understanding of knowledge-based value creation logic is a key challenge in KM and the actual starting point for development of management functions. Therefore, it is a question of how to create value from information. It arises when information is intelligently exploited in both operational work and operational development. Based on knowledge-based value creation logic, approaches to developing data resource management and the actual value creation process, as well as related management functions and tools. Data management is a comprehensive function to support the organization's value creation process. Knowledge is needed to understand things, make decisions, and create information (Laihonen et al., 2013).

As previously stated, knowledge can be defined in many ways and similarly there are many taxonomies to different kinds of knowledge. The greatest distinction in the classification of knowledge is between *tacit* and *explicit* knowledge. Tacit knowledge refers to knowledge, by Polanyi's (1966) definition, which is in the minds of people, and it is difficult if not impossible to articulate. Explicit knowledge can be defined as existing in some form, such as words, phrases, documents, organized data, or other clear forms. One of the fundamental problems in KM is how to transform tacit knowledge into explicit knowledge so that is can also, be used by others (King, 2009).

For centuries, scientists and philosophers have been interested in everything we in the present-day call knowledge management. Despite this, as a discipline, KM has only begun to develop in the last 15–20 years (King, 2009). Knowledge management is a new aspect of management, driven by the idea of the significant role that knowledge plays in the success of organizations. The rapid development of ICT has been central to the development of the field, which has provided new opportunities for the storage, analysis and transmission of data and information. But at the same time, technology has also created new challenges, such as the flood of information experienced by experts. Concepts related to knowledge management are still unestablished to some extent.

Scientists and practical applicants, use different and sometimes mutually contradictory concepts. Moreover, the phenomena of knowledge management, as a rule, are intangible, which is why simple and clear concepts are needed to understand them (Laihonen et al., 2013, p. 6). In the early days, knowledge management was more focused on generating and sharing information. In that case, KMs position within the organization was paralleled with other traditional functions of the company, such as marketing, accounting, or human resources management. Information was collected in databases and reports were produced on it. Efforts were also made to ensure that information stored in databases would be available to staff. Since then, the focus has shifted from knowledge production to more utilizing knowledge. With the development of the knowledge society, knowledge has emerged as one major factor alongside traditional production factors. Competitiveness is now being sought more by information (Laihonen et al., 2013, p. 10–12)

The connection between KM and the intranet is logical and natural. Intranet technology can be utilized within an organization as an enabler of KM initiative. Intranet alone is not capable of defining the company's KM initiative, but it is specifically an enabler. A few key components used in the intranet, such as LAN, user interfaces, communications services, electronic data warehouses can be used to support the organization KM. Intranet is precisely the ideal tool for many KM processes that supports the KM in general in organizations (Gee & Holmes, 2001).

2.2.1 Knowledge management processes

The purpose of KM processes is to improve the organization's business. KM processes have been studied by different scientists substantially and many parts of the processes have been identified, depending on the researcher's own orientations and preferences. However, the purpose of KM processes is to benefit the organization in its activities and to identify how knowledge can be utilized, for example, in company decision-making (Devi Ramachandran, Choy Chong & Ismail, 2009). Most commonly KM processes include knowledge creation, sharing, use and management of knowledge (Girard & Girard, 2015).

Zack (1999) argues that organizations should efficiently create, capture, organize, share and apply the organization's knowledge and expertise (Zack, 1999). Gupta et al. (2002) states that KM is a process that deals with the development, storage, retrieval, and dissemination of knowledge and expertise within an organization to improve its business (Gupta et al., 2002). Alavi and Leidner (2001) recognize four different KM processes that are generation, codification, transfer, and application of knowledge (Alavi & Leidner, 2001). According to Gottschalk (2002), KM processes are implementation, sharing, distribution, creation and understanding of knowledge (Gottschalk, 2002). Alders and Brewer (2003) states that KM processes are knowledge creation, acquisition, equation, allocation, and application (Alders & Brewer, 2003). According to Kayworth and Leidner (2003) there are four KM processes that are knowledge creation, storage, transfer, and application (Kayworth & Leidner, 2003). As stated, there are no clearly defined KM processes, instead researchers have identified processes according to their own preferences. According to the literature, there are about three to eight processes identified depending on the researcher. Common to the processes identified by all these researchers is that everything relates to creation, use and application of knowledge (Devi Ramachandran et al., 2009). For this study the most important KM processes are creation, storing, sharing, and utilizing and using of knowledge while examining KM processes related to organization's intranet.

Important to the organization for the success of KM processes is also the organizational culture. Organizational culture should encourage its members that knowledge is created, shared, and applied within an organization through its culture. It is important that organizational culture encourages the creation, storage, transfer, and application of knowledge to get the most out of the knowledge within an organization and benefit its business (Chang & Lin, 2015).

In addition to organizational culture, portals support the organizations KM processes (Coakes, 2006). The Cambridge Dictionary (Cambridge, 2021) defines portals as *"a page on the internet that allows people to get useful information, such as news and weather, and to find other websites"* (Cambridge, 2021). The portal should provide its user with the ability to use tools for collaboration, research, and personal productivity. In the design of portals, it should be considered that it should be scalable, integrated with old technologies and compatible with the system. KM initiatives are not entirely dependent

on technology, but technology nevertheless allows the reach and speed of knowledge transfer to be extended, which also helps in the retrieval and utilization of information and knowledge. Organizations leverage data repositories to preserve knowledge and seek to capture every possible information in an organization easily accessible throughout the organization. However, often all information is impossible to store, own and transfer. Still, ICT helps with the transfer of knowledge within the organization. In addition, more than explicit knowledge can be stored in databases. Databases also contain implicit knowledge, which is tacit knowledge that can be exploited as explicit knowledge (Coakes, 2006). By means of this, portals such as intranets are vital to organizations in order for KM processes to succeed.

2.2.2 Intranet for knowledge creation

Knowledge creation as an organizational process that can amplify the knowledge created by individuals and takes a form as part of the organizations knowledge system. Therefore, organization is not able to create knowledge without its individuals. Organization is source that provides a context and supports its individual to create knowledge (Nonaka & Takeuchi, 1996). Creating knowledge in organization often involves developing new content or replacing pre-existing content with tacit or explicit knowledge. New knowledge is necessary for organizations to use it to develop new innovations and create new knowledge. When a company begins to develop new products or services, or if its knowledge is outdated or inadequate, the company should create new knowledge through organizational learning (Shen & Tsai, 2008).

Knowledge creation is commonly defined as the first step in KM. Knowledge in an organization is not static but is constantly changing in the form of knowledge, that is, the existing tacit knowledge in an organization can be changed to explicit or transform subjective knowledge into objective knowledge. The process by which the form of knowledge can be changed was developed by Nonaka & Takeuchi. The model is named SECI-model, as it is based on four elements. In SECI-model, the overall general and remote knowledge base of the organization grows to a new knowledge base (Wickramasinghe, 2008). According to Nonaka and Takeuchi (1996), tacit and explicit knowledge is not completely separate from each other but complement each other. Tacit and explicit knowledge is constantly interacting with each other and switching to each

other along with the actions of people. In the SECI-model, knowledge is generated through the interaction between tacit and explicit knowledge and is divided into four different 'modes' of knowledge conversion (Nonaka & Takeuchi, 1996).

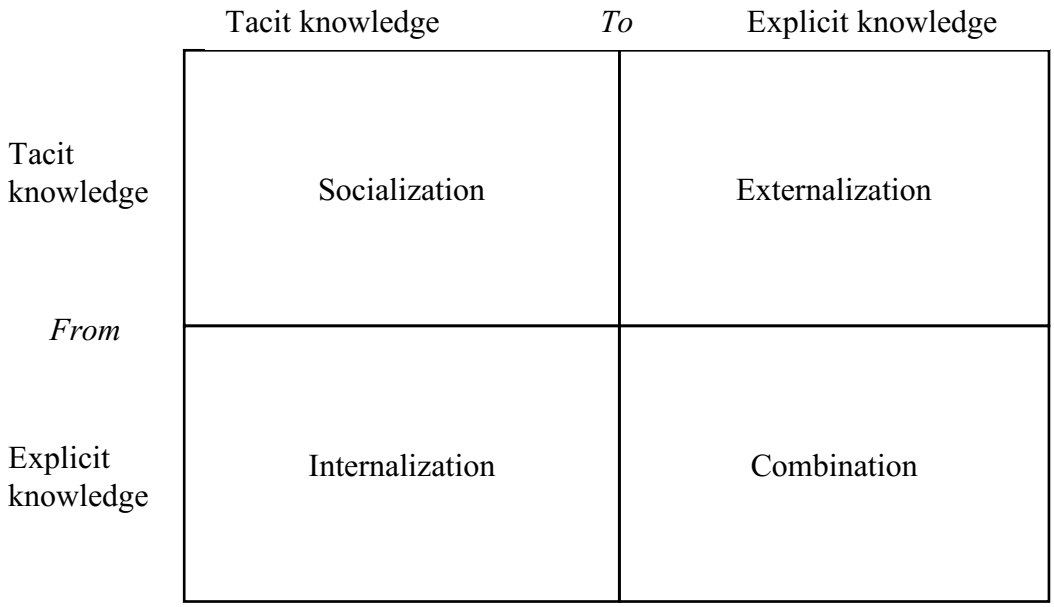

Figure 1: SECI-model (Nonaka & Takeuchi, 1996).

The first 'mode' is socialization, where knowledge is created from tacit knowledge to tacit knowledge. In this mode knowledge is created through the sharing of experiences. A great example of this is the master-journeyman setup, where the journeyman receives knowledge from the master through observation, imitation, and practice. In corporate culture, the same can be seen in on-the-job training, using the same methods. Socialization also appears between product developers and end-users, which can be considered an endless process. Customers share their experience with products, from which product developers are informed and can benefit from it (Nonaka & Takeuchi, 1996).

Second mode is externalization, where knowledge is created from tacit to explicit knowledge. At the easiest, externalization is explainable by the fact that when a person tries to conceptualize some kind of image, he/she uses language to do so. Subsequently, writing, tacit knowledge yields modified articulable knowledge. However, the inconsistency of the expressions helps foster interaction and reflection among individuals. An example of externalization is when business world seeks to conceptualize i.e., a new

service or product. The process of creating a concept is often triggered precisely by dialogue or collective reflection. Externalization can be seen as a key factor in the creation of knowledge, as it enables new knowledge to be created from tacit to explicit. Once explicit concepts have been created, the development of those can be continued by modelling. Thus, a logical model arises where there should be no contradictions, as all concepts and propositions are expressed in systematic language and coherent logic (Nonaka & Takeuchi, 1996).

The third mode is a combination where knowledge is created from explicit to explicit. In this process, systematic concepts are created as part of the knowledge system. In this mode, different types of explicit data are combined. Individuals exchange and connect knowledge through documents, meetings, telephone conversations or emails, among other things. When existing explicit knowledge is sorted, combined, added, and classified, new knowledge can be created. Widespread creative use of databases is often required for a successful conversion of knowledge (Nonaka & Takeuchi, 1996).

The fourth 'mode' is internalization, where knowledge is created from explicit to tacit. Internalization can be described so to speak through "learning by doing". Once the experience has been through the first three modes, it is possible to internalize individuals into a broad knowledge base that becomes valuable property. Transforming explicit knowledge into tacit knowledge internalized by the individual, documentation helps, as it enables individuals to internalize what they experience, enriching tacit knowledge. Documentation also aids the transfer of explicit knowledge to others, which helps them experience their experiences indirectly, as internalization can occur without having to directly experience other people's experiences. For example, reading a success story might help an individual know the realism and essence, an experience in the past may turn into a tacit mental model. When this model is distributed to multiple members of an organization, tacit knowledge also become part of the organizational culture (Nonaka & Takeuchi, 1996).

In his dissertation, Stenmark (2002) has explored the benefits of intranets as an enabler of knowledge creation and innovation. Innovation cannot often be designed and controlled in the traditional sense but should be 'cultivated'. A traction-based access mechanism for intranets is well suited to this. Intranets should promote internal

communication, but to succeed in doing so, relevant 'people management' and organizational practices are also needed. In his dissertation, Stenmark (2002) has studied the circumstances under which intranets can help and when to hamper innovation and knowledge creation. According to him, information depends more on networking and to support the creation of knowledge, care should be taken to ensure that intranets also support social networking. In order to facilitate the publication of information formation, the four knowledge-creating processes proposed by Nonaka in the SECI-model should be combined with other intranet use modes (Stenmark, 2002).

2.2.3 Intranet for knowledge storing

Knowledge storing as a KM process refers to the organizational memory generation process where existing knowledge is stored in physical memory systems (Gonzales & Martins, 2017). Alavi and Leidner (2001) define organizational memory as *"stored knowledge about the history of an organization that can be utilizes to carry current decisions".* The physical location of the organization's knowledge repository therefore supports the knowledge creation and development of the company and its individuals (Gonzales & Martins, 2017). Previous empirical studies suggest that when organizations create knowledge, they learn, but tend to also forget, do not remember, or lose acquires knowledge. Therefore, storing, organizing, and retrieving information is critical to organizational KM. Organizational memory includes, among other things, written documentation of the organization, structured information stored in electronic databases, human data stored in systems, documented procedures and processes and tacit knowledge obtained by members of the organization, and their network. However, the organization's memory becomes beyond the individual's memory and includes components such as production processes, working methods, organizational culture, organizational hierarchy, and data repositories, both internal and external (Alavi & Leidner, 2001).

Organizational memory has prevalent positive effects on the functioning of an organization such as its behaviour and performance. Memory allows an organization to store and apply already existing functioning processes, which contributes to the fact that resources are not wasted on replicating previous work. Powerful storage technology held by computers, as well as advanced search functions, are compelling tools when working with knowledge storing. Those functions increase speed to how memory can be accessed

and utilized at work. In addition, it helps to implement change, as past experiences exist in the organization's memory (Alavi & Leidner, 2001).

Knowledge storing should also consider the proportion of older workers in the workforce. The ageing workforce possess an abundant amount of knowledge and expertise, and it is important that the organization can recognize the kind of knowledge that older workers have in their possession and what should be preserved for younger workers in the future of the organization. As employees retire, many organizations risk continually losing valuable knowledge along with these employees if the process of knowledge storing is not supported within the organization (Joe, Yoong & Patel, 2013).

Intranet is a great tool for organizational memory creation and knowledge storing. Intranet provides a platform where each member of an organization can request a file they need or use intranet search tools to find the file for themselves. Intranet enables seamless and efficient storage of knowledge, and the information is stored on a platform in a concrete format from which it is easy to retrieve and share with everyone who needs it (LS intranet, 2020). Intranet has been studied for knowledge storing and retrieval. Its development has developed along two roads. The intranet can be described as an unstructured knowledge base, or in other way as a means of free flow and exchange of information. Often the intranet is studied from the perspective of information flow and cooperation. Researchers who stress the intranet as an unstructured knowledge base are addressing the basic concepts of KM based on how those can be combined with the intranet technology. Often the intranet can be seen as a universal information system that benefits the organizational memory (Stenmark & Lindgren, 2003). Intranet's cross-platform, as well as open standards, allow organizational knowledge integration. Intranet allows data to be accessed from many different sources, including legacy databases and user interfaces. In addition, converting paper delivery systems to electronic files in the intranet system will bring considerable cost saving to the organization (Scott, 1998).

2.2.4 Intranet for knowledge sharing

As one important KM process, knowledge sharing is a fundamental means enabling members of an organization to promote the application, innovation of knowledge, and ultimately the competitive advantage of the organization as a whole. Knowledge sharing

is the sharing of mission knowledge and know-how to others to help them and collaborate with others in order to develop new ideas, policies, or procedures. Knowledge sharing can take place in various forms, such as in writing, face-to-face conversation, documenting, organizing, or networking with other experts (Ruppel & Harrington, 2010). At an organizational level, knowledge sharing depends heavily on the kind of people there are in the organization who create, share, and use knowledge. The rationale for sharing knowledge is that knowledge is also made available to others within the organization. Between individual, knowledge sharing is the process of changing information held by an individual to a form understood to another individuals, so that is can also be used by another. However, the individual does not relinquish ownership of knowledge; instead, when sharing knowledge, knowledge changes into the shared ownership of individuals. However, sharing knowledge is now compulsory between individuals; sharing implies a conscious act (Ipe, 2003).

It is important to distinguish between knowledge sharing and knowledge transfer. Knowledge transfer is mostly used to describe how information moves within an organization, such as between departments or other organizations (Ruppel & Harrington, 2010). However, knowledge sharing is also important for the organization, as it provides a connection between the individual and the organization, thus making knowledge with the individual's own also available to the organizational level. Interaction between an organization and individuals who possess much different knowledge, improves organization's chances of innovation far beyond what an individual alone would be able to accomplish, and this delivers economic and competitive value to the organization (Ipe, 2003). Therefore, if there is a major deficiency knowledge sharing within an organization, and individuals are not consenting to share their knowledge, it has proved to be a significant obstacle to the effective management of expertise withing an organization (Davenport & Prusak, 1998).

Nonaka and Takeuchi's SECI-model used to knowledge creation can also be utilized in knowledge sharing (Nonaka & Takeuchi, 1996). However, Stenmark (2002) has criticized the model in ignoring the fact that knowledge is a competitive asset for the organization as well as for the individual (Stenmark, 2002). As Ipe (2003) noted, an individual is not compelled to share the knowledge if he/she does not want to do it (Ipe, 2003). Stenmark (2002) has also stated that people do not share knowledge unless they

themselves have the motivation to personally share it. People do not want to give away knowledge if they do not actually accomplish something with it or if they are afraid of losing something. According to Stenmark, Nonaka and Takeuchi's model does not take this into account and has proposed a new approach in his research where knowledge does not need to be outsourced. In Stenmark's proposal, the whereabouts of the knowledge can be identified and reported within the organization. Consequently, the value of individuals increases, as they have certain knowledge within themselves that can be exploited by the organization. By means of this, the value of the organization increases as well. This will not allow individuals to risk eavesdropping and substituting their knowledge into a database and their willingness to participate in sharing knowledge increases (Stenmark, 2002).

According to previous studies, knowledge sharing has been linked to positive effects on production costs, product development, team performance, sales growth by increasing innovation capabilities and completing projects more quickly. As a combination of all these, new products and services deliver sales growth. As a result of these benefits, many organizations have invested time and money in KM initiatives, as the sharing of knowledge can be studied to improve the efficiency of the company. As a result, companies also want to invest in knowledge management systems (KMS), as they can use technology to effectively operate KM processes (Ruppel & Harrington, 2001).

The nature of the intranet allows for many KM initiatives, as its basic elements include the browser base, search functions, and abilities to share knowledge. It enables communication and interaction within the organization. Intranet supports knowledge sharing at least three ways. First, it provides time and space among its users. Secondly, it provides flexibility for exchanging knowledge. Thirdly, it supports knowledge transfer and organization networking, as it is independent of direct connections, such as face-to-face conversation, between users (Ruppel & Harrington, 2001). According to Ruggles (1998), KM is *"an approach that adds or creates value by more actively utilizing competence, highness and judgement that reside within and even outside the organization"*. In this perspective, knowledge is seen as a KM process perspective rather than an asset. From this perspective, the creation of an appropriate environment that allows and facilitates the flow of information is important (Ruggles, 1998). The intranet

can be considered such an important environment that facilitates the flow of information. Intranet is even critical to that environment (Ruppel & Harrington, 2001).

For knowledge sharing to be effective organizational culture plays a significant role. Ruppel and Harrington (2001) studied the role of organizational culture in sharing knowledge through an intranet. Because of the study, it was discovered that is an ethical and confident culture that also promotes the knowledge sharing of tacit knowledge through an intranet. It is the sharing of tacit knowledge that delivers an important competitive advantage for the organization that each organization aims to promote in order to make KM effective (Ruppel & Harrington, 2001). As Ipe (2003) and Stenmark (2002) have noted in the previous research about people's willingness to share knowledge (Ipe, 2003, Stenmark, 2002), an ethical and confident organizational culture promotes, precisely, this willingness in knowledge sharing, allowing both the individual and the organization to benefit (Ruppel & Harrington, 2001).

2.2.5 Intranet for utilizing and using of knowledge

Taking advantage of knowledge on a large scale within an organization is commonly challenging. The use of knowledge may consider the ambiguous nature of knowledge, differences in human aspects and various management and organizational constraints. Organizations collect information for their business promotion, such as information about markets, customers, production processes and innovation over long periods of time. This knowledge base benefits the organization's key production factors and, with high probability, also creates a competitive advantage. Organizational knowledge is an important asset used and managed just like traditional assets (Law & Chang, 2016).

However, the exploitation of information assets differs considerably from the use of other assets in the organization. For example, the value of a data asset cannot be determined, and its value is often unknown. The exception is if the information property is used to generate performance. Furthermore, ownership of the knowledge property is unclear, although the knowledge may be "owned" and managed by the organization. Organizations do not want to leak knowledge they own to outside competitors in which case it might lose its own value. Utilizing knowledge in an organization effectively might therefore be complex. Among the greatest challenges are the introduction of information

within the organization, as well as the ability of members of the organization to apply the received information. These two challenges can be analysed from three different perspectives, which are the information communication technology perspective, the human (in this case the employee) perspective, and the organizational perspective, i.e., the supervisor perspective (Law & Chang, 2016).

The term "*knowledge reuse*" is used often in KM literature, which can be found in the information management literature to be synonymous with *"information retrieval"* (IR). Knowledge reuse is often described through four phases, which are knowledge capture, knowledge storing, knowledge sharing and knowledge utilization (Chua, 2004). The knowledge available to members of the organization, such as employees in companies, has grown enormously with the use of intranets. With the increase in the amount of information, the accessibility of knowledge has also become more difficult as the importance of information retrieval has become important. The organization's members are increasingly required to have better information retrieval skills so that the right search words are used in order to able to search for the right kind of information and get it used effectively. Quantitative growth in information also contributes to the facts that the search engine should operate efficiently and make useful information available to its users easily and quickly (Kietz, Maedche & Volz, 2002). Most of the information retrieval tools just like search engines and directories are designed to make it easier to find information. The functionality of the search engine on the intranet is also particularly important. Knowledge work often requires reuse, integration, as well as retrieval of new information. For example, to compounding a presentation, an employee should take advantage of earlier documents, web search, spreadsheets, as well as email messages. Here the reuse of information is concreted well, and new knowledge is created by integrating information from different sources (Dumais at al., 2003).

Knowledge reuse includes both recalls, and recognition. Recalls refers to the fact that the knowledge is stored in what location, what index or classification system. Recognition means that the data that are stored, meets the needs of the users and effectively the application of the knowledge. When expertise is desired to be used effectively within an organization, for knowledge reuse, the use of knowledge involves both identifying experts on the subject and selecting the most qualified expert for a particular query. In addition, it includes the query, response, and application of the knowledge. Information

mining is called knowledge reuse involving systematic secondary analysis of information. This consist of four different stages. The first is the definition of search queries, which is necessary for successful reuse. It has often been found that one feature separates beginners from experts; experts know how to ask questions. The next step is the search and location of experts and expertise. The third step is the selection of the appropriate expert or expert opinion among the results. The final step is to apply the knowledge to the sought information described in previous stages (Markus, 2001).

The reuse of information utilizes a wide range of repositories for information. The fundamental difference comes between document archives and data repositories. Applying information as text-shaped documents is different from retrieving data from data warehouses. Thus, indexing and storing data in these repositories is also different (Markus, 2001). According to Davenport and colleagues (1998), the archives can be separated into two different categories. One is archives that store external information (e.g., demographic data) and the other that store informal information such as group discussions, email discussions, etc. (Davenport et al., 1998).

2.2.6 Community of practice

The term Community of Practice (CoP) first appeared in 1991 that was used by Jean Lave and Etienne Wenger (de Lima, de Carvalho & Ambrosio, 2010). CoP as a term was crucial to the field of research utilizing a practical method of research. Behind the origin of the term was the idea that the community should replace the individual as a subject of learning. From an organizational perspective, it was though that CoP combines the ideas that communities learn, thus making the organization a community of communities (Gherardi, 2009).

It is important to understand that CoP is everywhere, as in working communities, schools and universities, and hobbies. From an organizational perspective, CoP is an important asset, as it forms the future of the entire organization. CoP can be defined as a set of people who share a common interest, problem or issue and deepen their knowledge in this matter by communicating with each other. CoP can share its knowledge through storytelling, mentoring, and discussions, allowing tacit knowledge to be transferred effectively within the people. By looking at KM processes, knowledge creation and

transferring are important activities for CoP. As stated, CoP often arises from common interest or problem. In an organization CoP might arise naturally, rather than as defined by management. Through conversations, knowledge sharing, participation, and sharing ideas, individuals help each other to solve a common problem (Al-Hawamdeh, 2003, pp. 121–122). For organizations, CoPs are of great use. It helps management understand KM processes. CoP delivers value to the organization in many ways such as, help promote strategy, can solve problems effectively, start new business lines, transfer best practices, develop professionalism, and help companies recruit and keep the talented ones (Gehrardi, 2009).

There is also a term Virtual Communities of Practice (VCoPs). VCoPs works like CoP, but groups of people come together to discuss and share their knowledge in a common virtual environment. Members may look to the community for an answer to their own problem and share solutions among the community, and thus the community builds up their own knowledge. The important thing for VCoPs is that the knowledge that is generated among the community should be stored in such form and place that it can be easily retrieved later. VCoPs can work through e-mails, chats, wikis and technologies provided by websites. These provide an environment in which experts from a particular group can share best practices on a common platform (de Lima et al., 2011).

Intranet, especially social intranet benefits VCoPs in the organization. Intranet provides VCoPs a platform to engage conversations and helps its members with problem solving. VCoPs can also take advantage of phone calls as well as video conferences to interact and create knowledge, but conversations through those can be difficult to store, thus transitioning knowledge between members only and not being available to the entire organization. Because of this, intranet is also in terms of VCoPs a useful channel. Conversations via intranet are automatically stored in the company's internal network and solutions achieved in the conversation can be effectively retrieved later (Dubé, Bourhis & Jacob, 2005, p. 148).

2.3 Information architecture

Wurman (1996) was the first to define the term information architecture (IA). He defines information architecture firstly as individual to organize information inherently, making

the complex clear and secondly as a person creating a structure or map of information that allows others to find their own paths to knowledge. Wurman sees architecture as a science and art that creates "teaching organized space". This includes the design of organizational, annotation, navigation, and search systems that enable the person to find and manage the information he or she need more easily. The IA is therefore used to describe the structure by which the data is grouped (Wurman, 1996). Carter (1999) defines information architecture as a collective term used to describe the various components of a general information infrastructure that consider the business processes of the business model and components and, through these, produce information systems that support and produce it. These main components are data architecture, systems architecture, and computer architecture. When innovations related to information are developed, all decisions will be reviewed holistically in the business environment and within these different architectures. In such a case, the company's business strategy and its long-term objectives can be considered, while also noting the importance of the technological environment and the external environment in the overall picture (Carter, 1999).

Due to the rapid growth of the internet, the amount of online information has grown blaringly. When people face massive amounts of information, difficulties arise as well as how to choose and obtain effective information. To this problem IA helps. On the internet, IA is a combination of organizing site content into categories and creating an interface to support these categories. This consist of four parts. First up is an organizational system that distributes information into different categories based on content characteristics (Nie & Hao, 2007). According to Wurman, there are five ways how information can be organized; location, alphabetical order, chronologically, by categories, or by hierarchical relation (Wurman, 1996). The second part is the notation system, in which case a uniform notation program should be created for each data group. Third is a navigation system that helps map user's necessary information. Last one is a search system that helps people develop documents matching search queries to meet user's data requirements. The purpose of IA is to achieve the best search results through web construction (Nie & Hao, 2007).

2.3.1 Information architecture for intranet

As previously stated, in the KM perspective, intranets contain a huge amount of information that should be readily available to members of the organization. In order to achieve this goal and ensure a good user experience, intranet should be implemented with the right kind of IA. What makes the IA of intranets difficult, is that IA designers often have only a limited number of opportunities to see how information is structured in other intranets. Also, essential to implementing the intranet is the use of suitable navigation elements so that information can be easily found (McCloskey, 2014).

Nielsen Norman Group has studied the implementation of the IA of intranets a lot. According to the study, ambiguous naming of navigation menus is one of the greatest challenges regarding the intranet when looking at the IA of the intranet. All menus should be named descriptively, accurately, and exclude each other so that users can move between menus easily. Organizing the intranet also plays an important role in IA terms. The intranet can be organized by task or subject matter. A task-based intranet refers to the fact that a content organization is independent of who created or owns the content. Often, task-based structures held up better, according to research, if, for example, an organizational change is implemented in the company. However, according to organizational structure, organized intranets are more easily serviceable, as in this case each department takes care of its own section in the intranet. However, in this case, the intranet will also have to be reorganized if the company faces organizational change. Nevertheless, according to the study, by 2014 86% of new intranets were implemented on a task-based basis. However, naming menus for task-based intranets is often more challenging and time-consuming (McCloskey, 2014).

Nielsen Norman Group also examined the number of main navigation items in its study. The study involved 77 intranets with an average of 7.6 main navigation items. At its lowest level, there were 3 main navigation items and 31 at highest. According to median, there were 7 main navigation items. The maximum number of main navigation items was reduced from previous research, which is a good direction, as too wide a structure immediately shows its user too wide range of available content, which also makes it difficult for the user to navigate and search for information, as many menu items might overlap. For the majority of intranets, company information (66%), human resources data

(64%) and news (56%) were selected for the selection of items on the main menu. In addition to more general topics, different solution for main menus could be found from companies in different fields, such as products related menus by production companies. The study also found that, increasingly, the navigation of the intranet was generally wanted to be improved, such as adding a feature that highlights to its user his or her current location on the site. Clear and continuous navigation demonstrated to its user how information can be found and helps them to better understand the overall structure and what sites they have already discovered (McCloskey, 2014).

In addition to navigation, many intranets offered quick links, namely navigation shortcuts to the site's most popular destinations, according to the study. Quick links allow the user to find the information they need more easily and faster. Social filters can also be added to quick links, which allows links to be recommended depending on what other users have been used. Social filters may include items such as "most viewed", "most popular documents", "frequently asked questions" or "commonly used forms" etc. With the use of social filters, the intranet will become more useful and interesting when the necessary information is found faster (McCloskey, 2014).

3 THEORETICAL BACKGROUND

In the following chapter, the theoretical background of the study is provided. This chapter introduces the main concepts used in this study and how theoretical framework is conducted to support the research.

3.1 Theoretical model and framework

The focus of this research is set around three main concepts, which are the implementation of the intranet or, in general, information system, knowledge management, and information architecture. The main research question is *"what are the qualities and information that the intranet should contain to make knowledge management as efficient as possible"*. The research model is formulated in such way that the main research question is answered as clearly as possible.

3.1.1 Needs analysis

The needs analysis can be used to define deficiencies or problems in the matter being investigated, as well as identify their causes and find solutions. Needs analysis can be described as a process designed to identify gaps between the current and the desired situation. The purpose of this is to systematically identify flaws between situations (Berkley Lab Training, 2020).

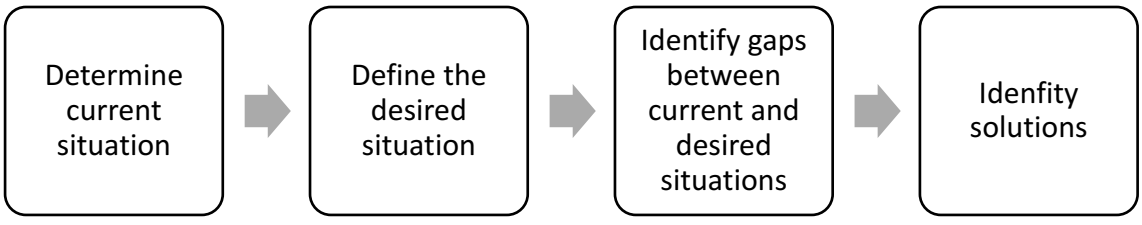

Figure 2: Needs analysis process (Berkley Lab Training, 2020).

The needs analysis is important that useful and usable systems can be developed. In development, it is important to identify and understand user needs and contexts, and these should be considered throughout the whole development cycle. User needs refer precisely to the difference between user's current and desired situations. This difference manifests

itself as problems and opportunities for users. User requirements describe the functions, constraints or other features that should be considered in the development of the system in order to meet the user's needs (Kujala, Kauppinen & Rekola, 2001).

The first step in implementing the needs analysis is to set specific business objectives for the matter under investigation. This is usually done through a review of the organization's mission statements, strategic objectives and improvement goals. When the objectives are set, the next step is to analyse the current situation of the organization's business processes by collecting relevant data on the level of performance and how resources are currently being allocated to these processes under investigation. Data can be collected from multiple sources and through different methods such as looking at documentation, conducting interviews, brainstorming, and observation. Once a company has set itself a target and studied its current situation, it will identify the gaps between these situations. A gap analysis is often used here, where gaps are identified, and solutions are sought. The intention is to outline a plan describing concrete steps to achieve the business objectives (Sales, 2019).

3.1.2 Gap analysis

Gap analysis is a method often used to asses' differences in performance of a company's information systems or software applications, which can determine whether business objectives are met and what steps should be taken in order to meet them. *Gap* refers to the space between the current situation and the desired state. The gap analysis is often referred to needs analysis and is often part of it. In gap analysis, gaps are identified, and solutions are sought to be found. It is therefore intended those solutions could be found in the gap analysis to achieve the business objectives set out in the needs analysis (Sales, 2019).

In information technology, small companies in particular may benefit from gap analysis as a company seeks to figure out resource allocation. Software development can determine which services or functions have been omitted and which have been deliberately omitted that still need to be developed. The gap analysis can be used to determine what settings needs to be used in order to meet the company requirements and business objectives (Sales, 2019).

3.1.3 Knowledge Audit

Knowledge audit is the first step in the organization's desire to take a knowledge sharing initiative. The purpose of the knowledge audit is to explore what information an organization has, how it stores it, and how it is maintained. The knowledge audit examines the strengths and weaknesses of the information and what it is used for (Mankin, 2017). In addition, the knowledge audit assesses the information needs of the organization as well as the behaviour of members of the organization in sharing and creating knowledge. Knowledge audit should be accomplished in order to transform the organization into learning organizations and ensure its effective knowledge management strategy. Knowledge audit provides an organization with knowledge of the current state of its competence and direction of where and how to develop this capability in order to strengthen competitiveness (Chowdhury, n.d.).

Typically, the purpose of the knowledge audit is to ensure that the goals of the organization are met. Knowledge audit can also be done when knowledge is intended to support and not replace experts in the organization. In this case, knowledge process analyses can be accomplished at the knowledge audit to best support experts. Thus, the goal is to understand the processes that make up the activity of the skills worker and see how these respond to the objectives of the organization. The knowledge audit competency assessment is therefore an assessment of how well different information processes are used to achieve knowledge goals. Audit is often internal to the organization, auditing is usually regular, but often driven by external need. The results of the knowledge audit can be used in an organization to make possible changes in knowledge management objectives or actions in information processes (Lauer & Tanniru, 2001).

3.2 Research model

Through the discussions with the case company's management, three main organizational goals for the intranet are identified and the framework is structured to follow these themes. The first organizational goal is to streamline and store data, which refers to knowledge storing. The second one is to unite and collaborate employees with the intranet. In the KM perspective, this refers to knowledge sharing. The third goal is to increase productivity, which refers to knowledge utilization and knowledge use.

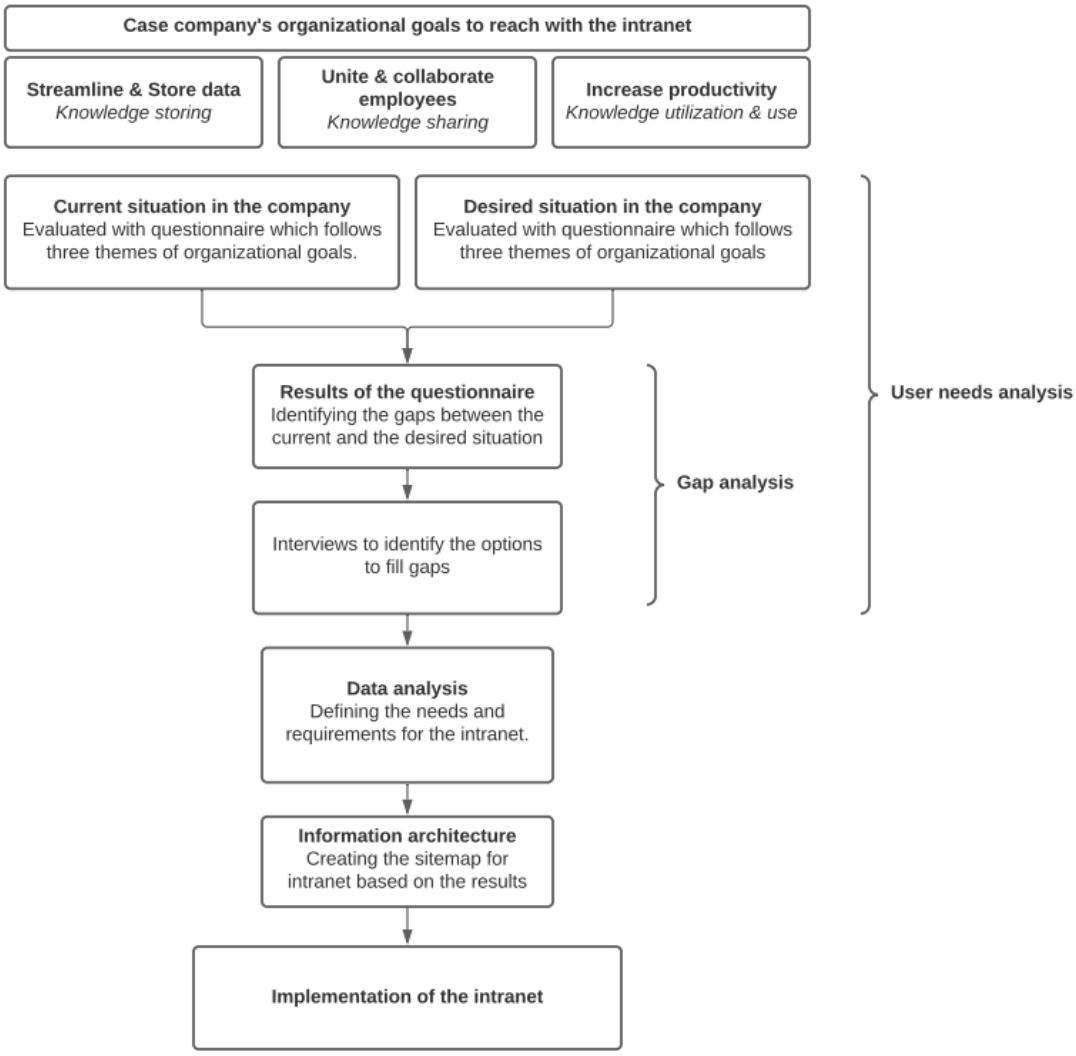

Figure 3: Research model of the thesis

Figure 3 presents the research model of this study. The research model follows the three main organizational goals of the company. Initially, needs analysis has been utilized to determine the case company's current and desired situation through these three themes. Both situations are clarified through questionnaire research. Based on responses from the questionnaire, efforts are made to identify gaps between the current and desired situation. Once the gaps have been identified, interviews are used as a research method to help fill the gaps identified. Interviews provide increasingly more detailed information about the possibilities of how to reach the desired situation with the regard to the intranet. Once solution for identifying gaps are identified, intranet information architecture can be designed to serve as best as possible precisely the needs of the case company and its organizational goals within the intranet.

4 METHODOLOGY

This chapter presents the research methods used in this study as well as the research strategy. The section also presents data collection methods, as well as what method has been used to analyze the collected data. At the end of this chapter, there is a brief presentation of the case company.

4.1 Qualitative methods

The premise of qualitative research is the depiction of real life. The idea is that reality is manifold, which should be considered in the study. That reality cannot be fragmented into parts any way. Thus, qualitative research seeks to study the subject as holistically as possible. Many characteristic features can be described for qualitative research. First, as mentioned above, qualitative research is by its nature, a holistic acquisition of knowledge, and the data are assembled in natural, real situations. Furthermore, qualitative research favours humans as an instrument for information collection, as the view is that a human is flexible enough to adapt to varying situations. Inductive analysis is also used in the study. The scientist quest is to uncover unexpected facts. The starting point is therefore not to test theory or hypotheses, but to examine the material in a complex and detailed way. In qualitative research, the target set is chosen appropriately, not using the random sample method. In addition, the research treats cases as unique, which is why the material is also interpreted accordingly (Hirsjärvi, Remes & Sajavaara, 2010, pp. 161–164).

The word qualitative refers to the emphasis on properties of entities, as well as processes and meaning that have not been experimentally studied or measured in terms of quantity, intensity or frequency. As mentioned, qualitative research examines real situations and qualitative researchers emphasize the socially constructed nature of reality and the intimate relationship between the researcher and the subject matter. In addition, the situational constraints that shape the study, are considered. In qualitative research, researchers emphasize the authoritative nature of intelligence, which seeks answers to questions to highlight how social experiences arises and is given meaning (University of Southern California, 2020).

4.2 Chosen method

Case study is a typical and traditional research strategy. In terms of features, a case study is detailed, intensive information about an individual case or a small number of interrelated cases. Typically, a case study selects an individual case, situation, or set of cases where an individual, group, or entity is targeted. The aim of the case study is more typically the description of phenomena, and the data are collected in connection with their environment, i.e., in natural situations (Hirsjärvi et al., 2010, pp. 134–135). The case study seeks to extrapolate key themes and outcomes of the study to help predict future trends or find previously hidden things that can be applied to practice. Furthermore, this can provide a means by which the research problem can be more clearly understood. The methods used to investigate the case may be in a quantitative, qualitative, or a combination of these in the investigative paradigm (University of Southern California, 2020). The case study was selected as a research strategy for this study, as the study examines the needs of one particular company with regard to the development of an intranet. Data in the study were collected in connection with the environment and in a natural situation, and data were collected from members of the organization which is typical for case study.

4.3 Data collection

In this study, the data was collected by questionnaire and interviews. Study used the survey method. Survey research considered one of the most important research methods in applied social research. Survey refers to all measurement methods that involve asking respondents' questions (Trochim, 2020). Survey refers to forms of questionnaire, interview and observation in which data are collected on a standardized basis and in which the target persons form a sample. Standardization means that questions should be asked to all respondents in exactly the same way (Hirsjärvi et al., 2010, p. 193). Roughly divided, survey research can be divided into two different areas: questionnaires and interviews (Trochim, 2020). Both methods were used in this study, both a questionnaire, and an interview, to provide the broadest possible understanding of the subject.

4.3.1 Questionnaire

The advantage of questionnaires is usually considered to be that those can be used to collect a wide range of research data. Substantial number of individuals can be obtained for research and many things can also be asked. However, there are also weaknesses in the questionnaires. Most commonly, material is considered superficial and studies theoretically modest. In addition, it may also be considered that it is not possible to ascertain how seriously respondents have taken the investigation and it is not clear how successful the response options given have been from the respondents' point of view, making it difficult to control misunderstandings (Hirsjärvi et al., 2010, p. 195). Because of these disadvantages, this study used additional interviews to provide the most accurate information on the subject.

Questions in the questionnaire were conducted in such a way as to comply with the research model. First, the questionnaire examined respondents' demographic data using multiple choice questions. The questionnaire was otherwise conducted anonymously. The topic of the study is the main factor affecting the response, in which the formulation of the form and the precise design of the questions can enhance the success of the research (Hirsjärvi et al., 2010, p. 198). The questionnaire first examined the current situation of the company in three different categories, which were knowledge storing, knowledge sharing and knowledge utilization and use. The questions were used to try to get the broadest possible picture of the situation of the whole company regarding these topics. Subsequently, the questionnaire examined the desired situation of the company for the same topics. The questions were formed in such a way that they could easily be compared with the questions that examined the current situation. The creation of the questions utilized the knowledge audit and used as a basis for the questionnaire to examine what information the case company has, how it is stored and maintained. In addition, the questionnaire explored wishes for a future intranet. The questionnaire was implemented with Microsoft Forms.

In addition to multiple choice questions, the questionnaire used open questions as well as scales-based questions. Open questions are questions that ask only a question and leave a blank space for answer. Questions based on scales make claims and the respondent chooses from them how strongly he or she agrees or disagrees with the argument

presented. The questionnaire used the 7-point Likert scale (from strongly disagree to strongly agree), where options formed an ascending scale (Hirsjärvi et al., 2010 pp. 199–200) asking respondents to rate their perception or opinions to the claim. The respondents were also asked to indicate how often event in the claim occurred (several times a day to I do not use it).

The questionnaire was chosen as a research method for this study, as the storing, sharing and use of knowledge of the case company was desired to obtain the broadest possible picture, which the entire company staff have the opportunity to respond to. In addition, the intranet was desired to implement to best serve the needs of the company's staff precisely from the point of view of their work duties. As a result, it was important for all staff to be able to influence the implementation of the intranet through the questionnaire, also providing their own views on the subject. Although the questionnaire is often methods of quantitative research, in this study it was initially utilized to examine the general situation, after which the study subject was further examined through interviews.

4.3.2 Interviews

Interview is a unique method of data collection in relation to direct linguistic interaction with the subject. The main advantage here is usually considered to be the flexibility of collecting the material. In qualitative research, the interview has been considered the main method (Hirsjärvi et al., 2010, pp. 204–205). Interviews are a much more personal form of research method than questionnaires. In the interview, the investigator works directly with the interviewee. Unlike the questionnaire, the interviewer has the opportunity to ask follow-up questions as well. Interviews are also often easier for the respondent, especially if opinions or impressions are sought (Trochim, 2020).

Hirsjärvi et al. (2010) lists reasons why an interview is often chosen as a research method. Firstly, why an interview can be chosen is because the research area is quite unknown, where it is difficult for the researcher to know in advance the directions of the answers. Secondly, the fact that it is pre-known that the subject of research produces answers in a complex and many directions. Lastly, the interview would like to clarify the answer that are being received and to deepen the information that can be obtained (Hirsjärvi et al., 2010, p. 205).

Interviews were selected as a data collection method for this study for precisely these reasons. Since the study used needs analysis, a method aimed at finding solutions to identified gap was needed in addition to the questionnaire. Interview is also a frequent research method used in needs analysis, which is why it was selected for this study as well. Through interviews, a larger and more common picture of the case company's situation was provided for the implementation of the intranet from the KM perspective.

4.4 Qualitative data analysis

Descriptive statistics are used to describe the basic characteristics of the data collected for the study. It can be used to provide a simple summary of the sample and measures. Descriptive statistics, together with the sample graphics, form the basis for almost every quantitative analysis of data (Trochim, 2020).

Descriptive statistics refer to what the data is and what the data show. Simply, descriptive statistics are used to describe what is happening in our data. Descriptive statistics can simplify large amounts of data on any metric, and also help to simplify these large amounts of data in a rational way (Trochim, 2020). Using descriptive statistic, raw data can be presented rationally and in such a way that their interpretation is simple. When using descriptive statistics, it is useful to summarize data into groups using tables, graphical descriptions, and a combination of statistical commentary, i.e., discussion of results (Leard Statistic, 2018).

The descriptive analysis was selected for this study as the data collected from the survey was simplest to present using descriptive analysis. Various tables were formed from the results of the survey, as well as diagrams, to describe the results, in addition to combining the discussion of the results to open up significantly more. The results of the interviews combined with the results of the survey are analysed in more detail in the discussion section of this research.

4.5 Introduction of the case company

The case company is a small financial accounting firm owned by the city and municipalities. The company is thus an inhouse limited liability company created due to

the outsourcing of financial divisions in 2019. The company specializes in finance and human resource management. In addition to the city and municipalities, the company also provides its services to communities owned by them. The company aims to provide all its customers with consistent and automated processes to ensure operational efficiency. The staff of the company is made up of experts in the field of municipalities.

On the financial management, the company provides services in terms of accounting, accounts receivable and payable, among other things. Furthermore, services include the maintenance of the financial planning system and reporting system, consolidated statements, VAT calculations and declarations to the taxman and the production of statistics. In the case of payroll management, the company provides in addition to payroll, maintenance of a reporting system, self-issuing electronic forms, making accounts, declarations and applications and producing statistics.

5 RESULTS AND ANALYSIS

In this chapter the results of the questionnaire and interviews are presented. The questionnaire results are analysed, and interviews are widely presented. Interview results are later analysed in the discussion chapter.

5.1 Questionnaire analysis

The results of the questionnaire were analysed through descriptive analysis, which is often an essential means of analysis in qualitative research. The questionnaire was conducted to follow the research model and needs analysis. The questionnaire consisted of four categories, which were knowledge storing, knowledge sharing, knowledge use, and intranet properties. Knowledge storing, knowledge sharing, and knowledge use were all divided into two further sections, detailing the current situation of these matters, as well as the desired situation, so that the gaps can be identified, Identification of gaps is characteristics of needs analysis. Analysis of the questionnaire was intended to identify gaps between the current and desired situation, which permits forming interview questions. Through the interview, the gaps are intended to find solutions in order to reach the desired situation.

The questionnaire was sent to a total of 38 people within the company. The questionnaire was distributed using email and the reminder message was sent twice in addition to the original message. A total of 26 replies to the questionnaire were received and therefore the response rate was 68%. The questionnaire was implemented with Microsoft Forms.

Table 1: Demographics

Variable	Category	% Of respondents
Department	Payroll	57.69
	Financial management	34.62
	Other	7.69
Age	18-24	3.85
	25-34	11.54
	35-44	7.69
	45-54	30.77
	55 and above	46.15
Years in current position	under 1 year	23.08
	1-2	34.62
	3-5	19.23

	over 10 years	23.08
Previous experience in similar positions	No	15.38
	Yes	84.62

Table 1 presents demographic data for respondents. The majority of respondents (57.69%) work on the payroll. The majority of respondents were over 55 years of age, which was 46.15%. 76.92% of respondents were over 45 years old, while only 23,08% were under 45 years of age. This also indicates about the age structure of the case company in general. The respondents had been working in their current position evenly for different periods of time. The majority, 34.62%, however, had worked in their own position for 1–2 years. The majority, 84.62% of respondents had previous experience in similar positions in the field. Only 15.38% did not own previous experience in similar tasks.

5.1.1 Knowledge storing

The current situation of knowledge storing examined using eight questions. It was desired to clarify the desired situation by paraphrasing the issues of the current situation in such a way that those could easily be compared with each other.

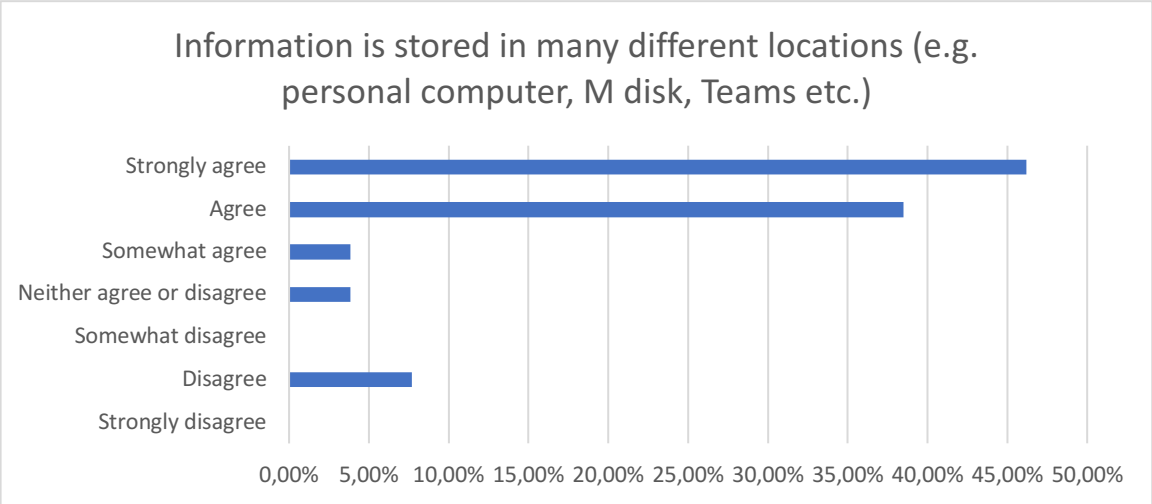

Figure 4: Knowledge storing in different locations

As a first question, how information is stored, was examined. 46.15% respondents strongly agreed that information is currently stored in many different places. In addition, 38.46% agreed that information could be found in many different places. The results

depict that the company's information is stored in many different locations, in which case the search for it may produce challenges.

Table 2: Knowledge storing in persons' own use

Variable	Category	% of respondents
I have a lot of information stored only on my own computer	Strongly disagree	3.85
	Disagree	7.69
	Somewhat disagree	15.38
	Neither agree nor disagree	7.69
	Somewhat agree	34.62
	Agree	19.23
	Strongly agree	11.54
The knowledge I need at my job is only held by certain people and not stored for common use	Strongly disagree	3.85
	Disagree	11.54
	Somewhat disagree	19.23
	Neither agree nor disagree	7.69
	Somewhat agree	26.92
	Agree	26.92
	Strongly agree	3.85

In addition, table 2 shows that respondents were asked whether they had information stored on their own computer only. 65.39% of respondents agreed in some level that information is only on their own computer. In addition, it was examined how respondents feel about whether information is stored only by certain individuals. More than half of respondents. 57.69% also agreed in some level that information is only available to certain individuals. These results also reinforce the first question of information being stored in many different locations within the company.

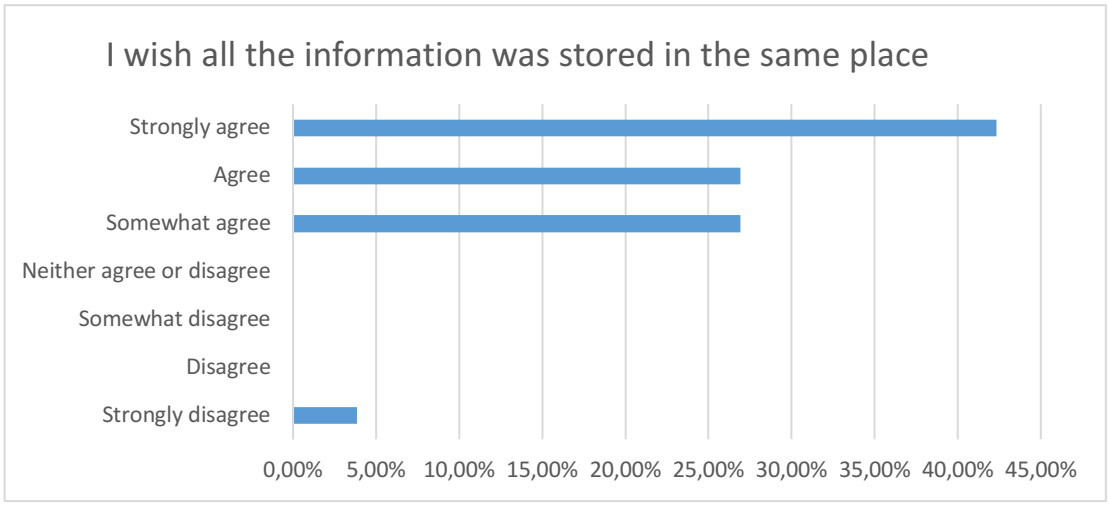

Figure 5: Desired situation in knowledge storing

Similarly, questionnaire participants were asked about the desired situation if they wanted the information to be stored in the same place. 42.31% of respondents strongly agreed that the information should be stored in one place. 96.15% of respondents agreed in some level that the information should be stored in one place.

Table 3: Knowledge storing availability for all staff

Variable	Category	% of respondents
It is important to me that the information should be available to all staff	Strongly disagree	0.00
	Disagree	0.00
	Somewhat disagree	0.00
	Neither agree nor disagree	3.85
	Somewhat agree	15.38
	Agree	15.38
	Strongly agree	65.38

Respondents were also asked whether the information should be available to all staff (Table 3). 65.38% strongly agreed that the information should be available to all staff. A total of 96.14% of respondents agreed in some level. Based on these five questions presented, gaps can be identified between the current and desired situation. Currently, information is stored in many different places, including on people's own computers only for their own use. Based on the questionnaire, it can be clearly stated that the desired situation would be that the information is stored in one place available to all staff. In order to find a solution, the interview should examine what are the options for making information found in all different channels into a common intranet and how to motivate people to map information found on their own computer to be used as common.

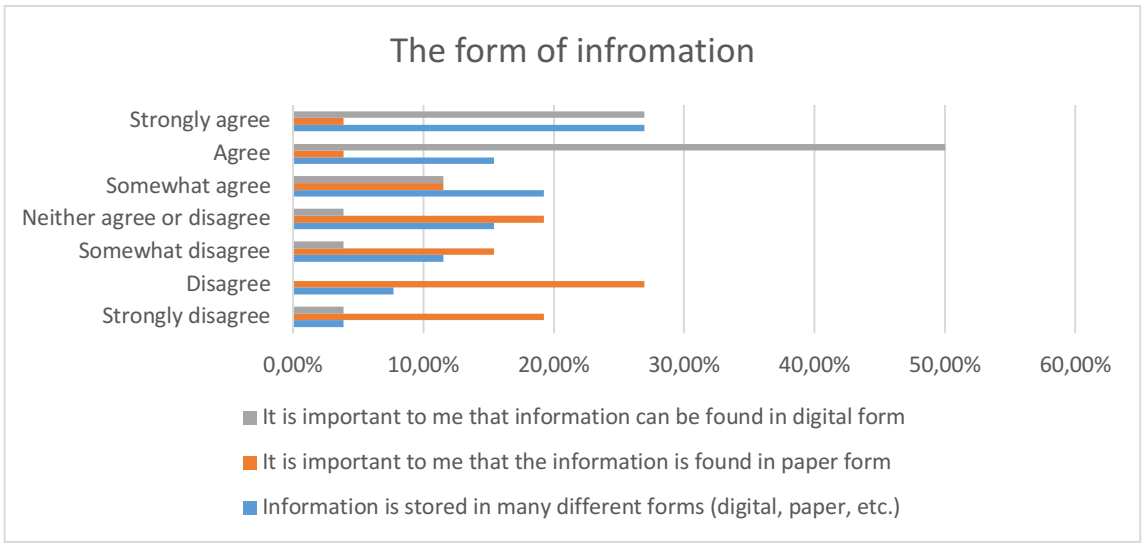

Figure 6: The form of information

Knowledge storing was also clarified as to the form in which information was stored (Figure 6). 61.53% of respondents agreed in some level that information is stored in both paper and digital. However, 61.53% also felt at some level that it is not important to find information in paper, indicating that more than half wish to eliminate the paper files. 88.46% of respondents agreed to some degree that it is important to them that the information can be found in digital format. This indicates that important paper information would also be good to be stored in an intranet in a digital format.

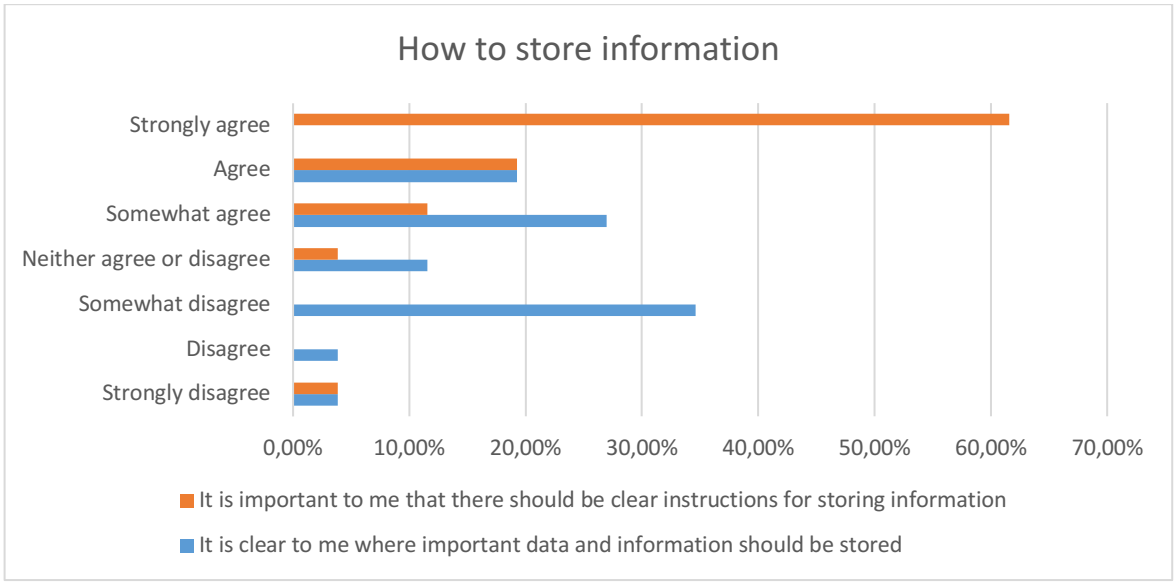

Figure 7: How to store information

In the questionnaire, there were also matters about where information should be stored. Some dispersal between respondents may be noted here. 42.32% disagreed at some level that they do not fully know where information should be stored. 46.15% of respondents agreed on some level that they know how and where information should be stored. 64.54% strongly agreed that they want clear instructions for storing information. 92.31% agreed on some level that they wish for clear instructions. Based on these responses, it should be necessary for the company to create clear instructions to ensure that information storing is clear for all staff.

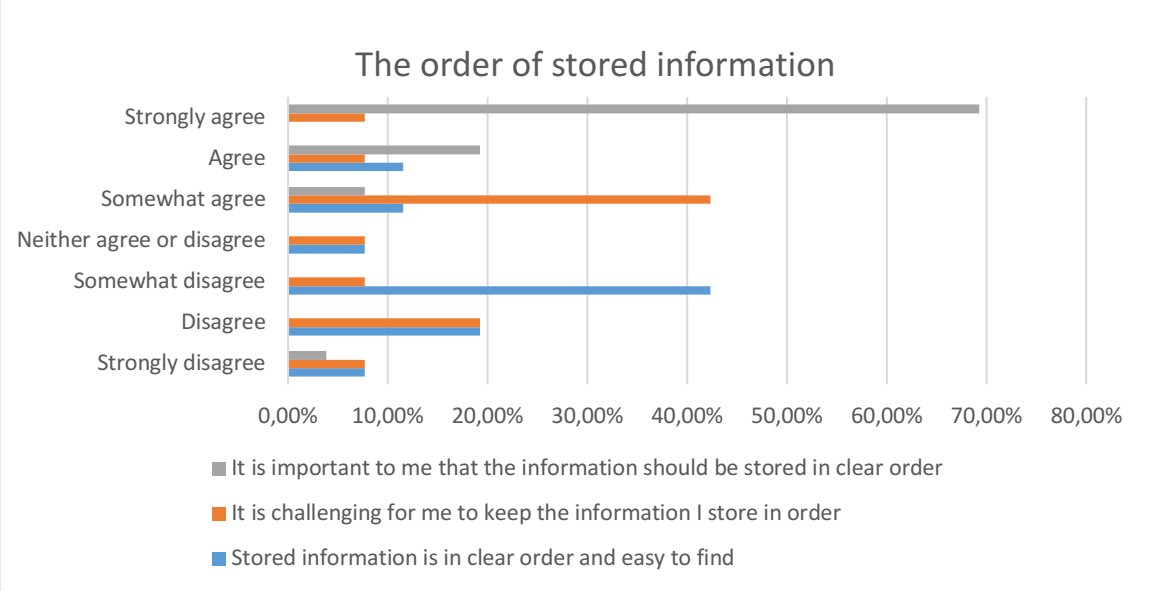

Figure 8: The order of stored information

The questionnaire also examined whether stored information was in clear order. Based on the questionnaire, it was noted that 69.23% of respondents felt at some level that the information is not currently in clear order. However, 96.15% attaches importance to the fact that the information should be stored in a clear order. In addition, the questionnaire examined whether respondents themselves have trouble keeping information in order, with 42.31% somewhat agreeing that it is challenging to keep it in order. A gap can be identified based on these results. The interview should be used to determine how the information could be arranged in such an order that it would be easy to use and exploit.

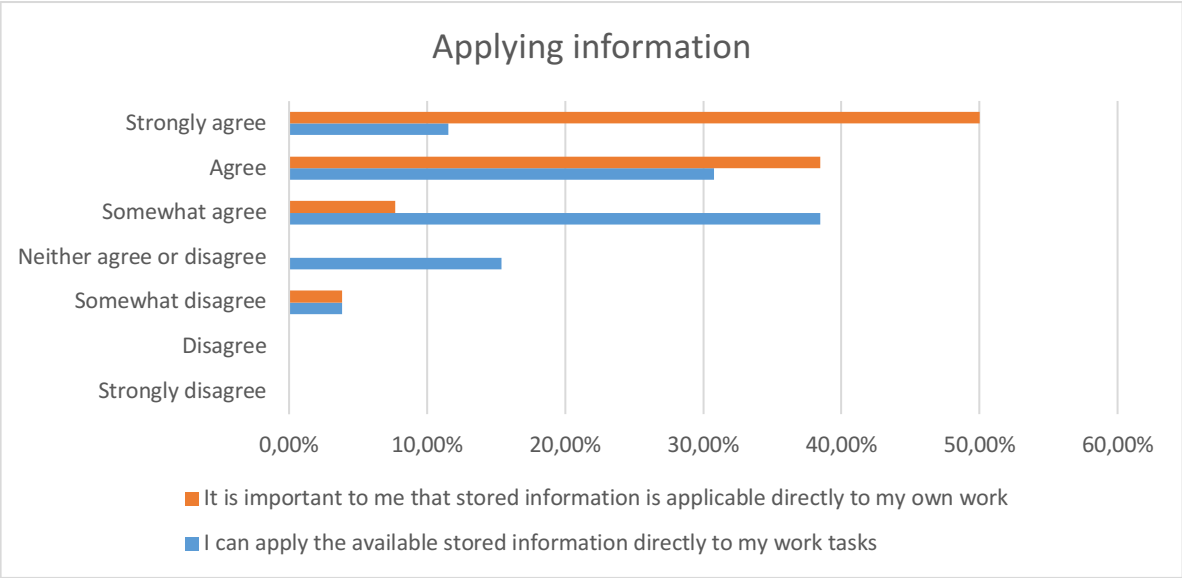

Figure 9: Applying information

Based on the questionnaire, it can be noted that the information stored currently is applicable to the respondents' own work. In addition, the respondents considered it important to permit the information stored to be directly applied to their own work.

Based on the questionnaire results, the fact that information and data is stored is relevant, but it is stored in many different locations and is not in a clear order. The interview is used to try to calculate solution to these problems. Furthermore, based on the questionnaire results, when implementing the intranet, it should be considered the fact that paper information should be stored digitally in the intranet and clear instruction should be created for the storing of the information.

5.1.2 Knowledge sharing

The questionnaire examined knowledge sharing among staff. As with the knowledge storing, the current and desired situation was sought to clarify also in knowledge sharing. As well as sharing information, it was explored how respondents cooperate among other staff.

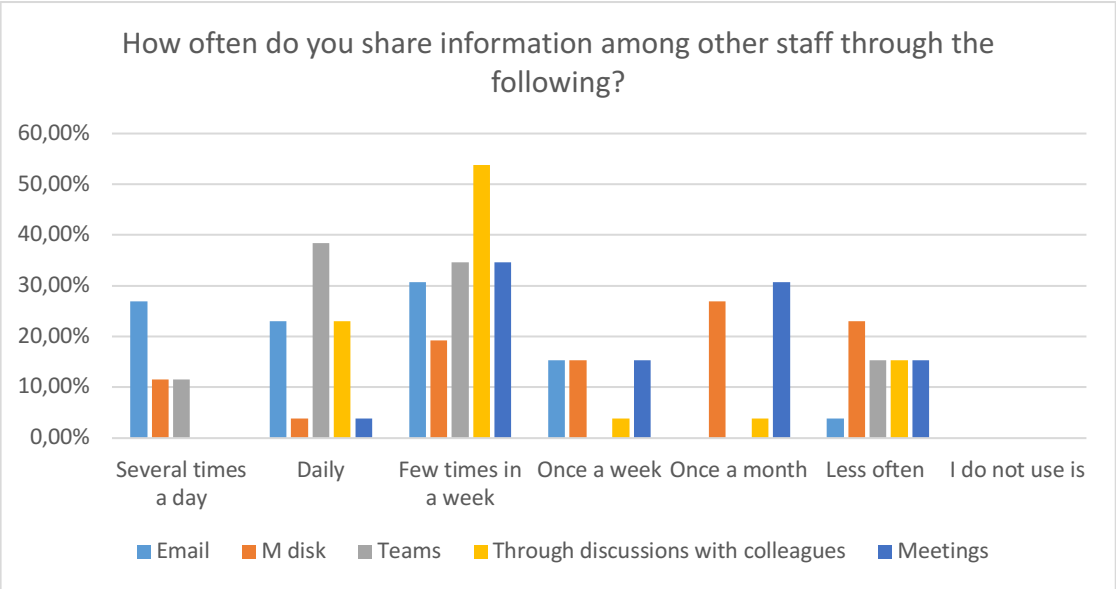

Figure 10: How often knowledge is shared

Figure 10 shows how often and through what staff share information with each other. Personnel share the most information with each other daily through Microsoft Teams, but email is also an important information-sharing channel several times a day. Discussions with colleagues is also a popular method of information sharing. However, due to Covid-19 pandemic, the company's staff mostly work remotely, which explains the fact that Teams and email are currently the most important tools for information sharing. The proportion of information shared through conversations with co-workers would probably be higher if the majority of staff worked at the office. However, for Teams and email, the problem in terms of sharing information may prove to be the fact that information is shared between a small group or even two people, e.g., in Teams discussions. In this case, the information does not reach the entire staff, but remains only between two people. It may be difficult for staff to assess what information would be important to share with all staff. The interview may be used to ascertain how often the staff share information only, e.g., through discussions between two people discussions, and how to assess what information would be good to reach the entire staff.

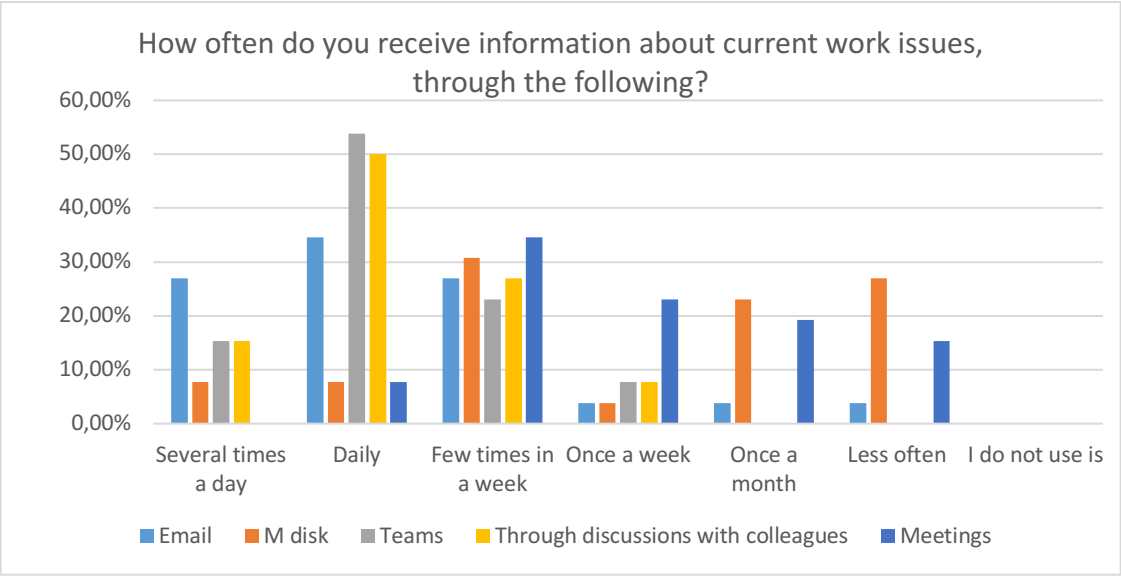

Figure 11: Receiving information through different channels

Figure 11 shows via what channel the staff receive information. The same trend is also noticeable here as in Figure 10. Among the most popular information channels are Teams as well as email. In addition, information about current affairs is obtained through discussions. The questionnaire also had an alternative to answer "other what?" and as an open response, one crucial comment appeared: *"Important information that directly applies to my work is not always shared. Now, within a month, two important things that affect my work, I was not informed"*. This problematic situation may be precisely because information is shared through two intermediate discussions and therefore do not end up with the knowledge of others.

Table 4: Desired knowledge sharing principals

Variable	Category	% of respondents
I would hope that the current affairs of the company will be informed	Several times a day	3.85
	Daily	26.92
	Few times in a week	0.00
	Once a week	61.54
	Once a month	7.69
	Less often	0.00
	Never	0.00
It is important to me that the management would share more information with me	Strongly disagree	0.00
	Disagree	0.00
	Somewhat disagree	0.00
	Neither agree nor disagree	19.23
	Somewhat agree	15.38
	Agree	42.31
	Strongly agree	23.08

The questionnaire also explored how often staff would like to see current affairs informed, with 61.54% of respondents wishing things to be informed once a week, while 26.92% would like to see things informed daily. In addition, more information sharing was desired from the management of the company. 80.77% of respondents agreed on some level that management should share more information with staff.

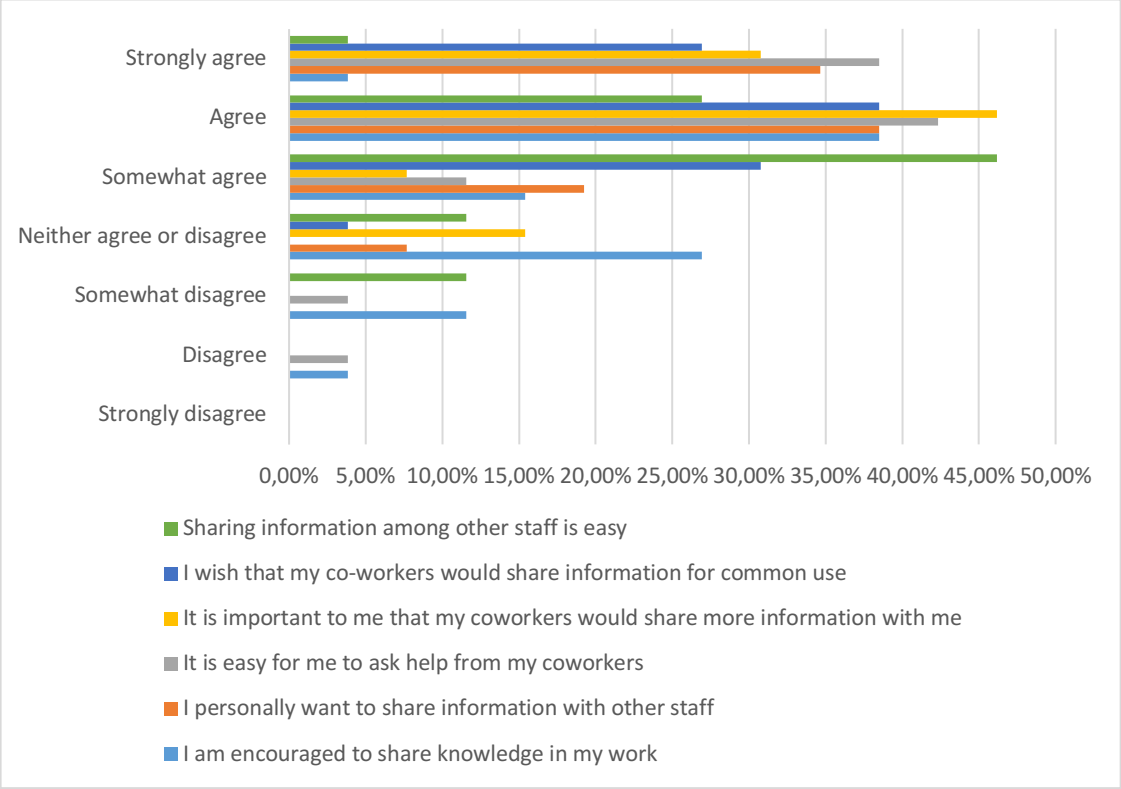

Figure 12: Knowledge sharing with others

The results of the questionnaire depict that, 57.69 % respondents agreed in some level, that they are encouraged to share information in their work. 26.92% had neither agreed nor disagreed. However, 92.31% agreed on some level that they want to share information with others. In addition, 92.31% felt at some level, that it is easy to ask co-workers for help and 76.92% of respondents agreed on some level that sharing information is easy among other staff. From this, it can be concluded that organizational culture is easily approachable, as it is easy to seek advice from co-workers. While a large percentage of respondents felt that information sharing is encouraged, want to share information themselves and information sharing among others is easy, 84.61% of respondents agreed at some level, that they would wish their co-workers to share more information with them.

In addition, 96.15% agreed at some level, that they would like other staff to share information for common use. Based on the responses, there are some degree of problems with sharing information, as staff are prepared to share information, but feel that not enough information is being shared. This gap is something that should be examined in the interview. Interview should explore what is the reason how staff feels like that. In addition, the interview should determine when the staff feels that they are receiving enough information about current work issues and can they name solutions what should be done, that receiving information would be at good level.

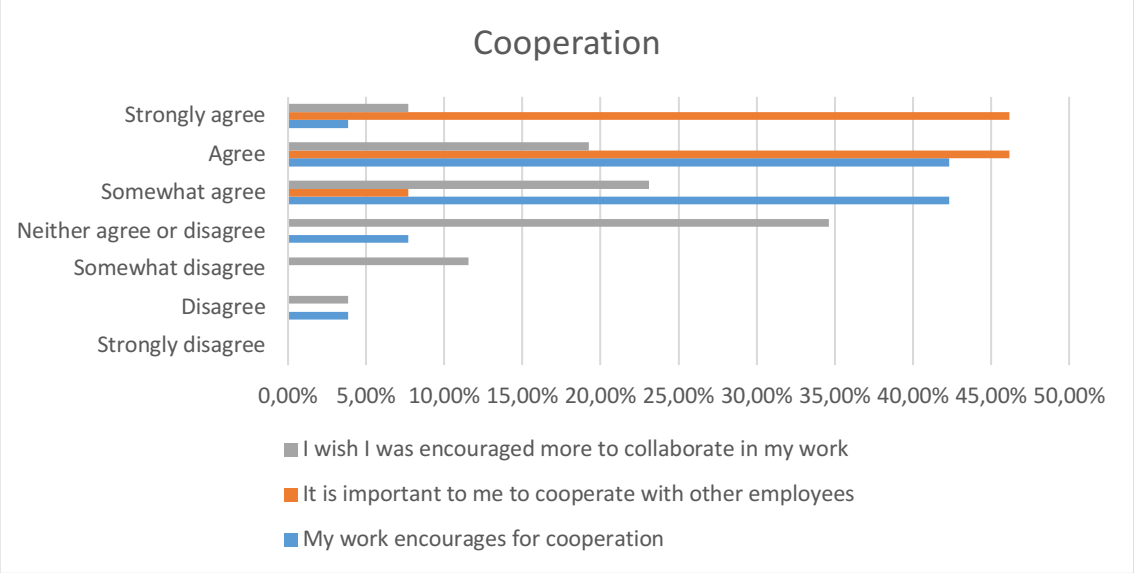

Figure 13: Cooperation

Figure 13 presents work cooperation. The majority of respondents agreed that cooperation was encouraged at work and though it was important to cooperate. The majority neither agreed nor disagreed that cooperation should be encouraged more. As far as cooperation is concerned, major differences in the current and desired situation were not found more.

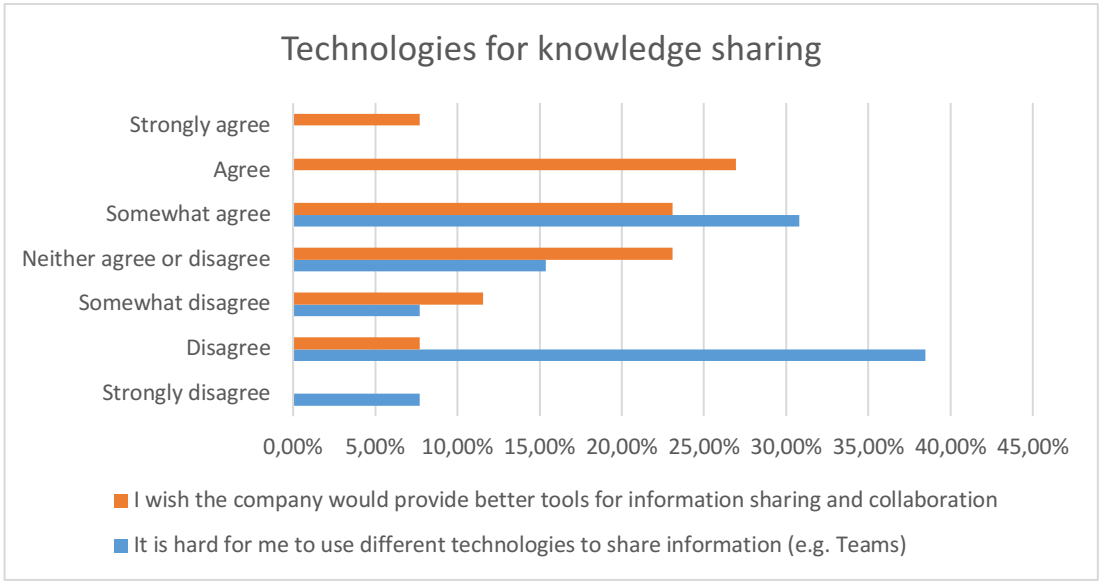

Figure 14: Technologies for knowledge sharing

The questionnaire also examined the capabilities of people to use different software to share information. 30.77% somewhat agreed that they experienced difficulties using different software to share information. 57.69% of respondents agreed on some level that they hope that better tools for sharing information and cooperation would be provided. Generally, intranet helps with this problem is the intranet is implemented as a social intranet, where cooperation and knowledge sharing are easy. It is important to provide training for staff to use the upcoming intranet so that they do not feel it is difficult to use.

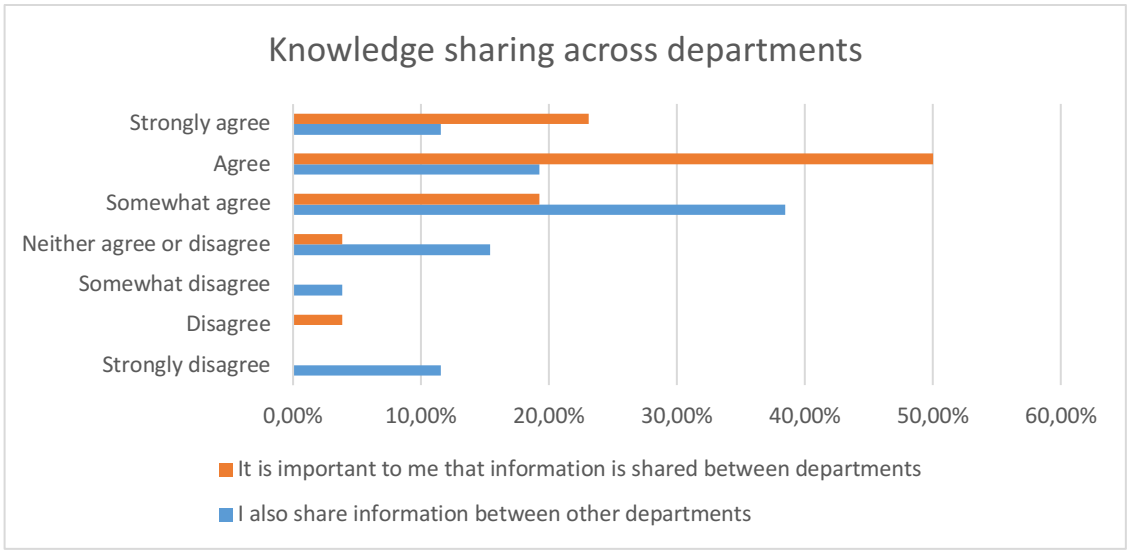

Figure 15: Knowledge sharing across departments

The majority of respondents indicated that they are sharing information between departments too. The majority also felt that it is important to share information across departments. Information sharing between different departments seems to be at decent level, but there is room for improvement in this matter also.

Table 5: Challenges and improvements for knowledge sharing

Variable	Category	% of respondents
In your opinion, what are the biggest challenges for sharing information in your department or a company as a whole?	No challenges/I do not know	26.92
	Hurry	11.54
	Ambiguous processes	23.08
	Common channel missing	19.23
	Information and communication unclear	15.38
	Covid-19	3,85
How would you improve the knowledge sharing among the working community?	Empty answers	23.08
	Clear common channel/intranet	23.08
	Meetings	23.08
	Clear processes	11.54
	I do not know	11.54
	Better cooperation	3.85
	Increase the use of Teams	3.85

The questionnaire also examined challenges of sharing information, as well as possible solutions to those, via open answers. Open responses were categorized by theme those were related to. The majority of respondents did not quite know how to name challenges to sharing information or were of the opinion that there were no challenges. Many also responded that ambiguous processes posed a major challenge to sharing information. Answers such as *"There is no clear division of labour as to who should share information"* and *"unclear processes"*. Many also felt the deficiency a common channel, for which 23.08% had also proposed a clear common channel/intranet. In terms of information, problems also arose. Responses told such things, as *"Knowledge does not always reach the right person. The turnover of persons is a problem and is not always informed"* as well as *"Changes in work assignments are made in the account, which are not always reported. I really don't always know who's doing what and who's in charge of which"*. The last one also related to the ambiguity of processes. A few responses were also related to heavy rush at work. As a solution for sharing information, 23.08% hoped for more meetings, both across the staff and among their own teams. Clear processes and a common channel were also hoped for to improve the sharing of knowledge: *"It would be decided what the medium in which knowledge is. Now it is in different places, and you*

always do not know when you are looking for information whether it is the latest, updated information. Email groups should be inspected/refine".

When it comes to sharing information, the main problems were how to clarify the fact that the staff knows what type of information they would have to share with others. Cooperation between staff seemed to be fine. In the interview, it is important to determine how often information is shared between two persons discussions, as well as how to define information that would be good to share among the entire staff. In addition, the interview explores why many have a feeling that not enough information is being shared, even though many are willing to share information themselves and what is behind this problem.

5.1.3 Knowledge use and utilization

The questionnaire was also used to examine the use of knowledge at work and how easily the information can be found across the company's different channels. In addition, the questionnaire explored what kind of information staff most often look for and need, which are important things to consider when implementing an intranet. The intention was to get a full picture of what kind of information staff find it difficult to search, and what kind of information they would like to be more accessible.

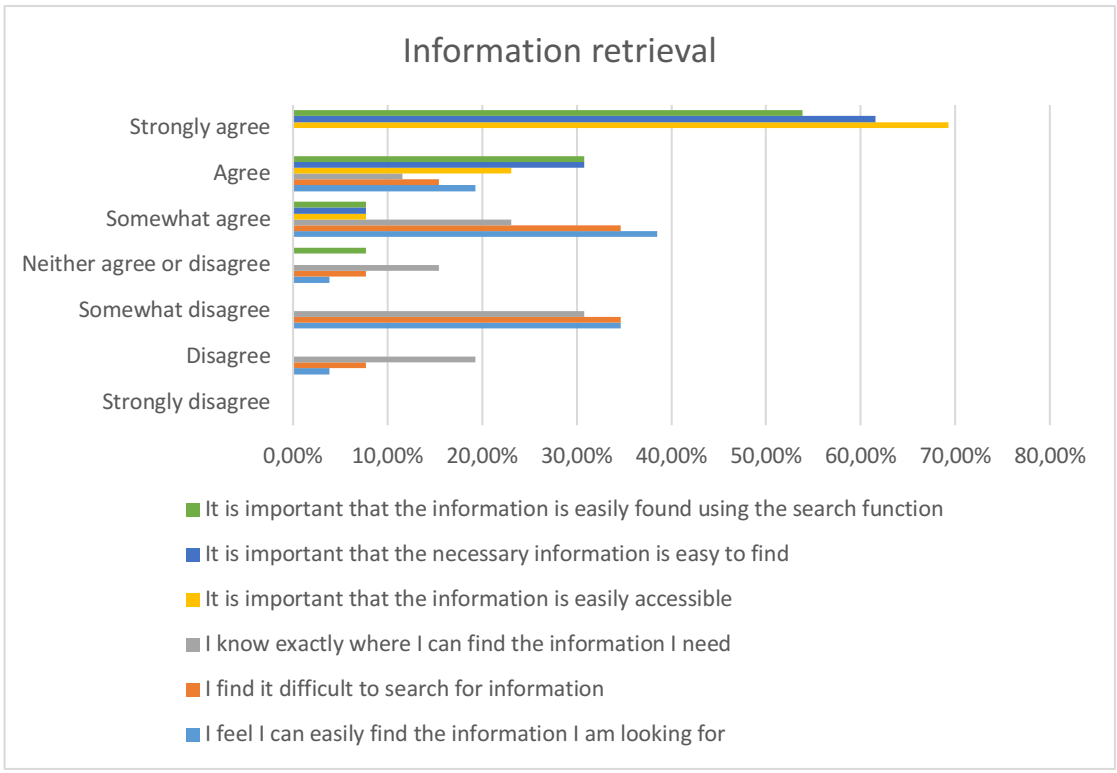

Figure 16: Information retrieval

The questionnaire examined whether staff feel the information was easily available. There was quite much dispersion about whether staff felt the information they were looking for was easily accessible. 57.69% of respondents agreed at some level that the information is easily accessible and 38.47% disagreed in some level. However, half of respondents agreed, on some level, that they find the search for information difficult. Increasingly more scatter was found as to whether staff experience that they know exactly where to find the information they need; 50% of respondents disagreed at some level that they do not know exactly, while 34.62% agreed at some level that they know exactly. However, no one strongly agreed or disagreed. In any case, all respondents agreed at some level that it is important that information is easily accessible, and that information is easy to find. In addition, the majority of respondents considered the search function important to make information easy to find. From these results, at least it should be borne in mind when implementing the intranet that the search function is good, and the information is easily accessible. In addition to these factors, the questionnaire explored whether staff knew where they can find paper as well as digital documents. In both, the distribution was precisely flat, with about half agreeing by some level and disagreeing by some level. However, no significant findings on this issue were found beyond the search for normal information.

In addition, the questionnaire examined where staff find the information most often. Clearly most often, the information was obtained by asking a co-worker. Information was also found on the M disk, which is the place where most of the company's files are currently stored. 38.46% of respondents searched for information daily in files located on the M disk, and 11.54% even several times a day. In addition, via email, information was often found as well as with Teams. Email and Teams may also be used to communicate with a co-worker, which supports information found from co-workers.

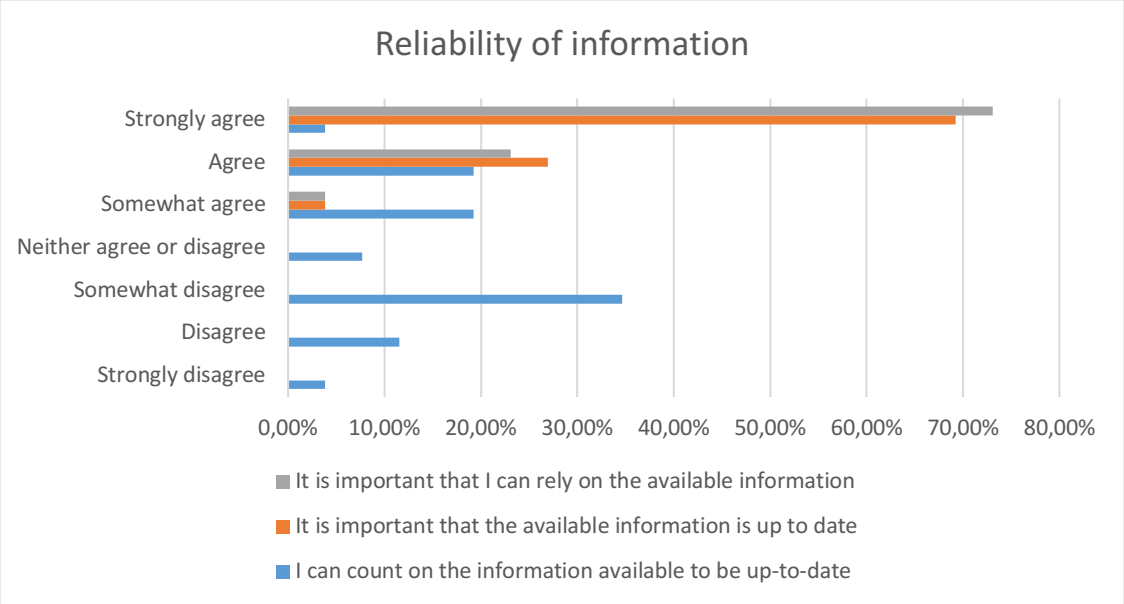

Figure 17: Reliability of information

The questionnaire examined the reliability of information, and whether information is up to date. It was troubling to find that 50.01% of respondents disagreed at some level about whether they could trust the information to be up to date. However, all respondents considered it important at some level that the information would be reliable and timely. A gap can be noted in the timeliness of information. The interview should ascertain where the staff feel they cannot rely on the information to be relevant.

Table 6: Utilization of information

Variable	Category	% of respondents
I am able to take advantage of the information available in my work	Strongly disagree	0.00
	Disagree	0.00
	Somewhat disagree	3.85
	Neither agree nor disagree	3.85

	Somewhat agree	38.46
	Agree	46.15
	Strongly agree	7.69
It is important that I can do my job more efficiently with the information available	Strongly disagree	0.00
	Disagree	0.00
	Somewhat disagree	0.00
	Neither agree nor disagree	0.00
	Somewhat agree	7.69
	Agree	30.77
	Strongly agree	61.54

Table 6 presents whether respondents feel that they can take advantage of available information in their work. Most believed they are capable to use information in their work. In addition, all respondents considered it important that work can be done more effectively with the available information. No gaps were noticed here.

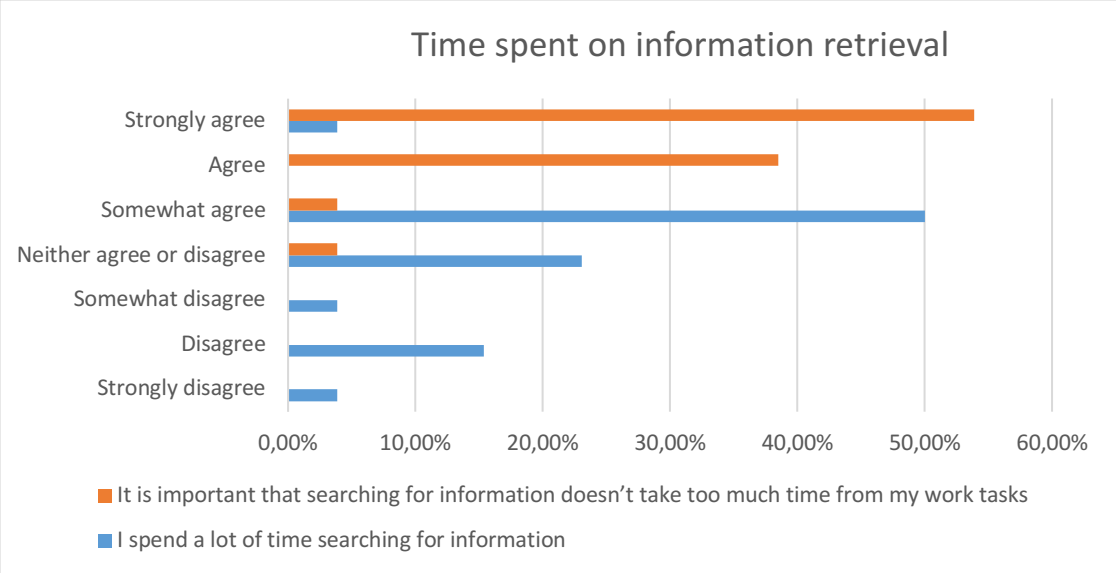

Figure 18: Time spent on information retrieval

The questionnaire was also used to determine whether staff spend an abundant amount of time searching for information, with 50% of respondents broadly agreeing that it takes a great extent of time to find information. Furthermore, 3.85% strongly agreed that a lot of time goes by. However, for the vast majority of respondents, it was not to take too much time from other job tasks to seek out information. A clearer data repository can be experienced as a solution to this problem, which can integrate into the intranet, so that the search for information may be accelerated if the repository is implemented for easy use.

The questionnaire also examined how staff feel to use current software in terms of information retrieval. The responses here were split evenly, with 34.61% agreeing in some level and 42.3% disagreeing. 23.08% neither agreeing nor disagreeing. However, all respondents considered it important at some level, that the software should be easy to use.

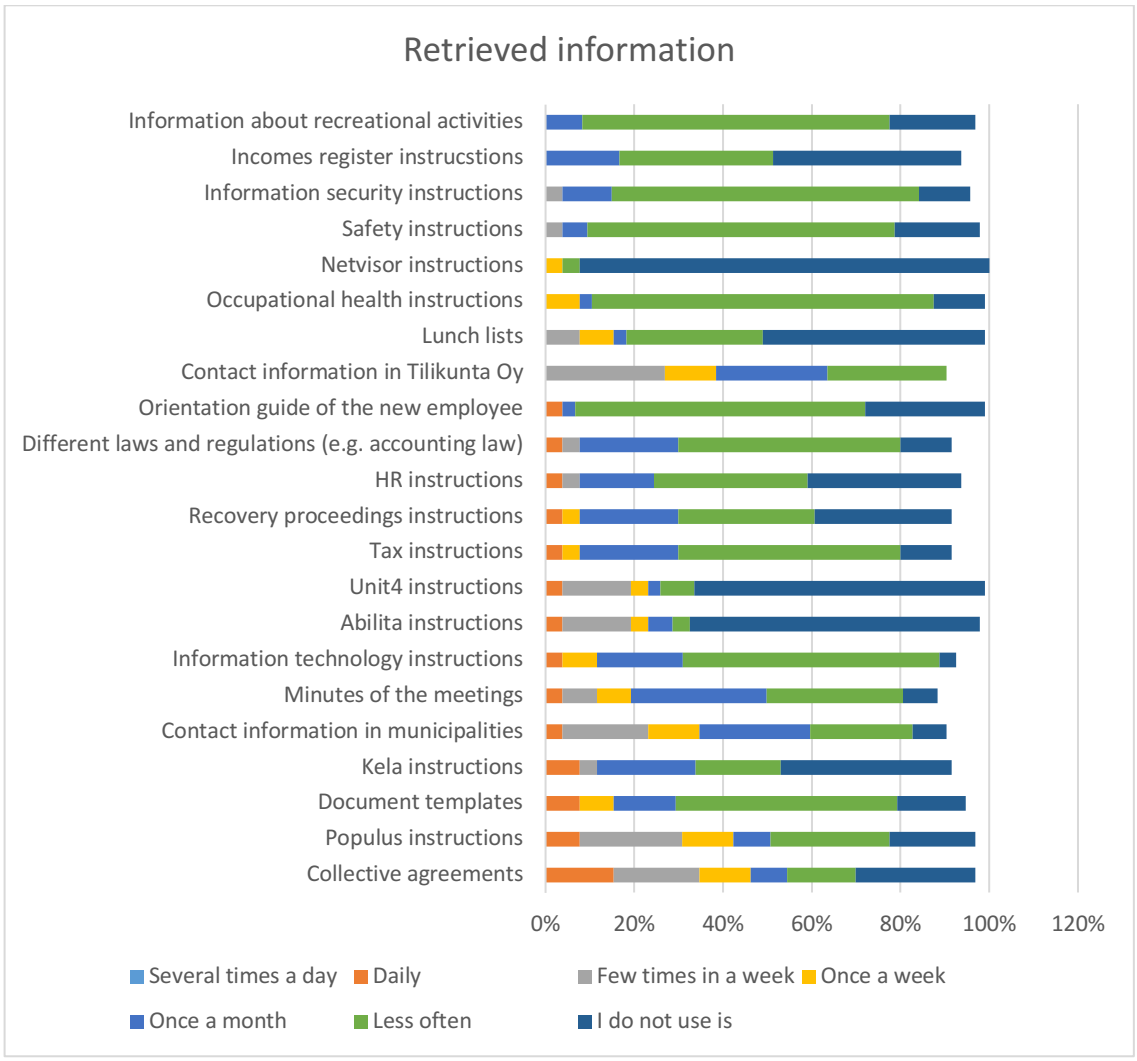

Figure 19: Retrieved information

The questionnaire examined what kind of information staff look for and need most often and how often they seek it. Most often, there was a search for information related to collective agreements, which was searched daily and few times a week. The findings may also be because the majority of respondents worked in payroll, where exploiting collective agreements is an important part of the job. The least need was for information about recreational activities, lunch lists, and Netvisor instructions. This information provides,

assistance in the way in which information is worth organizing in the intranet. These results are useful when implementing the information architecture of the intranet.

In addition, as an open response, the questionnaire was used to determine what kind of information search staff find troublesome. 19.23% of respondents felt it difficult to search for software instructions. Searching for M-disk was also perceived as difficult, based on the open responses: *"It is sometimes a little difficult to find the file you want, because they have now been stored a little here and there".* In addition, the open responses mentioned the timeliness of information; *"Knowing it is difficult, whether the information I found is still valid, or whether it is obsolete or corrected later"* and *"current affairs".* In addition, the rush was also the reason why searching for information is inconvenient. As with information sharing, ambiguous processes were also mentioned regarding the use of information; *"It is difficult to perceive internal policies and processes of the company."* Regarding the desired situation, most of the responses were also related to software guidelines, which were hoped to be more easily accessible. There was also much hope for policy guidelines and timely guidelines. Once again, based on open responses, clearer processes and alignments were hoped for, e.g., whether the matter belongs to the company or to the municipality; *"It has been unclear between what is the function of the municipality and what the function of the company, even though they have been clarified. There will always be some new thing and then one wonders whose task it is".* In addition, one common place where information can be found was mentioned; *"All the data in one place, so that you don't have to spend time retrieving where you can find the information".* Intranet may be a good solution for this problem.

5.1.4 Intranet

The final part of the questionnaire was intended to determine the wishes of staff regarding the upcoming intranet. In addition, the types of features the staff deem important in the intranet was charted. Finally, respondents were also allowed to issue their own suggestions regarding the intranet.

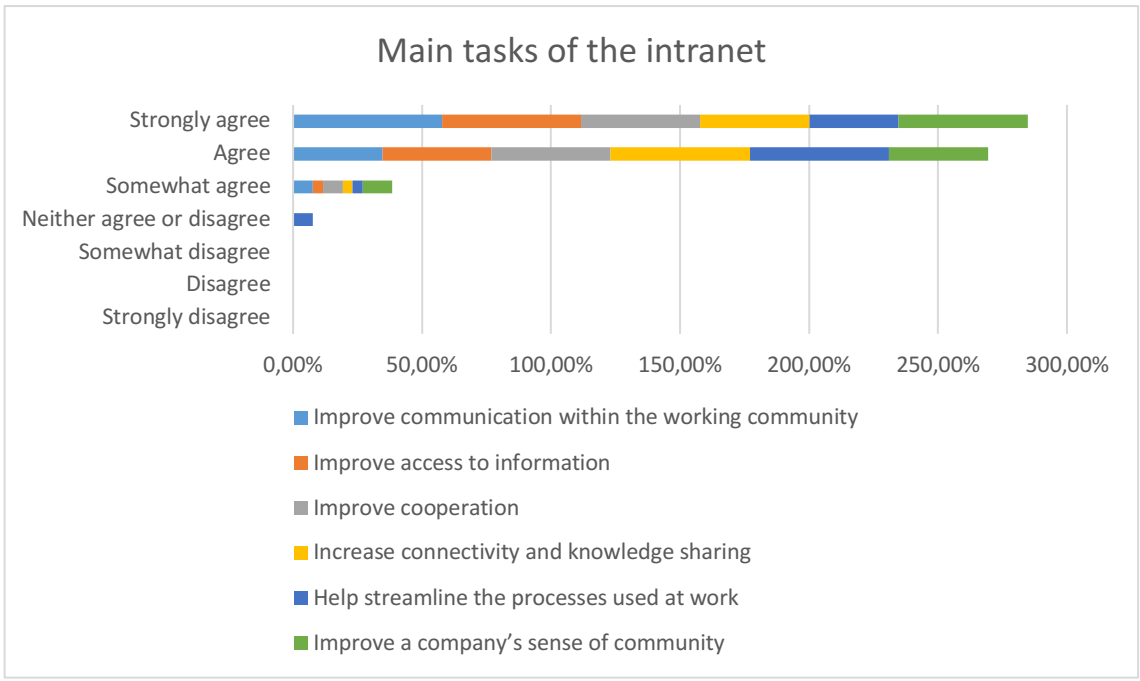

Figure 20: Main tasks of the intranet

The main task of the intranet was considered to improve communication within the working community. Improving access and flow of information was also considered important. All options named as alternatives were considered important. In particular, it is important for communication, cooperation and knowledge sharing to create a social intranet so that these features can actually be implemented within the company. Since the flow of information and access to various data is also important based on a questionnaire, it is also important to create a clear and easy to use directory of documents in the intranet.

The questionnaire also examined what qualities staff consider important in the intranet. Clearly based on the results, the main characteristics were the directory of documents and the timely information of the company. A contact directory, useful links, a collaborative platform, and a recreational activity bulletin board were also considered important. Less important was the customization of own profile, moving email to the intranet, and the marketplace. These results are also important factors when planning an information architecture of the intranet.

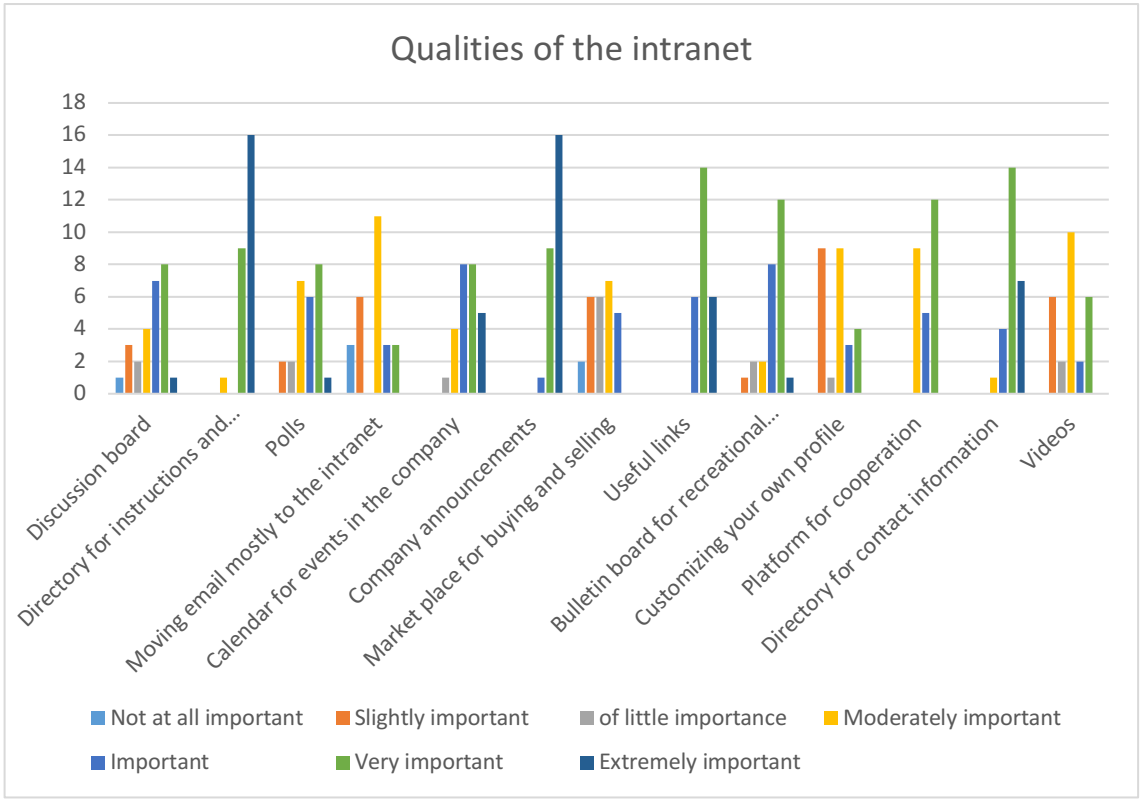

Figure 21: Qualities of the intranet

The staff's previous experience with intranets, and what they consider important in them were examined through an open response. Most of respondents mentioned clarity, ease of use and timely information, which came up in more than half of responses. Although customizing own profile was not very important to many respondents, it was hoped to clarify the processes; *"possibility to update your profile with own contact information and job description, and therefore providing information to others. Finding important instructions and work processes in the intranet. Possible important links to other authorities' pages."* As can be noted from this answer, useful links also came up many times in open responses; *"The links needed at work (outtake, reel, tax) all in same place."* An important comment also occurred in the open responses; *"That it is easy to use and is constantly maintained. Lest it be left as an information channel but is active to everyone."* There is currently no obvious level of timely information and reliable information because it has been much hoped for in the questionnaire. The interview should ascertain to ensure that the information on the intranet remains current and reliable.

Right at the end of the questionnaire, there was a free comments section, where in most of the responses, the intranet was already highly expected. In addition, it was also raised

many times in a part that there was much hope for ease of use and clarity. In addition, a version that work on mobile was also hoped. However, based on the comments, there is a great need for the intranet in the company; *"With interest, I expect the intranet!", "Hopefully a working intranet will be enabled soon"* and *"Great if we get an intranet in our company".*

5.2 Interview analysis

The interviews were intended to find solution to the gaps identified in the questionnaire. There was a total of seven interviewees, four of whom work on the payroll and three in financial management, to bring perspective of both departments into the study.

Table 7: Interviewees

Interviewee code	Department
Y1	Payroll
Y2	Payroll
Y3	Accounting and accounts ledger
Y4	Accounts payable and receivable
Y5	Accounting and account ledger
Y6	Payroll
Y7	Payroll

Table 7 depicts the interviewees codes referred to in the following section where interview material is extracted. All interviews were conducted via Microsoft Teams and interviews were recorded and later transcribed. Interview questions were also divided into four categories following the research model. Interview questions were formed based on the insights gain from the questionnaire results and there was a total of six interview questions, see Table 8.

Table 8: Interview questions

Interview code	Interview question
Q1	How to find information from all the different channels to be assembled into an intranet and how to motivate staff to transfer information e.g., from their own computer for common use?
Q2	How should the information be arranged into an intranet to make it easy to find and exploit? What does easy to use mean for you? When do you feel that there is too much information and what is irrelevant information?
Q3	How often do you share information in discussions between two people e.g., in Teams? How would you define information that would be good for sharing among all staff?

Q4	When do you think receiving information would be at a good level? How do you define good level of receiving information and how often? Can you name solutions what should be done, that receiving information would be perceived as good?
Q5	What do you believe is that information is not perceived as current? Do you feel this is an internal problem or a problem arising from outside factors e.g., software instructions?
Q6	How do you think it can be verified that the information on the intranet remains reliable and up to date? Who should take care of updating the intranet?

Table 8 presents interview questions and questions codes refer questions in the following section. Next, finding from interviews are presented to provide answers to the gaps that emerged from the questionnaire.

5.2.1 Knowledge storing

Questions Q1 and Q2 dealt with the storing of knowledge and information. Based on the questionnaire results, gaps between the current and desired situation were the main questions, and in particular, respondents were asked to describe "how all information is found to be collected to the intranet (Q1)" and "how the information should be organized there (Q2)". All interviewees felt that Q1 was a difficult and a challenging question. However, the following are the responses mentioned by the interviewees on how information should be collected. For instance, interviewee one mentioned that:
"*As far as I'm concerned, the information has to be built by subject area". (Y1)*

Another interviewee indicated that:
"It should somehow be broken down in that way by subject areas and what knowledge is needed and what knowledge everyone has". (Y2) or *"We need to determine what we want there. You have to start with what you want and where everyone has their own data stored". (Y6)*

As to how to collect all the knowledge and information and motivate people to search for their own recordings, answers were also obtained through interview. For example, interviewee one mentioned that:
"One person should organize whatever is put in there, that way it can be ensured that all the knowledge can be found there". (Y1) or interviewee four was concerned about how to store information and indicated that:
"All the information should be moved in one place. Would it be an M-disk then? Do they make each one with their own folder? Who is going through them, that what is

appropriate and what is not? Everyone must have named their files in a mixed manner, and you can't get any sense about them. Yes, there is a challenge". (Y4) and another mentioned that:

"I am sure that Teams and M-disk are, at least, where we can find files made by us". (Y5)

Interviewee seven gave some practical solutions how to collect information from everyone's own computer and mentioned that:

"Everyone should go through their own files, what is out there, what anyone else might need. For example, I have a personal list of my own employees, and if someone is filling in for me, they might need it. I should also clean up my own files, there can be something that others can benefit from. For example, it would be worthwhile to have a conversation in your own team, that everyone should go through their own files. Then there should also be one place to move those files". (Y7)

In Q2 were inserted in exploring how information should be organized into an intranet in terms of information architecture in order to make information easy to find and exploit. Everyone agreed that payroll and financial management should at least be separated into the intranet. The most degradation came between interviewees as to whether the information should be arranged directly by municipalities in the intranet. For example, one interviewee mentioned that:

"Of course, municipalities have some local contracts and those should be the individually. I wouldn't necessarily immediately divide the municipalities as categories. Firstly, there should be broadly payroll and financial management, and then in addition, the local contracts and local guidelines under them". (Y2)

Another interviewee was concerned about the division of municipalities and mentioned that:

"As far as I am concerned, a division between municipalities would be good. If you need to look for a specific municipality, you know immediately where to look for it. It is easier to put the information on a municipality basis than for example on a monthly basis. However, there are some minor differences between municipalities, although there are also common instructions". (Y3) Another interviewee gave suggestions of the division between departments and mentioned that:

"At least it would be good to have the financial management and payroll, and then those are divided into further subsections, e.g., the financial management has accounting and accounting payable and receivable. I have to wonder if it still needs to be broken down

by municipality. If there are information related to the software, then those are the same instructions for everyone. But otherwise in every municipality, for example, there are different practices." (Y4) and another mentioned that:

"It would be good if there was at least such a general place where all the common knowledge could be found. After that, the financial management and payroll separately and those would probably still need to be distributed separately. One option for dividing, is by municipalities, if the intention is for each of us to be able to work and filling in for anyone. Pretty much practices vary by municipality, not in big things, but there are different accounts and cost locations." (Y5)

Yet interviewee six was in opinion that the division between municipalities would be the right choice and mentioned that:

"There should be division between municipalities first, and downward accounting, payroll and accounts ledger." (Y6)

Interviewee seven suggested different divisions alongside with departments and mentioned that:

"If the whole company is considered, there should be division between payroll, financial management, leisure, rules and guidelines and occupational health by headlines. Yes, there is one method of grouping by municipalities, because there are different local agreements, but then there are probably general ones too." (Y7).

Q2 also examined for what does easy to use mean for interviewees. Everyone replied that it should be clear and arranged such way that one knows right away where to retrieve information. It was also mentioned that headlines and search features are precisely important.

"Headlining is the most important of all. In addition, the search function should be logical for search word to immediately find the necessary information". (Y4) and another mentioned that:

"It would be good to be able to put in a search word and then find the needed knowledge. In a similar way how Google works". (Y7)

In addition to these, Q2 examined when interviewees feel that there is too much information and what kind of information, they feel is irrelevant. Most of the interviewees felt the outdated information is irrelevant. However, several agreed that there may not be

irrelevant information, as everyone perceives it differently. Interviewee two felt that there are no such thing as irrelevant information and mentioned that:

"I don't know if there can be any unnecessary information. But at least the same thing shouldn't be stored many times in the same place. Of course, there can be a lot of information, but every piece of information is important, as long as it's in the way that it is not there many times, that many places have the same things." (Y2)

Another interviewee mentioned reports from the software as partly irrelevant and mentioned that:

"On the financial management, the software might create three different reports from the same point, and you don't really know which one is the important one. It's been a bit difficult, which one is the irrelevant part and what's the most important report. Those reports can't be packed into a small space, so there will be a mass of irrelevant information, if every report is stored. That is maybe a problem." (Y3)

Interviewee six felt that old information is irrelevant and told that:

"If we consider our instructions at the moment, then old information is irrelevant. You can't really know what is the latest instruction. We should find out what's the latest." (Y6)

Another interviewee felt that accurate information is important and mentioned that:

"Irrelevant information is the one, that you can also get directly from the software. It must also be accurate that information, e.g. annual changes, remains up to date." (Y7)

5.2.2 Knowledge sharing

Both questions Q3 and Q4 dealt with knowledge sharing within the company. For example, in Q3 we aimed to explore how often knowledge is shared in one-on-one discussions and how to define information that should be shared with everyone within the department or company. Through the responses it became clear that everyone shared information daily in Teams in one-on-one discussions, but it was more difficult to define what should be shared among the rest of the staff. Many of interviewees felt that information should be shared among the entire staff and at a lower threshold. Interviewee one believed every work-related issue should be shared and mentioned that:

"All work issue should be shared among everyone. But you always kind of assume that everyone already knows, even if you don't necessarily know if they know. I'm sure that's the biggest problem." (Y1) and another interviewee mentioned that:

"I share information daily, that is, a lot. It should be encouraged by everyone, when there is a situation that no one would dare to share it when they assume that other know it already, but if more information is shared in general, then that threshold would be lower. Some discussion platform in the intranet would be good, where you can ask questions." (Y2)

Interviewee six was concerned that there are some people that would not want to receive new insights and mentioned that:

"What we mainly have is that is someone insights something new, then there are people who don't receive that new information because there are people who have always done things in a certain way, and this is what they will continue to do and thus don't want to hear new insights from anyone. That's the biggest problem. Some people have been doing things in a certain way for 20 years and don't want to change those modes of action." (Y4)

Another interviewee felt that problem is assuming the knowledge of others and mentioned that:

The biggest problem is when you assume other people to know some things. There could be some channel for this matter in the intranet. Some software related tips -channel might be good where you can specifically share that practical work. People should not think that certain things are so simple that those are not worth of sharing, the threshold should be really low. Even if others already knew it, it wouldn't hurt, because if new people come in, then that historical knowledge would be good to be there anyway. Then, in a few years, the channel can be cleaned, if it begins to be too full of tips." (Y6)

Interviewee seven gave solutions for the problem and mentioned that:

"As far as I am concerned, it would be good to have a section in the intranet, where you can put your own problems and concerns about the work. The kind of FAQ that many websites have." (Y7)

Q4 also surveyed about receiving information. When the level of receiving information would be at good level and how often it should be. There was also desired to determine interviewees solutions to fix the problem that the receiving of information would be good. All the interviewees mentioned meetings, which should be held weekly. Informing was also perceived as an eternity problem. Interviewee three wanted to receive information from every change and mentioned that:

"Yes, as far as I am concerned, whenever there are changes, those should be informed. Yes, something happens here every week. It would be good to report and tell everyone about things and what happens." (Y3) another interviewee felt that email is not the right channel and mentioned that:

"It is important, in what form the information is informed. At least for now, there is so much email that it often goes unread. We in the accounts ledger introduced a 15-minute quick review once a week, which goes through, if there is something new, it has been a really good way of informing." (Y4)

Interviewee six felt that the situation has been improved and mentioned that:

"The situation has been greatly improved by the fact that there are now reagreed meetings every week. At weekly level, twice is good to inform and, of course, you need to have memos of the meetings that can be read afterwards." (Y6) and another interviewee had concerns about informing in general and told that:

"I didn't think it was a good habit before, when there were work issues discussed in the coffee room and half of the employees were missing. In its own way this covid situation has been a good thing, but has that informing completely missed? The meetings and memos of those are really good." (Y7).

Q4 also examined solutions to improve informing. Especially email was mentioned several times as a bad informing channel. Interviewees were many in the opinion that bulletin boards and meetings are great:

"In the intranet, for example, there could be just a column where information would appear a bit like news; "current" and things can be informed there. Minutes of the meetings are also good, but it feels like no one reads them afterwards, if they have been away. It would be good if they were more accessible. The main points about the meeting could be assembled in the intranet on the bulletin board." (Y2) and another mentioned that:

"As far as I'm concerned, there should not be informing by email, when that mass comes in anyway and there's a lot of that information lost there. Meetings are good, but there could be some place where you could inform, and then see all the current issues easily from there." (Y3) Yet another interviewee suggested bulletin boards and mentioned that:

"The bulletin board could be good on the intranet. We have really good service channel in the financial management software, where you can see everyone's questions and

answers, and that way find the information easily. Before that, everyone put the questions by email and they immediately disappeared into email, now those are thankfully left in that service channel." (Y4) and another mentioned that:

"It would be good if there was some place on the intranet to inform, and the information would sort of jump on the eye. If you've been absent, you'd see at once what's happening and what's current. Maybe even with bullet points, not too broadly, from the meetings, would be good to assemble in some quick place." (Y5)

5.2.3 Knowledge use and utilization

Regarding Q5, the aim was to assess and investigate why staff are not experiencing information as current and up to date and where they believe the problem is caused. Some of the interviewees agreed that the information is a matter of fact up to date and do not experience it as a problem. A large number of interviewees felt that the problem stems from both internal, and external factors. However, majority gave software instructions as an example. Few interviewees felt that this was not a problem and mentioned that:

"I can't answer. Who's thought that. Yes, all instructions can be returned when those are current for your own situation." (Y1) and another mentioned that:

"Oh really, is not perceived as relevant? I don't feel that the information it's not relevant." (Y7)

Another interviewee stated that there are a great number of old information:

"For example, I have a lot of data from my predecessor, e.g., from 2006. The problem is that she has not updated those herself. She has saved all of those old records but hasn't deleted the outdated information." (Y2)

Interviewee three had concerns about instructions and mentioned that:

"As far as I'm concerned, it's 50–50 internal and external issue. Last year, when a new software came, and all instructions were received in relation to it and acted by them. Along the way, not everything worked out the way it was advised and there were a lot of new things that haven't been updated to the instructions that are stored. A lot of people have written down those new things for their own use, but there will be probably problems when a new person starts and only the original base for those instructions is saved. We always try to tell the new employee all the changes, but it would be good to have them stored somewhere for common use." (Y3) and another stated that:

"I'm guessing that because everyone is in such a hurry now, that they can't really get acquainted with all the instructions properly." (Y4)

5.2.4 Intranet

Finally, in Q6, we examined things related to updating the intranet, that it can be ensured that the information there remains up to date. All the interviewees suggested that one or more people should be named responsible for updating. The payroll and financial management departments should name their own people. In addition, the responses showed that it would be good to have ones one data updated in the intranet to keep personal contact information up to date. All the interviewees had quite similar answers regarding to updating and interviewee one mentioned that:

"In principle, it would be good for anyone to get the access to update, it would be everyone's responsibility to have up to date information, but in practice it will not be so successful. However, it would be good for everyone to be able to update their own contact and work information, that at least those would always remain up to date." (Y1)

Another interviewee suggested that there should be specific persons named for the updating and mentioned that:

"One or two people should be named for it. It clearly needs to be someone's job to go through it. Perhaps in such a way that the payroll and financial management departments would have their own individuals. I don't care if it's one or two or three or even five people, as long as it's clear whose responsibility it is." (Y2) and another mentioned that:

"This is a difficult one. Yes, there should be at least one on the payroll and one on the financial management department who would announce what's going on here." (Y3)

One interviewee was concerned about the information retrieval and mentioned that:

"Somehow you should centralize that at least, not everyone should have access to put information there. Now everyone can make changes in M-disk and there is no logic on that, and you can't find anything on there. There should be some admin of the intranet. There should be people on the payroll and the financial management departments who run it." (Y4)

Yet all the other interviewees mentioned that there should be specific persons that are choose for updating:

"There should be some person in charge in that. It won't be good if everyone has the right to update it. There has to be an individual on the payroll and on the financial management." (Y5) and another told:

There's got to be a responsible person. What matters is that we all know who that person is who maintains it. Absolutely good thing is the departments common calendar, which all the members of the team are able to update themselves, however. (Y6) and another mentioned that:

"Yes, to that one person should be named as an updater. Then, for all sections, there would be the responsible people who inform the updater. There should be people from both departments, from payroll and financial management. "(Y7)

6 DISCUSSION

In this chapter, the results obtained in the study will be discussed and elaborated. Initially, the results of the questionnaire and interview will be combined into a rational whole and the most important findings will be presented.

6.1 Main findings

The findings from this thesis have been divided into four categories which are knowledge storing, sharing and use and utilization, in accordance with the structure of the thesis to make it easier to follow the discussion of the results.

6.1.1 Knowledge storing

As Alavi & Leidner (2001) stated, storing, organizing, and retrieving information is critical to organizational KM and therefore this manner was also crucial according to the research of implementation of the intranet to the case company. In terms of knowledge storing, there were two larger gaps between the current and desired situation according to the empirical results. The main problem was that information has either been stored in many different locations or employees also stored information on their own computers. Many felt that the desired situation would be when all information is stored in one place, so that it will be easier for everyone to use them. The gap was formed by how all information is assembled in the same place, which in this case would be a common intranet. It is crucial for organization to support the process of knowledge storing and to store its knowledge in same place so the risk of losing valuable knowledge is avoided (Joe et al., 2013). This was evaluated through interviews. As mentioned above, the interviewees felt this as a difficult question to answer. However, for the most part, solutions were found that data should be collected from each employee systematically by subject area. In addition, for the most part, company files and instructions can be currently found in M-disk, from where those are easy to transfer to the intranet. The interview results also indicate that it would be important for each employee to clean up the files on their own computer in order to ensure that all information is collected in the intranet for the collective use of everyone. This should definitely be accomplished at the initiative of both departments, i.e., financial management and payroll managers, so that every

employee actually examines his/her files. In addition, the company would do well to assemble a folder for common use, into which useful files can also be compiled. Therefore, it is easy to add material to the intranet from that folder.

Another gap in the storing knowledge was found in the organizing of information, which referred to knowledge storing as well as information architecture of the intranet. As the research about intranet IA determined, the intranet should be implemented with the right kind of IA in order information to be readily available to members of the organization. (McCloskey, 2014). The interviewees were used to ascertain how the information should be arranged in the intranet to make it easy as possible to organize and exploit it. Since the company's clients are the cities and municipalities, the most dispersal came in the responses as to whether the information should be organized into the intranet on a municipal basis.

In addition, interviewees were concerned whether the intranet should be built on a task-based or subject matter basis. For the most part, however, the interviewees responded that the intranet should be built in accordance with the organizational structure, allowing financial management and payroll to have their own sections that may have been further divided into subsections. As Nie and Hao (2007) stated intranet IA is combination of organizing site content into categories and distribute the information into those categories based on content characteristics (Nie & Hao, 2007). The results of the questionnaire and interview were also discussed with the company's management team, with whom it was concluded that the intranet should be build according to the organizational structure, but the municipality-specific classifications are distributed separately under departments to allow different local contracts and guidelines get incorporated into the intranet.

In addition, the interview question explored what easy to use means for respondents and when they feel that there is too much information and what kind of information is irrelevant. In terms of easy to use, clear headlining and good search features emerged, which have also surfaced in the Intranet Information Architecture research conducted by Norman Nielsen Group that was presented in the literature review (McCloskey, 2014). Alavi and Leidner (2001) also stated that advanced search function is a compelling tool when working with knowledge storing (Alavi & Leidner, 2001). For irrelevant information, obsolete information was perceived. However, regarding the intranet, this

problem is avoided by regular updating, which was also examined in this research. Moreover, discussions with the management team concluded that the intranet should not be made an archive, instead the archive will be held separately elsewhere, and intranet will focus more on the preservation and utilization of instructions within the various work processes.

6.1.2 Knowledge sharing

Intranet is broadly recognized as a great platform for knowledge sharing as, for example, Tiirikainen (2011) states that the key goal of the intranet is to share knowledge, insights and expertise to the whole organization (Tiirikainen, 2011, p. 54) and Ruppel and Harrington (2001) recognize at least three ways how intranet supports knowledge sharing as it provides a space, flexibility for exchanging knowledge and supports knowledge transfer and organization networking (Ruppel & Harrington, 2001). Therefore, the knowledge sharing within the company was examined and two larger gaps arose in this area as regards the current and desired situation. Generally, staff agreed that there was an abundant amount of information shared among co-workers and each information shared multiple times. However, the problem arose, that many times, the information is shared only between one-on-one discussions and therefore the information does not reach the entire staff. This problem was clarified in the interview. Interview was also used to determine what kind of information would be good to share among all staff. In the interview, it was revealed that almost daily, information was shared through one-on-one Microsoft Teams discussions. However, the interviewees were asked for solutions on how to defuse this problem. Many respondents think the general tips channel to the intranet would be good solution, where everyone can share their own work-related problems and issued at a low threshold. Previous challenging issues or questions would also be easily stored on the channel, which also allows new employees to find solutions on the intranet easily. As previously mentioned, Web 2.0 tools, such as discussion channels, allow employees to openly communicate with each other and add content to an intranet, improves the knowledge sharing and aims to engage users with the intranet (Kim, 2009). Therefore, such a discussion section should be implemented in the intranet by subject area under different departments, so that it is also easier to retrieve information in the right place and the intranet remains systematic.

In addition, informing and receiving information were clarified, as the staff felt that enough information is not shared on work-related matters. As Denner and Diaz (2013) stated, the most significant benefit of intranets is that it keeps employees updated (Denner & Diaz, 2013) and according to Gillis (2011) companies use their digital platforms to inform, educate and amuse their employees (Gillis, 2011, p. 219). Therefore, interview examined when informing would be at good level and whether staff have solutions to this. As the most popular solution to this problem, the news channel of the intranet that would be located immediately to the front page, arose. From this news channel, all employees of the company will immediately see the latest work-related changes and information. While, this research has been accomplished, informing within the company has already improved, between questionnaire results and interviews. The company has introduced regular meetings among teams on a weekly basis, where the most important work-related things are going through under the direction of a team manager. It was also mentioned in the interview that the main issues of the meetings would be good to assemble in the intranet news section, so that those who could not attend the meeting can easily inspect current affairs. Accordingly, the news section should also be implemented in the intranet under both departments, as well as collectively on the front page for the whole company to be reported. Those elements are important qualities on the intranet considering knowledge sharing as Tiirikäinen (2010) stated that key goal with these solutions is to share knowledge throughout the organization (Tiirikäinen, 2010, pp. 53–56).

6.1.3 Knowledge use and utilization

The study also explored the use of information, where the most important finding was that information retrieval should be easy. It is recognized by Kietz et al. (2002) that with the increase in the amount of information, the accessibility of knowledge and information retrieval has become more important in many organizations (Kietz et al. 2002). At the moment, information retrieval is not so easy, because the knowledge storing of the company is not at a good level and needs an improvement for which solutions were mentioned above. It is also important that the search features of the intranet are important and should be implemented to the intranet to make information retrieval efficient. Most of the information retrieval tools just like search engines and directories are designed to help the information retrieval to be easy (Dumais et al., 2003). The main problem in terms of the use of information which was found through the analysis of the survey data

reveal that the information available is not perceived to be current, the interview results also showed the similar pattern, as many interviewees also indicated that they wanted such problems to be solved. The interview also examined whether the problem was caused by external or internal factors. The interview did not find a clear answer to this, either, where the problem might come from. Two of the interviewees told that they were not aware that this was being experienced. While interviewees reported the problem caused by both internal and external factors, gave the majority, software instructions as an example, which are external factors. The intranet built into Microsoft SharePoint helps with this problem in a way that the files stored there indicate the latest modification date in the file folder as it has the ability to trace content generated by other users (Terek, 2013 p. 5). There are also different tools in the intranet that provides the finding the origin of the knowledge as well as for finding the person behind it (Fichter, 2005). Consequently, when people use the information, they can easily inspect when the file has been edited, in this case they will also see if the information is updated in a timely manner. In addition, the updating of the intranet in the future plays also an important role in this case, for which the study also sought solutions, which have been outlined later in the next paragraph.

6.1.4 Intranet

The questionnaire was used to determine the desired qualities of the intranet and results obtained allowed us to locate many great ideas for the implementation project. For example, directory for rules and guidelines were hoped for as well as bulletin boards to inform the important affairs of the company. Hopes for various message boards were also evident in the interviews regarding communicating and sharing knowledge. All of these wishes are easy to execute with Microsoft SharePoint, as it is truly a diverse platform that gives many opportunities as it is customizable for various needs (McKenna et al., 2011). As mentioned above, the intranet is aimed at collecting all the rules and guidelines relating to work, so the staff's wishes regarding of directory, are fulfilled. The greatest worry for the intranet rose about who will be maintaining and updating the intranet. This was also examined in the interview and the following solutions were found to the problem. Each of the interviewees told that the people responsible for the updating should be appointed and for both, financial management and payroll, should have their own updaters. On this issue, the management team of the company also agreed with the results, and the updaters

initially selected team leaders from both departments. When updaters are selected among employees, it can be ensured that information on the intranet remains such that employees genuinely benefit from it in their everyday work. In addition, they are best aware of the problem encountered in their own work most frequently. Therefore, they can assemble exactly the right kind of information on the intranet better than, for example, the management team who do not work in these tasks, for which information gathered for the intranet are for. This allows intranet also work as a platform for knowledge creation as creating knowledge involves developing new content (Shen & Tsai, 2008). However, it is important to provide extensive training of selected updaters once the intranet is completed so that the update can be done without effort and the intranet will remain an active and useful tool for the entire working community in the future.

6.2 Research questions

The first and most important research questions in this thesis was: *What are the qualities and information that the intranet should contain to make knowledge management as efficient as possible?* There were many answers to this question through the questionnaire, as well as interviews that have been presented above. The results from the thesis are also consistent with the previous studies of the benefits of the intranet as KM support. For example, according to Edenius and Borgerson (2003) the intranet can be considered a both a tool for KM and a strategic management tool, which connects employees of an organization through its ICT into a single entity that generates and integrates knowledge (Edenius & Borgerson, 2003). Especially the social elements of the intranet such as discussion channels and collaboration platforms support knowledge sharing greatly as Kim (2009) found on his research, which is in terms of KM, a precisely essential process. Kim (2009) stated that these kinds of tools facilitate and improve communication between employees and therefore improve knowledge sharing and collaboration at the organizational level (Kim, 200). As a platform, SharePoint also supports KM, as the platform works in the clous and files can be edited in collaboration up to date, avoiding separate storage and intermediate steps, allowing KM to be efficient. SharePoint as a platform has the potential to strengthen an organization's knowledge sharing and cooperation, which will enable an organization to be efficient in their KM processes (Khumalo & Mearns, 2019). The supporting questions that are presented below, to complement the main question. In addition to the main question, the study had four

supporting research questions, the first being: *What kind of information do employees need in their daily working tasks?* This question was well answered with the help of questionnaire results. The questionnaire was answered almost all the staff. In addition, the survey results found what information is used by staff the least, which may not therefore be so relevant to the intranet. The results made it easy to bring together the most important information used in the daily working tasks. This question would have been able to be studied even more widely, for example, with observation, but since it was a supporting question in this thesis, it was not too widely explored.

The next supporting question was: *What characteristics of the intranet would serve best the collaboration and knowledge sharing among the employees?* Answers to this question were received both from the literature review and research results. Based on the results of the research, the employees of the company were quite happy with the current situation in terms of cooperation. According to Kalman (2003) intranets allow employees to cooperate on business processes and by that generate value for the organization and that is why intranet itself is a great tool for collaboration (Kalman, 2003). When it comes to characteristics of intranet, the Web 2.0 tools precisely improves and facilitates communication, collaboration and knowledge sharing among employees (Kim, 2009). Especially in the result of the thesis, the desired channels of discussion that will be implemented in the intranet, will serve greatly the cooperation of employees of the company as well as in knowledge sharing. As the intranet will be implemented in SharePoint, it has the variety of features that can be used for communication, collaboration, and knowledge sharing (McKenna et al., 2011). Since the intranet will also work along with the Microsoft Teams that is currently in great use, it will be easier to share information and collaborate.

The next supporting question was: *How can intranet be a part of knowledge management?* A comprehensive answer to this question was obtained through the literature review, which also itemized the effect of the intranet in KM for various KM processes. According to Buniyamin and Barber (2004), intranet is often the first step when an organization begins to implement KM initiatives. Intranet as a knowledge management tool is also a practical was to create and share knowledge within the organization, that the members can benefit from (Buniyamin & Barber, 2004). Also, according to Coakes (2006) portals, such as intranets, support the organizations KM processes (Coakes, 2006).

Intranet can be seen as an enabler of KM initiatives and provides a platform and a place for the implementation of many KM processes within the organization (Gee & Holmes, 2001). Finally, the research question: *How should information be organized into an intranet to best serve the needs of the company?* This question was answered in the information architecture section of the literature review, but these were reinforced by the detailed need of a case company through the research results. Information should be organized inherently, making the complex clear and to make sure that users of information can find their paths to knowledge easily (Wurman, 1996). According to Wurman (1996) there are five ways to organize information and one of them is by categories (Wurman, 1996), which is also used in organizing the case company's intranet. Suitable navigation elements are also essential when implementing the intranet, that all the information can be easily found (McCloskey, 2014). The results of the thesis provided a comprehensive understanding of how an enterprise intranet should be implemented from an information architecture perspective. The interviews were used to provide an even more detailed picture of what is the best way to organize the information of the case company into the intranet. The result of this study provided the site map for the upcoming intranet.

7 CONCLUSIONS

In this section, the conclusions will be made and answers to the research questions will be presented. Finally, the limitations of this thesis are presented, and future research ideas are proposed. In this thesis, the core aim was to understand the current situation of the intranet of the company under investigation and examine what future situation is expected from the employees. As such, through a mix-method approach, utilizing both survey questionnaire and semi-structured interviews, this thesis contributes to the literature through the following.

The main finding was that the intranet would not be made a company-wide archive in which all the data are stored, as therefore it could become extremely confusing, and the information would be difficult to exploit. The employees indicated that they want the intranet to be a directory for the instructions and processes required by company employees in their daily work duties. It was also an important subject, that the intranet will be implemented as a social intranet to support collaboration and knowledge sharing. Therefore, Microsoft SharePoint has already selected as a platform. SharePoint is a collaborative platform (Weldon, 2012) that enables easy management of teams, information storage and the use of management of business processes (Terek, 2013 p. 5). SharePoint is also used for various purposes such as content management, communication, knowledge sharing, and collaboration. It is also a fairly safe choice for almost every organization because of it is customizable platform for different kinds of needs (McKenna et al., 2011). The company operates Microsoft Teams already, which is a social communication application. SharePoint and Teams are complementary for each other, making the intranet a social entity that serves the needs of the company in all aspects. In addition, due to the characteristics of SharePoint, the intranet built there also serves the company's KM processes. Absolutely important for the study as well as the implementation of the intranet was that the outcome, the intranet, serves the processes of company's KM. This goal was reached through the choices made through the results of the research and the future intranet will support the KM processes of the company.

In addition, the thesis received many solutions and ideas on what features to include in the intranet so that it best serves the needs of the employees of the company. Moreover,

to implement the intranet, the thesis results yielded a great deal of information and tips in general for storing information within the company that a company can take advantage of. For example, when planning to archive for files that would not be included in the intranet. Consequently, the results will also be increasingly more able to decode the problem of storing the data in confusing order.

In terms of information architecture, the intranet was decided to implement by subject matter, which follows the organizational structure of the company. Currently, Microsoft Teams have already teams created that can easily be combined into a SharePoint intranet. This allows files already shared in Teams to be incorporated into the intranet. The study resulted in a sitemap for the intranet, see the Figure 22.

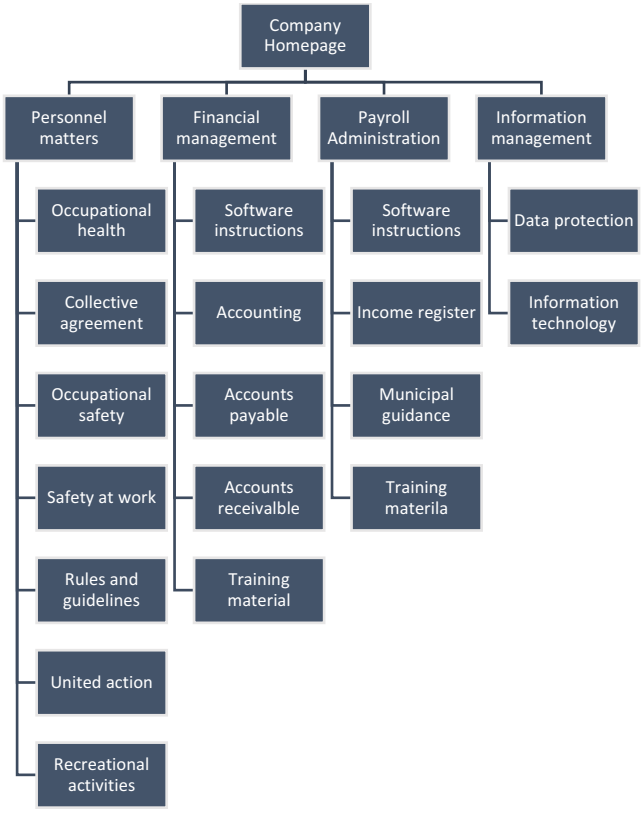

Figure 22: Site map for the intranet

Site map for the intranet was entirely constructed based on the findings raised in this thesis. However, the navigation was desired to be kept simple, due to which the information was divided into four sub-sites. Within these, however, information was shared by topic area with a little more detail, which also facilitates information retrieval, but not a confusing main menu. Under each of the four subsites, features that were

desirable, such as message boards, useful links etc. will be added. Give the current situation of the company, where the information is in considerable disarray, the navigation was desired to be kept simple in order to move this situation closer to the desired situation. Based on the results of the study, the municipal division was not the best possible, but it was nevertheless included in the intranet in order to bring in local agreements as well. Under accounting, accounts payable and receivable, breakdown by municipality will also be implemented. The structure of the site map was going through with the management team, who unanimously agreed that with such a structure the intranet will be implemented.

Considering theoretical contributions, this research provided a broad picture of how intranet can function as part of the organizations KM processes. In itself, the results obtained in this study may not be useful to other organizations, as this was a case study in which the needs of the case company were examined in quite detail. That is why the result may not be precisely generalizable. If the subject had been studied more widely with a larger sample involving many organizations, the results could be increasingly generalizable. However, each company's own intranet need should be explored individually since there are no general way to implement an intranet to organization. However, for other organizations, this research may be useful in terms of practical implication, as the framework and theories used in this thesis can be reproduced to meet the needs of another company. Consequently, other organizations can utilize research theories and framework of this study to explore their own organization's situation on the subject. However, practical benefits from this thesis arose for the case company.

7.1 Limitations and future research

This thesis was limited to the implementation of the intranet from a KM perspective, which is why information systems and information architecture were dealt narrowly. Both are important elements for the implementation of the intranet, but the thesis would have become too broad if both had been thoroughly studied in this research. Regarding information systems, only available technologies were briefly discussed in the study, as the implementation platform of the intranet had been chosen to be Microsoft SharePoint in the early stages of the research by the case company. As a result, it was not worthwhile to incorporate different technologies too broadly into this study. However, various

options were wanted to be mentioned briefly since the research might provide advice to other implementors of the intranet in the future. The information architecture was studied a little more in this research, although it bordered quite narrow too. Although one of the outcomes of the research was aimed at obtaining a site map for the intranet, there were quite a few of theory about information architecture. However, the subject was important in terms of the implementation of the intranet, for which is why it was briefly included in this study. In terms of KM, the study limited some of the KM processes outside of this research. Only the KM processes that were essential to the intranet and were essential to the organizational objective of the case company were included in the study. Knowledge management is an established discipline, as such information was also found on more processes than that was presented in this thesis. However, it made sense for this thesis to narrow the subject down to specific processes, that the study would not become too broad. The KM processes delimited outside of this study, may also benefit from the intranet, but are not as relevant as those discussed in this study.

As a future research proposal, it would be good to look at how the intranet has been deployed in the case company and whether it has improved the processes of the organization's KM and whether it has been helpful in the main problems of the company. When intranet has been in use for an extended period, it would be interesting to reimplement a similar questionnaire to compare the situation and see if the introduction of the intranet has been beneficial to the company from a KM perspective. As another further research proposal, one might suggest comparing the use and benefits of the intranet of different companies from the KM perspective. Thus, the best possible solutions for the implementation of the intranet could be found and collected to make the best benefit it in terms of KM.

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APPENDICES

1. Appendix: Questionnaire

Intranet questionnaire for staff

Dear respondent!

This research aims to investigate the knowledge sharing in case company.
In an attempt to produce results more accurate and relevant, you are expected to share a little about yourself and your work experience. It is important to the outcome of this research that your answers are as sincere as possible. The questionnaire is completely anonymous, and the results will be presented in general manners.

We know your time is precious, so we kept the questionnaire as simple and short as possible. The survey should take no more than 8-10 minutes of your time. If you wish to receive the search result, please leave your email address at the end of the questionnaire.

Thank you for your participation!
For questions or concerns regarding this survey, please contact: ida.pentikainen@abo.fi

Demographics

In which department do you work?

a) Payroll
b) Financial management
c) Other

What is your gender?

1. Female
2. Male
3. Prefer not to indicate

In which age category do you belong?

a) 18-24 years
b) 25-34 years
c) 35-44 years
d) 45-54 years
e) over 55 years

How long have you been working in your current position?

a) under a year
b) 1-2 years
c) 3-5 years
d) 5-10 years

e) over 10 years

Before your current position, have you been working in similar positions?

a) yes
b) no

Streamline & Store data – *Knowledge storing*

Current situation

For each statement below, please choose a number between 1 and 7 where 1 means you "Strongly Disagree" and 7 means you "Strongly Agree".

Scales: (1) Strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree nor disagree (5) somewhat agree, (6) agree, (7) strongly agree

	1	2	3	4	5	6	7
Information is stored in many different locations (e.g. personal computer, M disk, Teams etc.)							
Information is stored in many different forms (digital, paper, etc.)							
I have a lot of information stored only on my own computer							
It is clear to me where important data and information should be stored							
The knowledge I need at my job is only held by certain people and not stored for common use							
I can apply the available stored information directly to my work tasks							
Stored information is in clear order and easy to find							
It is challenging for me to keep the information I store in order							

Unite & Collaborate Employees – *Knowledge sharing*

Current situation

How often do you share information among other staff through the following?
Scales: (1) several times a day, (2) Daily, (3) Few times in a week, (4) Once a week, (5) Once a month, (6) Less often, (7) I do not use it

	1	2	3	4	5	6	7
Email							
M disk							
Teams							
Through discussions with colleagues							
Meetings							
Other what?							

How often do you receive information about current work issues, through the following?
Scales: (1) several times a day, (2) Daily, (3) Few times in a week, (4) Once a week, (5) Once a month, (6) Less often, (7) I do not use it

	1	2	3	4	5	6	7
Email							
M disk							
Teams							
Colleagues							
Meetings							
Other what?							

Knowledge sharing and collaboration practices

For each statement below, please choose a number between 1 and 7 where 1 means you "Strongly Disagree" and 7 means you "Strongly Agree".

Scales: (1) Strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree nor disagree (5) somewhat agree, (6) agree, (7) strongly agree

	1	2	3	4	5	6	7
My work encourages for cooperation							
I am encouraged to share knowledge in my work							
I personally want to share information with other staff							
Sharing information among other staff is easy							
It is hard for me to use different technologies to share information (e.g. Teams)							
It is easy for me to ask help from my coworkers							
I also share information between other departments							

In your opinion, what are the biggest challenges for sharing information in your department or a company as a whole?
open response

Increase productivity – *Knowledge utilization & use*

Current situation

For each statement below, please choose a number between 1 and 7 where 1 means you "Strongly Disagree" and 7 means you "Strongly Agree".

Scales: (1) Strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree nor disagree (5) somewhat agree, (6) agree, (7) strongly agree

	1	2	3	4	5	6	7
I feel I can easily find the information I am looking for							
I find it difficult to search for information							
I am able to take advantage of the information available in my work							
I know exactly where I can find the information I need							
I know where I can find the necessary physical documents							
I know where I can find the necessary digital documents							
I find it difficult to use different types of technologies to search for information							

I spend a lot of time searching for information							
I can count on the information available to be up-to-date							

For each statement below, please choose a number between 1 and 7 where 1 means you "Strongly Disagree" and 7 means you "Strongly Agree".

Scales: (1) Strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree nor disagree (5) somewhat agree, (6) agree, (7) strongly agree

I find the information I am looking for most often in the following places:

	1	2	3	4	5	6	7
Teams							
M disk							
Email							
Google							
Physical documents and instructions							
Asking a co-worker							
Other what?							

	Several times a day	Daily	Few times in a week	Once a week	Once a month	Less often	I do not use it
How often do you look for information about files located on M disk							

For each statement below, please choose a number between 1 and 7 where 1 means you "Strongly Disagree" and 7 means you "Strongly Agree". **What kind of information do you most often search/need and how often?**

Scales: (1) several times a day, (2) Daily, (3) Few times in a week, (4) Once a week, (5) Once a month, (6) Less often, (7) I do not use it

	1	2	3	4	5	6	7
Populus instructions							
Abilita instructions							
Unit4 instructions							
Netvisor instructions							
Incomes register instructions							
HR instructions							
Contact information in the company							
Contact information in municipalities							
Safety instructions							
Information security instructions							
Information technology instructions							
Collective agreements							
Kela instructions							
Tax instructions							

Recovery proceedings instructions							
Minutes of the meetings							
Occupational health instructions							
Information about recreational activities							
Different laws and regulations (e.g. accounting law)							
Lunch lists							
Orientation guide of the new employee							
Document templates							
Other what?							

In your opinion, what information do you think is difficult to find at the moment?
open response

Streamline & Store data – *Knowledge storing*

Desired situation

For each statement below, please choose a number between 1 and 7 where 1 means you "Strongly Disagree" and 7 means you "Strongly Agree".

Scales: (1) Strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree nor disagree (5) somewhat agree, (6) agree, (7) strongly agree

	1	2	3	4	5	6	7
I wish all the information was stored in the same place							
It is important to me that the information is found in paper form							
It is important to me that information can be found in digital form							
It is important to me that there should be clear instructions for storing information							
It is important to me that the information should be stored in clear order							
It is important to me that the information should be available to all staff							
It is important to me that stored information is applicable directly to my own work							

Unite & Collaborate Employees – *Knowledge sharing*

Desired situation

How often would you prefer to receive the company information?

	Several times a day	Daily	Few times in a week	Once a week	Once a month	Less often
I would hope that the current affairs of the company will be informed						

For each statement below, please choose a number between 1 and 7 where 1 means you "Strongly Disagree" and 7 means you "Strongly Agree".

Scales: (1) Strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree nor disagree (5) somewhat agree, (6) agree, (7) strongly agree

	1	2	3	4	5	6	7
It is important to me to cooperate with other employees							
It is important to me that the management would share more information with me							
It is important to me that my coworkers would share more information with me							
I wish that my co-workers would share information for common use							
I wish I was encouraged more to collaborate in my work							
I wish the company would provide better tools for information sharing and collaboration							
It is important to me that information is shared between departments							

How would you improve the knowledge sharing among the working community?
open response

Increase productivity – *Knowledge utilization & use*

Desired situation

For each statement below, please choose a number between 1 and 7 where 1 means you "Strongly Disagree" and 7 means you "Strongly Agree".
Scales: (1) Strongly disagree, (2) disagree, (3) somewhat disagree, (4) neither agree nor disagree (5) somewhat agree, (6) agree, (7) strongly agree

	1	2	3	4	5	6	7
It is important that the information is easily accessible							
It is important that the available information is up to date							
It is important that the necessary information is easy to find							
It is important that I can do my job more efficiently with the information available							
It is important that I can rely on the available information							
It is important that searching for information doesn't take too much time from my work tasks							
It is important that the information is easily found using the search function							
It is important that the technology and software used for information retrieval are easy to use							

In your opinion, what information would you hope to be more accessible?
open response

Intranet

For each statement below, please choose a number between 1 and 7 where 1 means you "Not at all important" and 7 means you "Extremely important".

Scales: (1) Not at all important, (2), Slightly important , (3) of little importance, (3), Moderately important, (4), Important, (5), Very important, (6) Extremely important

What do you think is the main function of the intranet in the working community?

	1	2	3	4	5	6	7
Improve communication within the working community							
Improve access to information							
Improve cooperation							
Increase connectivity and knowledge sharing							
Help streamline the processes used at work							
Improve a company's sense of community							

For each statement below, please choose a number between 1 and 7 where 1 means you "Not at all important" and 7 means you "Extremely important".

Scales: (1) Not at all important, (2), Slightly important , (3) of little importance, (3), Moderately important, (4), Important, (5), Very important, (6) Extremely important

What kind of features do you consider important in an intranet?

	1	2	3	4	5	6	7
Discussion board							
Directory for instructions and documents							
Polls							
Moving email mostly to the intranet							
Calendar for events in the company							
Company announcements							
Market place for buying and selling							
Useful links							
Bulletin board for recreational activities							
Customizing your own profile							
Platform for cooperation							
Directory for contact information							
Videos							
Other what?							

Based on your previous work experience or studies, what features you consider important in the intranet?
open response

Any other comments or wishes for the upcoming intranet?
open response

Would you like to participate in the interview via Teams?

a) Yes

b) No

Thank you for your participation
Ida Pentikäinen

2. Appendix: Interview questions

1. How to find information from all the different channels to be assembled into an intranet and how to motivate staff to transfer information e.g. from their own computer for common use?

2. How should the information be arranged into an intranet to make it easy to find and exploit? What does easy to use mean for you? When do you feel that there is too much information and what is irrelevant information?

3. How often do you share information in discussions between two people e.g. in Teams? How would you define information that would be good for sharing among all staff?

4. When do you think receiving information would be at a good level? How do you define good level of receiving information and how often? Can you name solutions what should be done, that receiving information would be perceived as good?

5. What do you believe is that information is not perceived as current? Do you feel this is an internal problem or a problem arising from outside factors e.g. software instructions?

6. How do you think it can be verified that the information on the intranet remains reliable and up-to-date? Who should take care of updating the intranet?