Norwegian University
of Life Sciences

Master's Thesis 2021   30 ECTS
School of Economics and Business

Digital Mastery within the Norwegian SMB market:

Seniors' perspectives on the challenges they face as they strive for digital maturity, as well as the solutions to those challenges and the factors affecting their firms

Chukwudi Ndu Nwachukwu

Master in Business Administration – Business Analytics

Acknowledgements

Sammendrag

Bakgrunn: Alle virksomheter, uansett størrelse, ønsker å være en del av den digitale revolusjonen og oppnå en større grad av digital modenhet over tid. De gjør det fordi de ønsker å gi mer effektive resultater, samtidig som de drar fordel av de konkurransefordelene som følger med å være digital moden. Digitaliseringen av selskaper i arbeidsmarkedet har innvirkning på små og mellomstore bedrifter, gir selskapene en mulighet til å del i den globale økonomien med hjelp av teknologi. Det er imidlertid ingen konkrete eksempler på hvordan dette har spilt seg ut på det norske markedet for å støtte denne påstanden når dette knyttes opp til utfordringer, faktorer og løsninger til disse utfordringene.

Hensikt: Målet med denne masteroppgaven er å undersøke den digitale modenheten til små og mellomstore bedrifter ved å kartlegge nivået på den digitale modenheten blant selskaper ved hjelp av den digitale modenhetsrammen utviklet av Westerman et al. (2014), og identifisere utfordringene de står overfor i reisen mot å bli digitale modne. Videre kunne komme med løsninger på disse utfordringene, samt informasjon om faktorene som driver økt bevissthet om digital modenhet blant norske små og mellomstore bedrifter.

Metode: I denne studien ble en induktiv tilnærming valgt, og data ble samlet inn ved hjelp av både kvalitative og kvantitative metoder. Seks deltakere fra ulike norske små og mellomstore bedrifter ble intervjuet og deltok også i spørreundersøkelsen.

Resultat og konklusjon: Funnene i denne studien avslørte at mykere verdier som ledelse, visjon og strategi, samt kompetanse og tilgjengelighet, er vanskelig for SMB å oppnå. Videre diskuteres det hvordan ressurser, spesielt når det gjelder tidsstyring, i forbindelse med utvikling av digital modenhet i små og mellomstore bedrifter påvirker opplevde utfordringer, så vel som støtten som kreves for å fremme nivået på digital modenhet for foretakene. Ifølge funnene i denne masteroppgaven, står små og mellomstore bedrifter overfor tydelige utfordringer med å oppnå digital modenhet. Utfordringene som var typiske av firmaene som ble intervjuet blir presentert i denne oppgaven. Alle selskapene delte en felles egenskap ved at de alle ønsket å øke modenhetsnivået gradvis over tid. For å øke modenhetsnivået derimot må de enten ha nødvendige interne ressurser eller skaffe de nødvendige ressursene gjennom ekstern bistand, for eksempel ved å leie inn konsulenter som er eksperter på dette eller som har god erfaring med å heve modenhetsnivået til firmaer med ulike utgangspunkt og midler til

rådighet. Ettersom dette blir gjort vil firmaene kunne prioritere digital transformasjonsarbeid og tilpasse intern struktur så vel som kultur for å oppnå større grad av digital modenhet.

Nøkkelord: digitalisering, digital modenhet, digitale modenhetsmodeller, små og mellomstore bedrifter

Abstract

Background: All businesses, regardless of size, want to be part of the digital revolution and to achieve a greater degree of digital maturity over time. They do so because they want to produce more effective outcomes while also benefiting from the competitive benefits that digital transformation may provide. The digitization of the economy has an impact on small and medium-sized businesses (SMEs), who have been offered new possibilities to engage in the global economy. However, there aren't any concrete examples of how this has played out in the Norwegian market to support this claim.

Purpose: The goal of this study is to investigate the digital maturity of small and medium-sized businesses by examining the level of digital maturity among firms using the digital maturity framework developed by Westerman et al., (2014) and identifying the challenges they face in order to achieve higher levels of digital maturity. Furthermore, provide solutions to those challenges, as well as information on the factors driving increased awareness of digital maturity among Norwegian SMEs.

Method: In this study, an inductive approach was chosen, and data was collected using both qualitative and quantitative methods. Six participants from various Norwegian SMEs were interviewed and also participated in the survey.

Findings and implications: The findings of this study revealed that softer values such as leadership, vision, and strategy, as well as competence and availability, are difficult for SMEs to achieve. Furthermore, it is discussed how resources, specifically in terms of time management, in connection with the advancement of digital maturity in small and medium-sized enterprises affect perceived challenges as well as the support required to advance the level of digital maturity of the enterprises. According to the findings of the study, small and medium-sized businesses face distinct challenges in achieving digital maturity. However, the challenges that were most frequently encountered by the firms that were interviewed are presented in this study. All of the companies shared a common characteristic in that they all aspired to improve their level of maturity in the future. In order to raise the maturity level, they must either have the necessary internal resources or obtain the necessary resources through external assistance such as consultants. Then they will be able to priorities digital transformation efforts and adapt internal structure as well as culture in order to achieve greater levels of digital maturity.

Glossary

Digital Maturity	Digital maturity is a process that varies in its perception depending on who is questioned. Certain businesses may perceive themselves to be more digitally savvy than others. This, however, is contingent upon the size of the companies and the industry in which they operate. For instance, industries that are more customer-centric are more digitally integrated. (Berghaus and Back. 2021).
Digital Transformation	The term "Digital Transformation" refers to the process by which businesses undergo change as a result of increased use of information technology. It reflects the pervasiveness of information technology-induced changes, which affect both the primary and support functions of a business. Additionally, the concept addresses a company's ability to manage the process of digital transformation in a systematic manner.
Digitization	Digitization is the process of transferring information (flows) and tasks to a computer via technology.
Information Technologies (IT)	IT is an amorphous term that refers to a collection of technologies for the processing and storage of data, as well as the management of communication between computers, machines, and humans.

Small and medium sized enterprises	SME vary in size but are limited to 250 employees in the EU (OECD 2015). Norway, on the other hand, has a cap of 100. (NHO).

1.0 Introduction

1.1 Background and Objectives

1.1.1 General Information

Information, communication, and technology (ICT) have advanced significantly in the last ten years, and as a result, they have gained new capabilities. These technologies have changed the landscape of the standards that businesses must meet in order to succeed in today's business environment. One of the changes is the communication between employees and the electronic system, which has had an impact on how people and organisations live, interact, consume, and perform at their respective workplaces. Corporations must not only adopt these technologies, but also reconsider how they operate in order to remain competitive.

Many businesses are being compelled to adapt in order to meet the needs of their customers and remain competitive. When it comes to digital transformation, there is frequently a lack of a comprehensive guide for guidance. Where it is more common for t raditional companies that were larger and more rigid in the past to face greater challenges compared to firms who are more flexible.

Despite the fact that digital transformation is critical, businesses must also focus on digital mastery (High level of digital master). This is because digital mastery increases businesses' ability to adapt to an ever-changing digital environment. Digital transformation is defined as "a change in how a company employs digital technologies in order to develop a new digital business model that assists the company in creating and appropriating more value." By leveraging business drivers and processes, digital transformation is intended to enable businesses to compete more effectively in the digital world. As a result, the concept of "transformation" becomes more complicated because the company is transformed into a digital expert on the same day the transformation takes place. Companies, on the other hand, must focus on navigating the competitive landscape, as this is a goal that is consistent with digital mastery. The extent to which a company has digitally matured demonstrates its ability to adapt to changing digital environments. This concept combines two distinct but interconnected aspects of digital technology and change management: the intensity of digital technology and the intensity of change management. As a result of the ever-increasing expectations of customers and employees, the company has improved its digital capabilities in comparison to its competitors. Second, this section considers how the organisation views and

manages its transition to a digital future. The combination of these two dimensions determines a company's maturity.

The Nordic Digital Disruption Index 2019, the digitization index for digitization from Deloitte's Nordic Digital Disruption Index 2019, shows that Nordic companies continue to face digitization challenges. Approximately 80% of the companies polled stated that they are developing new business models to respond to new ways of using technology in order to increase their competitiveness and stay competitive. Approximately 60% of businesses said they lacked the digital skills needed to digitise, while 20% said they were successfully developing a new business model.... Significant scans fail in 70% of cases, according to a recent Mckinsey survey, which is a concerning statistic.

Unfortunately, many businesses lack the necessary data and human resources to achieve digital growth. Despite consulting reports demonstrating the history and potential of digital mastery, there is a scarcity of comprehensive educational literature on the subject.

These challenges have an effect on the company's ability to use information technology in today's business environment. This raises questions about the company's overall standing as well as its digital strategy.

In the run-up to and during the COVID-19 pandemic in Norway, an increasing number of businesses and industries have increased their focus on digitalization. Both SMEs and larger corporations are involved in this case. People may have developed a greater interest in understanding how firms work with technology, as well as the opportunities and challenges associated with digital technology in the context of small and medium-sized enterprises, as the emphasis on digitalisation has increased (SMEs). After consulting with BDO experts, they concluded that there would be differences in the degree of digitalisation depending on the industries they belonged to. This could range from companies that have made no progress to those with leaders who have not prioritised digitalization. In the case of businesses that are aware of the changes but are unaware of their own digital progress in comparison to the industry standard for digitalization.

We also have companies that are embracing digital transformation but are unaware of their position in terms of digital transformation when compared to other companies in the same industry or market size as their competitors. If we are discussing being in the early stages of a digital transformation or different stages of a digital transformation, this case study allows

both this thesis and BDO to understand how some of their clients are doing and how they can achieve a higher level of digital maturity.

This thesis contributes significantly to a company's digital transformation journey by applying a theory relevant to the Norwegian market. This thesis will be useful not only to the companies that participated in this thesis, but also to other organisations with similar in nature. Furthermore, the findings can be used by BDO and other researchers to analyse and try to understand where there may be potential for further research in terms of obtaining an overview of the measured digital maturity within SMEs in Norway, Above and Beyond.

In this chapter, I will discuss the motivation for writing this thesis, how the research questions were derived from the motivation, and a brief explanation of how this thesis is constructed in order to conclude..

1.1.3 Why should SMEs be studied?

Small and medium-sized enterprises (SMEs) account for nearly 99.5 percent of all businesses in Norway (NHO), and they have roughly the same average in different markets across Europe, indicating that they are a relatively significant economic factor in each country (Stanworth and Gray 1993, NUTEK 2004, Wolff and Pett 2006). Despite this, research on digital maturity among companies of this size has not been particularly thorough. Small and medium-sized businesses (SMEs) account for a sizable portion of net sales and value-added business. It is critical to be familiar with these organisations in order to succeed in business, as they play an important role in both Norwegian economic development and community life in general (NHO, 2021). Small and medium-sized businesses (SMEs) are especially vulnerable to the changes brought about by digitalization. According to Müller et al. (2017), while digitalization provides these small and medium-sized enterprises (SMEs) with completely new opportunities to participate in the global economy, they are experiencing difficulties in the digital transformation and are falling behind in the digital transition when compared to larger corporations, which typically benefit from the competitive advantage that digitialization provides (2017).

As a result of these changes, digitalisation has become a critical factor in all industries. Many businesses have shifted to remote working, particularly during COVID-19 (Corona Virus Disease 2019), pushing the boundaries of what it means to be a modern business. Aside from pandemics, small and medium-sized businesses (SMEs) have been largely unsuccessful in overcoming the challenges they have faced, according to Westerman et al., (2011). This lack

of improvement is thought to be due to firms' preference for incremental changes over business transformations (Nti, 2019), which would yield better results, and is a direct result of these firms' low level of digital maturity.

Evidence suggests that small and medium-sized businesses in Norway are having difficulty transitioning to modern digital businesses. Employees and policymakers in small and medium-sized businesses are concerned about digital technology (Morgan-Thomas, 2016, p. 1122). When compared to larger corporations, they generally have the advantage of innovating at a faster rate (Beliaeva, Ferasso, Kraus & Damke, 2019). With this in mind, the primary goal of this master's thesis is to add to the existing literature on how digital maturity has affected firms in various ways.

Even when it comes to technologies relevant to SMEs, fewer than half of small and medium-sized businesses (SMEs) in Norway use digital technology (Nti, 2021). According to the OECD (2017, p.36), this is a problem not only in Norway but also in other countries. For the purposes of this discussion, digital technologies can refer to analytical tools that can help with the analysis of data, such as customer data, and then the visualisation of that data in a visualisation tool like Tableau or Power bi. Businesses can communicate with their customers or clients more effectively by utilising the various communication channels available on social media platforms such as Twitter, Linkedin, and Facebook. According to some, communication tools like Teams and Zoom, which have made the transition to the home office easier, have increased the firm's productivity. Additionally, the amount of time spent communicating internally with colleagues and externally with customers will be reduced.

In comparison to Norway, Sweden and Denmark have both conducted extensive research on small and medium-sized enterprises (SMEs) and digital technology. A research study from the book Leading Digitally that looked into the concept of digital mastery (the degree of digital maturity) and was included in the book was particularly interesting. Following a review of the literature, I discovered that there are few in-depth studies on how small and medium-sized businesses in a variety of industries use digital technologies, and, to a lesser extent, how efficiently these are implemented and used by the firms. More specifically, it is designed to take into account how firms approach things digitally, the opportunities found in a digital mastery adventure as well as the challenges that SMEs in Norway face, as well as a thorough understanding of the firm's current digital maturity position. The majority of topics concerning digital mastery among small and medium-sized businesses (SMEs) were

addressed by consulting firms in Norway and were not supported by different researchers found in research studies conducted in Denmark and Sweden.

Knowing how important the SME market is for European countries, particularly Norway, makes mapping and understanding the problems that Norwegian SMEs are facing as they transition to a digitalized environment even more insightful and exciting.

1.2 Problem Statement

There is no doubt that incorporating digital technologies into a company's operations has its advantages. In a manner that will have a positive impact on business operations. Various academics have discussed how digital mastery has influenced the performance of their respective firms. Firms that are successful in overcoming the challenges of integrating digital technology into their operations provide tremendous opportunities for small and medium-sized enterprises (SMEs). Most, on the other hand, are lagging behind in terms of embracing digital transformation (OECD, 2017a). Small and medium-sized enterprises (SMEs) miss out on internal efficiencies, better collaboration, new products, cost reductions, and increased productivity because they do not develop a plan for where they want to go or take the steps necessary to incorporate digital technology more fully into their operations.

MIT and Capgemini's (Fitzgerald et al., 2013) research found that the most difficult aspect of digital transformation is not the technology itself, but rather the people and management challenges that must be overcome (Kane et al., 2015; Van der Bel, 2018). Despite the fact that every business and sector is facing its own digital future, this article is not about a technological push in the traditional sense. The full advantages of digitalization may be realised by businesses if they understand the possibilities that digitalization presents, as well as the difficulties that digitalization presents (Sánchez, 2017).

The SME market can be a difficult one to navigate. It is made up of businesses from a variety of different industries, each with its own set of requirements that must be met. However, despite the fact that the importance of digital maturity is becoming increasingly recognised by the general public, there are still a number of businesses that have not raised their level of maturity. A similar pattern can be observed across all industries, and newcomers can be found in every industry (Andriole, 2017). This struggle has been exacerbated in large part by a lack of guidance and practise (Westerman et al., 2012). For example, several research articles failed to address the issue of how to achieve digital maturity. According to the findings of Kane et al. (2015), senior management should be in charge of initiating and coordinating

digital transformation. Other studies have sparked more timely discussions because the company's culture is mentioned in their work (Kane et al., 2015). It is necessary to be unified. The individuals, organisational structure, and challenges that are driving digital transformation (Kane, Palmer, Phillips, Kiron, and Buckley, 2016; Westerman et al., 2012). Despite the fact that the academic literature contains a wide range of challenges, opportunities, and self-assessments of SMEs, there is a gap in the literature.

In particular, when considering the company's long-term goals and how it can thrive in a data-driven world, this becomes clear (especially in the SME market). It is determined by the services they provide, the size of the market, and the expectations of the organisation. Previous researchers have not carried out a comprehensive study of small and medium-sized enterprises (SMEs) in the Norwegian market. A better understanding of the digital maturity of various industries in Norway is therefore essential. This implies that insights that provide a clear understanding of the different levels of maturity, challenges, solutions, and factors in different sectors in Norway are sought after and investigated further.

1.3 Research question

As the title suggests, the primary goal of this thesis is to conduct a more in-depth investigation into the digital maturity of small and medium-sized businesses (SMEs) in Norway. Because of this, their digital maturity will be classified and presented in an organisational chart along with the challenges and key factors that are driving the firms' digital transformation, regardless of whether internal or external factors are at play. Once this has been done, it will be examined to see if any weaknesses can be identified that can be linked to their digital maturity, as well as to see if solutions can be provided to the challenges that have been identified and to present the common key drivers that have been identified among the businesses. An examination of relevant literature will be conducted, as well as the delivery of a presentation, with the goal of achieving this thesis objective being achieved. An initial quantitative analysis was carried out to determine their digital maturity using the framework developed by Westerman et al., , which was followed by a qualitative analysis in which a semi-structured interview style was used to conduct a case study with the participating organisations.

Three research questions have been proposed and will be investigated further in order to achieve the thesis's goal. These are as follows:

RQ1: What is the digital level among the SMEs in Norway?

RQ2: What are the common challenges faced by managers in digitally mature firms, and what solutions might they pursue?

- *RQ3: Which factors both external and internal are driving smaller and medium-sized businesses (SMEs) to become more digitally mature?*

Based on the results of the self-assessment and the interviews, the conclusions gained from identifying the barriers and solutions, as well as the factors that impact the industries among SMEs, this study could contribute and lead to a better understanding of practical measures that can be taken in advance to prepare both the employees and leaders, as well as the firms in general, for better in-depth understanding and knowledge of the current state of digital maturity, thereby ensuring the success of the transformation initiatives.

1.4 Objective and Scope of the study

Due to the vast breadth of this thesis's target area and the fact that the digital transition has not been extensively examined, it is necessary to place certain restrictions on the scope of the research. It is undertaken as a qualitative and quantitative case study, and data is collected through interviews with participants and the distribution of a self-questionnaire to participants from various businesses. The approach used to assess digital maturity is to look at their digital capabilities as well as their leadership capabilities.

The interviewers are expected to be people who have been with the company for a long time and have a strategic perspective on the digital maturity of their organisations, as well as having had the opportunity to see the many transitions that have taken place at the company over time: Because there is a scarcity of research on firms' digital maturity, the objective is to cover a wide range of industries while concentrating on Norwegian enterprises. However, due to the broad scope of this thesis's subject matter, the number of firms included will be limited to six in order to ensure that the needed depth of research is achieved.

1.5 Overview

This master thesis is split into seven chapters, with each chapter having sub-categories following the topic discussed in this research paper:

Chapter 1 (Theory and Previous Research) The following chapter will discuss the context for the research questions outlined in the preface. Additionally, we will discuss digital maturity and why the Norwegian market gap is significant in terms of mitigating the negative consequences of not addressing the gap.

Chapter 2 (Literature Review) summarises existing theories and research that are relevant to my research questions. This chapter will provide a concise overview of previous history and will briefly introduce terms that are pertinent to this thesis.

Chapter 3 (Case Study Method) will put a priority on providing an overview of the theories that will form the basis for this master thesis. The theoretical framework that will be presented is digital transformation, followed by a discussion of digital maturity. Following that, discuss the general barriers that SMEs face.

Chapter 4 (*Empirical Findings and Analysis*) will provide an overview and presentation of the various organisations and sectors discussed in this thesis. Additionally, give a brief summary of the interviews conducted with the various organisations.

Chapter 5 (*Discussion*) will compare and contrast the data gleaned from the semi-interviews and the literature. This chapter will then transition to the present and discuss the challenges, solutions, and factors affecting their digital maturity.

Chapter 6 using the findings from this thesis, the *Conclusion* chapter will apply them to both of the research questions addressed in this thesis and conclude the contribution made by this thesis.

Chapter 7 (*Future research*) will be based on this thesis to outline ideas for further work within the topic.

1.6 Delimitation

The main focus of this thesis is on small and medium-sized enterprises (SMEs). The primary focus of this thesis will be on SMEs in general rather than going into detail about one particular industry among SMEs. Although the various sectors may have their own set of problems, the goal is to examine the common problems that can be found across all of them. While COVID-19 may have been shown to have played a crucial role in digitalisation and, as a result, increased the visibility of the problems that firms may have been experiencing, this thesis does not compare how Covid-19 might have affected the challenges, solutions or the factors that will be presented in this thesis.

It became difficult to find additional firms to participate as a result of the time constraints that existed during the writing process. As a result, the number of respondents was reduced, which was not what the researchers had hoped for. Despite the fact that the number of participants was significantly smaller, the participants who took part provided valuable insight that was appreciated.

2. Literature Review

This chapter aim to explore and review relevant literature from different scholars and literatures to provide a clearer understanding of the concepts Digital Transformation, Digital Mastery and Digital Maturity.

2.1 Digital Transformation

With the use of technologies and good implementation of these, a business enterprise can be said to be a digital master/Digital Mastery if it has a long-term revolutionary ability to change processes, customer reviews, or even the fundamental business model. It is necessary to observe the trends in enterprise environments in order to fully comprehend why Digital Mastery is important in today's world. Digital technology is no longer available on a continuous basis; rather, it is the culmination of a series of tendencies and tendencies within the surrounding environment. For this phase, the goal is to identify relevant trends and explain why they have made Digital Mastery a requirement for businesses that want to remain competitive.

A company has achieved Digital Mastery when it has developed a sustainable innovation capacity through the use of digital technologies to alter business processes, customer experiences, and even the fundamental business model of the organisation. The availability of digital technologies has not always been the case, but they have arisen as a result of a number of environmental developments and trends. For the purposes of this section, relevant trends will be identified and explained, as well as how they have made digital mastery a requirement for companies seeking to remain competitive.

2.1.1 Digital transformation - Three concepts for digital change which have shaped the business environment

According to some academics and practitioners, digital transformation is a trendy buzzword that is frequently used in a variety of different types of studies and cannot be described in any other way than as a complicated term (Reis et al., 2018). The term "digital transformation" refers to "*a change in how a company employs digital technologies in order to develop a new*

digital business model that assists the company in creating and appropriating more value."
This term, on the other hand, is not universally accepted. Others believe that there is more to the term than just the business model involved with it (Schallmo & Williams, 2018), but on the other hand, has additional components, such as organisational structure, workplaces, ethics, and culture, among other aspects that needs to be taken into consideration.

Firms must go through three concepts within the digital scope discussed in order to gain a complete understanding of the problems and the process. The terms digitisation, digitalisation, and digital transformation are used to describe the following concepts.

Definition	Example
In the Oxford Learner's Dictionaries, the term "***digitization***" refers to the process of converting data into a digital format that can be easily read and processed by a computer.	Scan and save tangible papers (invoices, written documents, etc.) on a hard drive by scanning them and saving them digitally on a computer. In other words, the physical document is encoded in a digital format and can be read by a computer.
Digitalisation: The incorporation of digital technologies into daily life through the digitization of everything that is digitisable (Fitzgerald et al., 2014, p. 234)	A smartphone application for purchasing and utilising bus tickets during fairs, with no interaction with the company's physical devices. When you take notes on your phone, they will appear on your computer right away!
Digital transformation: A process of disruptive or incremental change. It begins with the adoption and use of digital technologies and progresses to an implicit holistic transformation of an organisation, or a deliberate effort to create value.	Utilization of digital tools for data analysis. Combining the two to improve the customer experience

Table 1.0

The first phase, known as digitization, is concerned with the transition from analogue to digital storage and transmission of the same processes using a computer (Verhoef et al., 2019, p. 3). Even though the process changes when going from analogue to digital, the end result is the same (Gartner, 2019). The second phase, known as digitization, emphasises the application of digital skills to the transformation of business models. Changes, such as more efficient working practises and technologies that reduce operational costs, have a significant positive impact on the amount of time, tasks, and values that firms, companies, and individuals allocate to their work (Li et al., 2016). The third phase, digital transformation, is the result of the combination of the first and second phases, which are described previously (Li et al., 2016). Not only how technology is used, but also how companies operate on a fundamental level, are all important considerations (Westerman et al., 2012). People must rethink old processes and reimagine new processes and decisions in order to successfully navigate the digital transformation (Schallmo & Williams, 2018, p. 7). Netflix's business development in the twenty-first century serves as an excellent illustration of the processes. First and foremost, the company revolutionised the movie rental industry by providing their customers with couriered DVDs delivered to their door at a time when owning a DVD player was uncommon. Netflix was able to offer digitalised services as a result of the rise of digital technology, which was made possible by digital distribution. It has resulted in a fundamental shift in their business model, which was previously fuelled by the provision of a subscription-based video streaming service. These concepts have produced the following outcomes, which are supported by Kane et al., (2015) (p. 4), who argue that while digital technology exists, it is more about how firms choose to integrate the technology into their operations and how this improves their operations.

2.2 Digital Maturity

When a company adapts in order to be able to compete effectively in an inevitable society that is becoming more digitalized, this is referred to as digital maturity. It is not simply a matter of utilising the various technologies that are currently available; rather, it is a matter of how the new technology is implemented in conjunction with the organization's strategy, technology, workforce, and culture. What should be considered, however, is the organisational structure in terms of the digital expectations that customers, partners, and employees would have of the company.

Adaptation in a world where the digital landscape is constantly changing, according to Kane, is a continuous and ongoing process of adaptation (Kane et al., 2017). Digital maturity, according to Chania and Hess (2016), is "the stage of a company's digital transformation at the time of measurement." Some authors use the terms "digital transformation" and "digital maturity" interchangeably when discussing digital transformation. As a result, both terms are frequently used in the same sentence. Kane (2017), on the other hand, explains why it is preferable to use the term Digital Maturity. He asserts that the process of digitalisation is not a finite one. Instead, it is a continuous process, primarily because businesses must keep up with the increased digitalisation that is occurring across all industries. This claim is further supported by the research of (Davison & Ou, 2017), who describe digital maturity as an ongoing process leading to a never-ending digital scope in their paper.

Kane (2017) thinks that simply using digital technology does not automatically result in a company being digitally competent. His other belief is that firms frequently install new and fashionable digital tools, but that these technologies are not well integrated into the company's operations and that employees do not fully utilise the tools to their full potential. Companies that only have digital technology must become more digital or increase their level of maturity as a result of their possession of only digital technology (Kane, 2017). Instead, Kane et al. (2015) argue that organisations and business executives should concentrate on digital maturity rather than digital transformation, and that digital transformation should be abandoned altogether. This is due to the fact that digital maturity is something that develops gradually over time, rather than overnight. It is possible that shifting the emphasis to reaching higher levels of digital maturity may result in a variety of benefits, such as making firms more digitally competitive (Kane et al., 2015).

In order to comprehend how digital maturity might manifest itself. It is necessary to examine the characteristics of these types of organisations. According to research conducted by Deloitte insight, the following characteristics were found in digitally mature firms (Gurumurthy & Schatsky, 2019). The first one is strong leadership and the second one is having a digital mindset.

According to Kane et al. (2017), digital maturity is defined as the alignment of a company's strategic vision with the digital tools necessary to achieve the strategic aspect of that vision. The digital tools available must be aligned with the value chain, competitors, customers, suppliers, partners, employees, potential substitutes, and new entrants in order to effectively combat them. Implementing the digital transformation is not something that can be done in a

single day. It is, on the other hand, a gradual and time-consuming process. Taking this into consideration, there should be less emphasis on digital transformation and more emphasis on digital maturity because it is more dynamic than digital transformation. At the same time, it enables the company to always be aware of its current capabilities and future opportunities. As a result, Kane (2017) contends that using the maturity model instead of the maturity spectrum is more accurate. The majority of the authors in this field are inclined to agree with Kane (2017) that digital maturity is the scientific term to be used in this situation (Remane et al., 2017). Digital maturity can be further subdivided into two dimensions, both of which are essential for achieving full maturity: the intensity of transformation management and the intensity of digital maturity (Fitzgerald et al., 2014; Westerman et al., 2011). A firm's digital maturity will improve as a result of a more in-depth understanding of these dimensions.

2.2.1 Four levels of digital mastery

An important aspect of this thesis is to evaluate digital mastery in the small and medium-sized business (SME) market. Which is why, to determine how far various businesses have progressed in their digital transformation, and when looking at the challenges, solutions, and factors involved, the term "digital maturity" is used. It has been decided to move forward with a more specific digital maturity model that includes an opportunity for self-assessment in order to make the definition more consistent. According to the book Leading Digital – Turning Technology into Business Transformation, the framework was developed. It is possible for participants to assess their current digital mastery status within the organisation using the self-assessment tool. This is accomplished through the completion of 20 questions. For the first ten questions, the focus is on leadership capabilities, while the remaining ten questions are on digital capabilities. Each of the questions is assigned a score ranging from one to seven, with one representing a complete disagreement, four representing a neutral response, and seven representing a complete agreement. The scores from each of the ten question categories are then totalled and used to assign the firm to one of the four dimensions of Digital Mastery, with the highest score being assigned to the firm. These will be discussed in greater detail further down the page.

It has four dimensions, which are as follows:

There is a framework that describes the different characteristics of a company's digital maturity. The framework is divided into four categories, each with two axes, as shown in the diagram. Located on the y-axis, the "Digital Intensity" focuses on investing in technology that will ultimately change the way firms operate (Westerman et al., 2012). All of these things,

including customer engagement, internal operations, and business models, are all made possible through the use of digital technologies. Even though businesses invest in a variety of digital initiatives and have a high level of digital intensity, this does not necessarily imply that they are doing everything correctly. Many of the companies that make investments are uncoordinated and duplicative in their efforts (Westerman et al., 2012).. Specifically, the x-axis is concerned with "Transformation management intensity," which examines the managerial aspects and leadership capabilities that have an impact on a company's digital transformation. For example, the vision, governance, engagement, and IT-business relationships are all important considerations. It is difficult to achieve a high level of transformation management intensity without a solid plan, in which a well-structured plan has been developed, as well as management support. This is especially true when businesses refrain from investing in new and innovative opportunities.
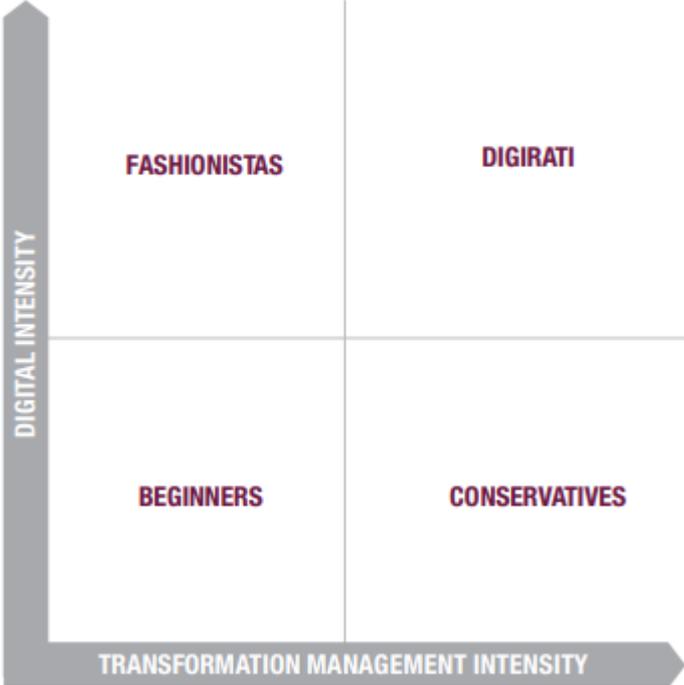
Figure 2.2. Capgemini and the MIT Center for Digital Business (2012) developed a model of digital maturity referred to as the Digital Mastery Scale.

Firms that score poorly on both the digital intensity and transformation intensity scales fall into the first category on the chart's left side. It was classified as a Beginners level of difficulty by Ashwell (2017) and Westerman et al. (2017). Companies in this category are well-known for performing poorly when it comes to utilising digital tools and making the best use of available digital resources. Furthermore, some businesses lack the necessary work culture to capitalise on the opportunities presented by digitalization. This is something that is

more frequently discovered when researching SMEs. The underlying cause is almost always a lack of resources, which prevents them from utilising the digital capabilities that are available to them. However, there is a lack of understanding about how digital capabilities can actually reduce future costs and how newly acquired digital capabilities can provide a small or medium-sized enterprise with a competitive advantage over its competitors. More well-known corporations have either not invested in additional digital competency or have done so cautiously.

Firms in the Fashionista category are adept at utilising digital tools and exhibit a high degree of digital intensity, in which only digital tools provide added value and no strategic plan is in place (Ashwell., 2017), Westerman et al., 2017). As a result of the digital transformation, these companies want to improve their digital capabilities and maturity. However, the lack of well-developed digital strategies and visions, as well as poor communication across the organisation, indicates that the Transformation Management Intensity is low.

Conservative businesses have clearly defined digital strategies and visions, and as a result, they place a strong emphasis on developing the appropriate digital culture. Companies in this category are high-intensity and have management that understands the importance of leveraging available digital capabilities. However, they lack the digital tools required to achieve their strategic goals, demonstrating a low level of digital intensity. A solution to this problem can be achieved by either forming an internal team solely responsible for developing the company's digital capability or hiring a consultant.

In order to be referred to as Digirati, also known as a Digital Master, a company must score highly on both Digital Intensity and Transformation Management Intensity (Ashwell (2017) and Westerman et al., 2017). This is also displayed as digitally transformed in similar frameworks (2011). These firms have been successful in establishing strong synergies between their strategies, visions, digital investments, and digital capabilities, among other things. Finally, these businesses are thought to be technologically advanced. However, there has been much debate about when someone is considered digitally mature. On the one hand, some argue that because the field is changing so quickly, firms will never be completely

digitally mature. According to BDO, however, this is not always the case. It is sufficient to consider them digitally mature by adjusting the digitally mature scale in accordance with what they are capable of achieving and based on the current standard digital capabilities.

This framework was previously used by Westerman et al. (2012), who investigated approximately 400 significant companies. According to a 2012 study, the majority of larger firms had already begun taking steps to improve their digital maturity the previous year. Their use of social media, mobile technology, and analytics tools, as well as changes to internal procedures and business models, allowed them to adapt and become more flexible as they transitioned to digitalization. When the researchers examined the data, they discovered that there were only a few firms that were digitally mature, that is, those that were truly positioned to reap the actual economic benefits of digitalisation..

2.3 The four dimensions of Digital Maturity: Challenges and solutions

Kane et al (2015) conducted a study of 4,800 businesses to determine how digital technologies are altering their approach to conducting business. The findings demonstrate that new technology is not the driving force behind the digital transformation, but rather management problems such as competence, strategy, and culture. For economic advantages to be realised via digitalisation, the researchers think that digital technology must be integrated among workers as well as into the different processes and activities of the organisation. (Kane, Androile, 2017)

Given that management issues were discovered to be the driving force behind digital transformation, four dimensions of digital maturity have been identified through previous research and will be the focus of this research. Among these are *vision and strategy; culture; leadership; and availability*; as well as competence and accessibility. Those are the concepts that most publishers believe are essential for them to grasp in order to be considered digitally mature. The ones that digital companies are particularly adept at and that have been frequently mentioned in previous research. This is the reason why I have selected these dimensions as the primary ones that I will be working with. According to the findings of the researchers, Figure 1 will provide an overview of the various dimensions, with previous literature to the right of the figure. In addition, I will be analysing the various dimensions so that it is clear what significance they have in this thesis as a whole.

Dimensions	Solutions	Challenges
Vision & Strategy (Andriole (2017), Baradwaj et al. (2013), Bouée (2015), Bughin et al. (2017), Catlin et al. (2015), Cianni & Steckler (2017), Davison & Ou (2017), Duffy (2001), Fitzgerald et al. (2013),	- Expanding the integration of digital and business strategies - Developing sound long-term strategies that span five years or more	- Failure to develop an integrated digital strategy - There is no understanding of where in the organisation digital maturity is required.
Culture Bughin et al. (2017) (Westerman, Calmejane, Bonnet, & McAfee, 2011), Bouée, (2015), Catlin et al. (2015), Fitzgerald et al. (2013), Kane et al. (2017), McLaugin (2017), Snow et al. (2017) och Westerman et al. (2011)	- Be more innovative when embarking on the digital transformation journey	- Hierarchical structure in the firm which decreases digital maturity - Balance between responsibility and risk
Leadership Ashwell (2017), Bughin & Catlin (2017), Bouée (2015), Catlin et al. (2015), Cianni & Steckler (2017), Fitzgerald et al. (2013), Kane et al. (2015), Kane et al. (2017),	- Demonstrate engagement in addition to investing in the company's digital assets. - Pay attention to employee feedback and cultivate a culture of trial and error.	- Limited involvement on the part of the decision-makers who initiate digital transformation. - There is a lack of understanding of digital trends that can be beneficial to the

		firm's implementation.
Competence & Availability Bughin et al. (2017), Bughin & Catlin (2015), Bouée (2015), Catlin et al. (2015), Fitzgerald et al. (2013), McLaugin (2017), Westerman et al. (2011) och Westerman et al. (2012)	- Incorporate data-driven decisions based on digital tools, as well as a greater emphasis on automated procedures. - Recruiting and developing digital talent within the organisation	- A scarcity of resources and expertise to further advance digital maturity; and

Figure 2. Four categories of digital mature

2.2.1 Vision & Strategy

Organizational leaders must develop and communicate a clear and enticing vision for the entire organisation, which the employees can follow (Andriole (2017), Fitzgerald et al. (2013)). According to the findings of Kane et al. (2017), Vision & Strategy was the dimension that showed the greatest differences between firms that were highly digitalized and those that were less digitalized. The inclusion of a digital strategy in an organization's plans, according to (Bughin et al., , 2017; Scanlan, Catlin and Willmott, 2015; Duffy, 2001; Ross et al., , 2017), is extremely important. As Kane (2017) points out, the most significant challenges are how to align digital strategy with the overall strategy of the different firms, which is also supported by this research. Moreover, Kane et al. (2017) discovered in their research that organisations that are digitally matured also tend to have longer-term strategies.

Catlin et al,. (2015) assert that by integrating a well-thought-out vision with an organization's overall strategy, organisations' will, as a result, flow better into better internal cooperation. According to Kane et al. (2017), the effects of a digital strategy will be the use of digitalisation to solve the problems associated with digital capabilities for the organisation. Additionally, it leads to a better understanding of the existing processes that are taking place within the organisation, as well as how the various digital capabilities can be used to improve the processes that are currently in place. Bouee (2015) and Kane et al., (2017), on the other

hand, emphasise the importance of refraining from implementing what is considered to be "in fashion." Instead, the emphasis should be on developing a digital strategy that demonstrates how digital tools can improve the work and achieve the goals set, as well as how digitalisation can help to differentiate the organisation from competitors.

2.2.2 Culture

Having the appropriate digital tools is not the only factor that contributes to increasing digital maturity. Building a culture that is open to digitalisation and allows for the expression of creativity has a significant impact on the achievement of digital maturity. Firms with a less hierarchical approach and fewer difficulties in getting cases through to higher-level executives should take note of these findings in particular. Following the advice of Fitzgerald et al., (2013), having the right mindset regarding technical acceptance is critical in the digital transformation process. According to the same author (Kane et al., 2017), employees must be open to change and actively participate in the digital transformation that is taking place in order to be successful in the digital transformation.

(Bughin et al. 2017; Catlin et al. 2015; Fitzegerald et al. 2013) have stated that firms who wish to be successful in adapting to the various digital capabilities available must adopt a "try and fail" culture in order to achieve their goals. Not everything has to be a success in order for this to happen. The willingness to try, on the other hand, is critical. Having a fear of failing is something that many businesses struggle to overcome. The fact that getting past this fear and achieving digital maturity is precisely what makes this dimension so important is a testament to this. Kane et al., (2017). "Skunk-works," which is innovative work that takes place in addition to the work that needs to be done to keep the organisation running, have been investigated by Bughin et al. (2017), Bouee (2015), and Fitzgerald, all of whom have come to the conclusion that such work is a good way of encouraging creativity. However, not all small and medium-sized enterprises (SMEs) have the time or resources to accommodate the additional workload on top of the actual work that needs to be done. If budget constraints aren't an issue, consulting firms can help small and medium-sized enterprises (SMEs) gain digital capability without the need to embark on a series of pilot projects and "skunk-works." According to them, it is critical to have strong leadership in order to contribute to even greater levels of digitalization engagement in the future.

2.2.3 leadership

A firm's vision and overall strategy are the starting point for digital transformation, according to Fitzgerald et al. (2013). The vision and overall strategy are most heavily influenced by the organization's top executives. Because of this, the authors believe that communication and vision must be transparent within a small group of people within an organisation, with an emphasis on having strategies and visions reach out to everyone within the organisation. Digital maturity can be perceived as being too complicated by some organisations. Both Fitzgerald et al. (2013) and Catlin (2017), on the other hand, believe that the leadership dimension is critical in digital transformation and that it should be prioritised.

Leadership abilities to drive change are widely acknowledged to be critical during a digital transformation project (Andervin & Jannson, 2014). (2016). In small and medium-sized enterprises (SMEs), where the CEO and other employees may have additional responsibilities and roles in addition to those that are typical for their industry, this is a problem that is particularly prevalent. Having a team with prior digitalisation experience on hand can help to pave the way for a digital transformation to take place. There is something for everyone, says Ashwell, whether it is about the firm's strategy, its processes, or its operational practises (2017). However, according to Ashwell (2017) and Snow et al. (2017), becoming more digitally mature also entails including co-workers in the process of becoming more digitally mature Leaders who actively listen to their co-workers' feedback while digitalising and allowing them to experiment with digital tools is essentially what leaders must engage in with their coworkers during the digitalisation process, and this is what they must do with their co-workers.

According to Westerman et al. (2014), the most common reason for digital transformation failure is that leaders fail to get all of their employees on board with the change. To be successful in digital transformation, you must be open to new ideas. The necessity and benefit must be recognised by the entire organisation. All parties must come to an agreement on the course of development. • Define and communicate a transformational digital vision • Activate employees • Maintain digital control (Westerman et al., 2014).

McAfee (2012), Bonnet, Tannoy, and Ferraris are all examples of companies that have formed sub-groups under the leadership dimension. These are the following areas: the ability to lead, engagement, the ability to build a relationship between IT and the organisation, and the ability to shape the future of the organisation: Finding a way to harmonise these subgroups will result in a higher level of digital maturity across the organisation.

2.2.4 Competence & Availability

Organizational change management and flexibility are essential, according to (Kane et al. 2017; David & Ou and Snow et al. 2017), and having the ability to adapt to today's constantly changing digital environment is essential for having the internal capability of organisational change management and flexibility. Having the ability to implement innovations quickly and efficiently in response to market conditions gives businesses a competitive advantage. Firms, on the other hand, according to Svahn et al. (2017), must constantly rethink how their organisation operates and how it has been organised.

In order to remain digitally mature, the company must have excellent talent who is dedicated to developing programmes with digital skills in mind. According to Fitzgerald et al., it is also important to hire people who have the appropriate digital capabilities for the firm's future goals (2013). This statement is also in accordance with Kane et al. (2017), who believe that it is critical to hire employees who have the appropriate digital skills. Additionally, it asserts that denying employees the opportunity to advance their digital skills and knowledge increases the likelihood that they will leave their current jobs for positions at other companies that place a higher value on digitalization.

2.4 Digital Maturity among SMEs

North et al. claim that SMEs are essential to the national economy (2019). SMEs in Europe are also heavily affected by the impacts of digitalization, which have a greater effect on smaller and medium-sized companies. Because of digitalization, many of these companies now have new opportunities to participate in the global economy, but many are unable to keep up, and are lagging behind in the digital transition (North, Aramburu, & Oswaldo, 2019; OECD, 2016).

A complete picture of what digitalization means for the firm is typically lacking in SMEs, who frequently experiment with new solutions, study their competitors, and progress, for the most part, forward (North et al.,2019). Small and medium-sized enterprises (SMEs) must engage with both internal and external resources in order to change fast. As a result, it is critical for SMEs with external help in the area of digital platforms to stay up with the pace of digital transformation. Aside from that, small and medium-sized businesses think that it is critical to study and learn from other businesses of a similar size as they go down the path to digitization. In order for small and medium-sized businesses to achieve more digitization, the most significant driving forces are internal efficiency, cost reductions, improved cooperation,

and the development of new goods and service offers (North et al., 2019; European Commission, 2020).

As Blatz et al., (2018) note out, one key element of many small and medium-sized businesses is that they come from quite diverse places when it comes to where they started in the digital transition. It is not true that every SME starts from the same place and has the same resources and abilities when compared to larger corporations and when compared to one another. According to North et al. (2019), small and medium-sized companies (SMEs) are utilising fast impact strategies to accelerate their digitalization. They frequently make use of internet of things technology, which is technology that is connected to the internet, in order to offer strategically better customer communication and information management to their customers and clients (Harrigan, Ramsey, & Ibbotson, 2011).

The utilisation of digital technology varies considerably based on the size of the organisations as well as their location Small and medium-sized businesses employ digital technology in a manner distinct from that of large corporations. On the one hand, larger companies tend to have more sophisticated technology, such as data analytics, larger ERP systems to handle larger and more broad operations, while on the other hand, the smaller gaps tend to be online interaction, such as the use of social media, interaction with the government, and electronic invoicing (OECD (2021))

3 Research Methodology

This chapter will present the thesis purpose, research approach, research purpose, research strategy, methods for data gathering and analysis, research quality, weaknesses, and research limitations.

3.1 Research approach

Most of the prior research on digital maturity has relied on semi-structured interviews, which have been utilised in the majority of the studies (Higgs and Rowland, 2005; Allen et al., 2007; Price and Whiteley, 2014). Since the purpose of this study is to examine digitally mature businesses, the problems and variables that may be used to give a solution to the challenges that are encountered by certain Norwegian SMEs are examined. Due to the nature of this research, the study will primarily employ an inductive approach. A source for drawing conclusions from the empirical data collected, which may eventually lead to the development of theories that can be applied to other firms in other sectors, will be provided by the data acquired. An inductive approach is one in which the fundamental problem is utilised as a

starting point for looking for empirical evidence, which is then further comprehended with the assistance of theories. (Collis & Hussey, 2014).

As with any research project, it is critical to get an understanding of the current knowledge of the subject and to recognise what has previously been done by others. As a result, the study must take into consideration the most recent accessible research, which is typically performed by consulting firms. Because of their critical role in the subject, it is also important to have an understanding of the modern technologies available in terms of how firms are perceived to be digitally mature and the stages that these firms must go through in a transformation involving digitisation, digitalisation, and digital transformation, as well as how they are perceived to be digitally mature. The information acquired from the literature study will be utilised as a starting point for interviews with representatives from a variety of firms in the Norwegian small and medium-sized enterprise industry.

Figure 3: The overall approach to developing research questions is described here.

An evaluation as well as interviews were performed with seniors, and it was discovered that an atmosphere in which they could freely express themselves was preferred to the other options. It is intended that the semi-structured interviews that will be performed as part of this study would be more like a dialogue, in which participants can openly disclose any difficulties that they have encountered or are currently experiencing.

Following the completion of the semi structured interviews, the respondents were invited to complete a self-assessment that would aid in the mapping out of their digital maturity. Sub-chapter 3.3 will provide further in-depth explanations of these concepts.

Last but not least, 30 businesses were contacted in order to participate in the interview. Due to time constraints, interviews were conducted with respondents from six different Norwegian firms. In addition, if more time had been allocated for conducting research, the likelihood of collecting and analysing a larger set of data would have increased, allowing for broader, deeper, and more valuable insights into the change initiatives and efforts that have arisen as a result of the organization's digitalization efforts to be gained. The objective was to send out the self-assessment in advance so that only the businesses that fell into the category of being digitally mature would be invited to participate in the interview. However, due to the fact that the questionnaire was not completely completed, the interviews were conducted first, followed by the self-assessment, and only those who were classified as digital mature were utilised to do additional research for this thesis.

3.3 The selection and the conduct of the research study

In order to answer the research questions, two types of data collection methods were used: qualitative and quantitative data collection. The benefit of combining data collection methods is that they can be used to supplement each other and provide a more complete picture. The first data collection procedure was carried out in the form of a semi-structured interview. A self-assessment questionnaire was then administered, with the results being used to separate the digital masters from the other categories and proceed to use the firms that had been identified as digital masters.

The respondents were selected with the assistance of BDO Norway. A selective sample, on the other hand, was used, in which a group of firms were chosen based on the fact that they would be the most appropriate to answer the research questions. When using a selective sample, it can be more straightforward to identify the candidates or businesses that will be most helpful in answering the research questions (David & Sutton, 2011). Specifically, firms that were more digitally mature than their competitors, as evidenced by the self-assessment, which will be discussed in greater depth later on as well. However, access to and knowledge of the company were severely restricted, and as a result, the selection process was heavily influenced by who happened to be available at the time of selection. This could have an impact on the validity of the evidence. Furthermore, the number of respondents is extremely limited. Although this is unfortunate, the findings should still shed some light on the challenges and factors that SMEs in Norway are dealing with.

I chose Kvale's (1997) detailed method of conducting in-depth interviews, which consists of seven stages, because it is a widely accepted tool for understanding the practical aspects of interviews. These seven stages cover the entire interview process, from start to finish. According to Kvale (1997), the benefit of following his guide is that the researcher gains a more structured and systematic approach to conducting an interview. The seven dimensions are as follows:

Stage 1. **Thematizing**

At this stage, it is critical to understand the purpose of the interviews, how the interviews will approach the topic under investigation, and how the topic will be interpreted. Once this is completed, the next step is to determine the critical information that will be gathered during the in-depth interview process. Prior to the month I began writing my thesis, I planned for several months. A project description was created and prepared over the course of several months. During the preparation period, I was able to gain a theoretical foundation by reading various current digitalisation literature. This enabled me to gain even more theoretical knowledge than I had previously obtained through my master's degree. I had little prior experience with qualitative interviews, so it was critical for this thesis that I gain a better understanding of the various aspects of interviewing people. I learned things about myself, such as my role as an interviewer, my attitude during the interviews, and how I pursued follow-up questions. In the weeks leading up to the start of the thesis, I scheduled a mock interview with my family to get feedback on my interview skills. In addition, conducting a mock interview gave me ideas for what interviews I wanted to conduct and how I would analyse and interpret the responses I received.

The interviews will be semi-structured and conducted in Norwegian, with the participants speaking only Norwegian. The interviews consist of 12 pre-defined questions that cover all four dimensions of the situation. The advantage of these types of interviews is that there is a greater chance of receiving more insight because they are more in-depth, and a better understanding of digitalisation and digital maturity. I'm writing about David and Sutto at the moment (2011). Furthermore, because this type of research necessitated an in-depth understanding of the respective organisation that the person represented, they were deemed suitable candidates for the interview stage of the process. This can be accomplished through interviews in which the person being interviewed comprehends and reflects on the various processes, the various working methods employed, and their attitude toward this conception

(Bryman & Bell, 2011). It is also considered effective due to the degree of adaptability that this technique affords the user. The ability to ask follow-up questions allows me to gain additional insight into a specific event or to explore more interesting topics. When conducting surveys or observational studies, it is impossible to have all of the information (Bryman & Bell, 2011). The information gathered from these interviews will serve as the foundation for this thesis, as it will be used to answer the research questions posed in the introduction.

Stage 2. **Designing**

An interview guide should be created after a thorough understanding of the research topic. Which includes the key topics and questions that will be used. An important aspect is gathering the right relevant information and knowledge about the research topic. As a result, you will be less likely to ask interviewees questions that are unrelated to the research study.

It was decided to create an interview guide. Appendix A contains the interview guide. I decided to send the interview questions ahead of time. As a result, they will be better prepared for the interview. This also entails informing the participants about the length of the interviews (Yin, 2011). The respondents were first contacted via email with a brief description of my background, the topic of the thesis, and how they would benefit from participating in an interview. Furthermore, the email contained an invitation to participate in a 30-to 60-minute interview.

In most cases, conducting face-to-face interviews with SME executives is the most beneficial method of gaining an understanding of the market. In light of the COVID-19 and the restrictions that followed, I chose to conduct the interviews through either the video call service Zoom or the team collaboration software Teams, depending on which the firm was most familiar with at the time. As a result of not being able to conduct face-to-face interviews, the interviews have a less personal touch. However, conducting the interviews digitally allows me to conduct more in-depth interviews in a shorter period of time than I would otherwise be able to. When compared to phone interviews, virtual video call interviews are also preferred because they allow me to see how the people who are being interviewed responded to my questions and because they make the interviews a little friendlier.

All of the interviewers gave their consent for the video call to be recorded, and the recordings were later used to transcribe the interviews. This ensured that the respondents' responses were not interpreted and that the transcriptions were of high quality, thanks to the involvement of a representative from BDO. Additionally, to be able to use the interviews for research and

analysis (Kvale & Brinkmann, 2015). Table X at the end of this section contains a summary of the interviews that were conducted with participants.

Stage 3. **Interviewing**

During the interviews, the interview guide was used to help the interviewees better understand the issues being discussed. The vast majority of the interviews took place in late April and early May of 2021, according to the results. The most important lesson learned from the interviews was the importance of providing a thorough introduction and explaining the purpose of this research study to the participants. In addition, obtain permission to audio record the interview sessions during the process.

Stage 4. **Transcribing**

The practise of writing down the questions and listening to the audio recording is fairly common at this point. This is to take a more in-depth look at the responses provided by the participants and to write them down. One reason for this is that it is not always possible to devote sufficient time to writing detailed responses to the participants' responses. My approach to this stage was to transcribe the interviews on the same day they were conducted in order to make it easier for me to identify the questions I wanted to go over in greater depth later on in the process.

Stage 5. **Analysing**

When you get to this stage, you'll be able to compare the answers to the research topic. One of the most important aspects of this stage is determining which analytical methods will be used after the interview process has been completed. The answers to these questions are used in this research study to highlight and discuss the challenges and barriers that small and medium-sized businesses (SMEs) face. Detailed discussion of this topic is provided in Chapter 5.

Stage 6. **Verifying**

According to Kvale (1997), determining the credibility of the information gathered from the participants is essential before proceeding. Generality, dependability, and validity are all considered in this assessment. This is discussed in greater detail in Section 3.7 of this chapter.

Stage 7. **Reporting**

The results of the study and the methods employed must be communicated in a manner compatible with scientific standards, taking into consideration the ethical implications of the interview session, and provides a detailed explanation of how the research could be applied to other future research studies, according to Kvale (1997).

In order to ensure that the interviewees were aware of what they were going through, a letter was sent out to them explaining the purpose of the study as well as how the information collected would be used to benefit the organisation. If they so desired, the participants were also informed that they could withdraw their consent at any time, even after the interview sessions had begun. The individuals who took part in the interviews were all given pseudonyms in order to protect their identities.

Table 3. Description of the selected respondents

Participant A	Sector	**Pest Control Industry**
	Job vacancy	Senior
	Length	35 minutes

Participant B	Sector	**Fitness Industry**
	Job vacancy	CEO
	Length	38 minutes

Participant C	Sector	**Software system developer industry**
	Job vacancy	Senior
	Length	43 minutes

Participant	Sector	**Mobile app development industry**
	Job vacancy	Senior
D	*Length*	59 minutes

Participant	Sector	**Recruitment Industry**
	Job vacancy	Senior
E	*Length*	39 minutes

Participant	Sector	**Insurance Industry**
	Job vacancy	CEO
F	*Length*	35 minutes

3.3.2 Survey

In order to better understand and generate more information about the different firms' digital maturity as a result of the interviews in a broader context, a survey was conducted. The survey was inspired by McAfee, Bonnet, and Westerman's book "Leading Digital," and the maturity model developed by Westerman et al. (2012) and the Capgemini Research Institute, digital maturity model found in that book were used in this study. Whereas the maturity model used in this study was chosen because it has been used in research in recent years to evaluate digital maturity among firms in various industries. Furthermore, this maturity model has the advantage of incorporating elements from other maturity models to make it stand out even more, which I believe makes this maturity model useful to incorporate into this thesis.

Having questions which I believed were of the highest quality in terms of helping me achieve the aims of this study when approaching the firms used in this study, as Capgemini Research Institute (2019) states that this maturity model can be especially useful for measuring digital maturity.

In order to maximise participation, this research study decided to distribute the survey among the six companies that participated in the interview session. Another option that was discussed was sending the survey to approximately 200-300 local businesses. However, it is possible that as a result of this strategy, the response rate will be low (Easterby-Smith et al., 2015). This is primarily due to the fact that, in contrast to those who were interviewed and then asked to complete a survey, participants may not feel obligated to respond to the survey, but they may also recognise the importance of participating. Furthermore, I may not have complete control over who responded to the surveys, how honest they were, and how much effort they put into answering the surveys, all of which could be damaging to my reputation.

Surveys can be distributed in a variety of ways, including on paper, via interviews, or over the phone, to name a few. (Easterby-Smith et al., 2015). The survey was carried out using Google Form, and the results were distributed via a link that directed survey respondents to the Google Form's landing page. There are no incentive measures available when creating a survey using the Google Form. To compensate, I included a statement of consent before the participants began answering the questions.

The early stages of developing the survey questions focused on making them as simple to understand as possible while also being detailed enough to be understood, with easy-to-answer options, which Halvorsen (1994) highlights as a benefit in a survey.

Because of the unclear questions and terms used, I hoped that this would result in minimal time spent answering the questions, but also in minimal mistakes being made as a result of this topics high conceptual level which could impact the survey result.

Seeking assistance and advice from my supervisor and a representative from BDO International was one method of ensuring clarity and appropriate formulation of the survey and working with the data collected. He and his colleague were both experts in the field of quantitative surveys.

3.4 How the survey was done

The participants were asked to answer twenty questions, which were divided into four categories. Vision and strategy, culture, leadership, competence, and availability are all critical factors to consider. These questions probed the dimensions' various aspects in depth.

3.5 Ethics, validity and reliability

In this master thesis, it was precisely the responses of the participants that served as the basis for the collection of empirical data for the study. As Jacobsen (2017) points out, it might be difficult not to jeopardize the credibility of a survey with individuals who are aware that they are being researched and interviewed, whereas there is a tendency to behave in ways that are different from how they would have behaved in a "normal" setting. These ethical considerations were addressed before data collection in order to safeguard the interviewees privacy while also preventing informants from responding or behaving in a different manner during the interviews. If the answers had not been anonymized, then the rehabilitee would have increased had they not been anonymised. However, people are more truthful in their responses when they are aware that their identities are being protected, which is why collecting quality data in this manner may prove to be an effective strategy.

Prior to each interview, informed permission was obtained, which means that the respondent freely agreed to participate and was aware of the risks and advantages of doing so (Jacobsen, 2017). The need to address issues relating to the right to privacy was also underscored. On the one hand, the interviews would not cover anything other than the subject matter of the study, which was crucial. Furthermore, data identifying people and corporations that were not relevant to the study was removed. As a result, the findings were provided with a minimal degree of detail that was related to the respondent in order to avoid the respondent's identity being revealed.

Because there was room for subjective statements, there was some uncertainty about whether or not the participants interpreted the questions in the same way. This could have resulted in participants with varying levels of digital maturity rating themselves on an equal footing, despite the fact that they are not. As a result, the questions have been rewritten in a way that anyone can understand them now. Also, give participants the opportunity to point out if any of the questions were confusing to begin with. The questions were developed with the assumption that the participants in this test possess a high level of knowledge about their organisation. However, it is possible that not every participant had a complete understanding of the capabilities of their respective organisations. Because of this, a more comprehensive understanding of each organization's various capabilities would have allowed the self-assessment data collected to reflect more on the firm's capabilities rather than what the surveyed participants perceived their own capabilities to reflect more on the firm's capabilities.

4.0 Results/Data

This chapter presents the qualitative and quantitative data that was gathered, and it serves as the foundation for the discussion that will take place in the following section. Detailing the findings of the self-assessment, section 4.1 will investigate the interviewees' perspectives on their challenges and factors on their digital maturity, thereby answering the research questions Q2 and Q3. Section 4.2 will present the findings of the self-assessment that will identify the participants' perceived digital maturity (as-is) level, thereby attempting to answer the research question Q1. The research provides valuable insights into the digital transformation processes of the companies that participated in the study.

4.1 Results of qualitative data: Interviews

In order to present the interviews in this chapter, a logical structure was used to organise the questions. To begin, a brief overview of the industry in which the case firm operates is provided to the reader. Second, the digital tools and technologies used by the firm, as well as the result of these operations, are presented in order to illustrate the benefits that each company has earned as a result of the use of these capabilities. And last but not least, the company's perspective on digitization is presented. Afterwards, each example is described in further detail about its future goals, vision, objectives, and investment decisions. Finally, the future problems as identified by each company are discussed.

Firm A: firm's profile

Participant A is a pest control company that specialises in extermination. They are well-known throughout the world for their expertise, and they have a number of subsidiaries, one of which is based in Norway. With 300 employees, the company in Norway slightly exceeds the typical number of employees in a small and medium-sized enterprise (SME). It is the parent company's goal to maintain a keen interest in new technology that will benefit the customer and improve the service they provide to them. When examining the key drivers of digital maturity in firm 1, it becomes clear that both external and internal factors play a critical role in assisting them in achieving greater levels of digital maturity. Major customers, on the one hand, who have high expectations and demands of the company, and internal factors, which play a critical role in allowing the companies themselves to penetrate new customer segments, are two of the most important external factors for a company to consider.

The firm itself is market-leading within the systems they apply but acknowledges that the industry could use further digital maturity, which might explain why external factors such as customer base and size play a role in forcing this company to think ahead of the other firms.

The senior employees acknowledge that the firm has some areas they could improve, but they are aware of what needs to be done to improve their digital maturity, which is evident in terms of the plans they have. One perspective on this is that digitalization, according to the firm, is an opportunity with the right efforts and investments. These investments, however, are motivated by client demand and a change in the customer journey by implementing better digital technologies. They see a significant benefit in a more automated approach that reduces the requirement for manual orders to be reviewed and supplemented with manual orders. They also feel there is a significant possibility for efficiency, although no statistics have been established.

As a result, they see enormous promise in IoT devices and other emerging technology applications in customer service. One example is allowing consumers to buy services online themselves rather than having to call customer service. They want to automate the procedure to the point where it enhances client happiness. For example, if a client places an order, they should be able to view the estimated delivery time ahead of time.

Internal drivers, particularly those related to the evolving ERP system, play an important role in the firm's digital maturation. Employees who use it on a daily basis see such digital transformation initiatives and changes as one of the backbones of the daily operation.

"Changes, especially to the digital features, are something that employees enjoy and that they look forward to having implemented in their way of working" (Senior Employee, Participant A)

"The industry as a whole has a long way to go in terms of digital technologies; however, I believe we are ahead in some aspects" (Senior, Participant A)

Firm B: Firm's profile

Participant B is a fitness centre that operates a number of fitness centres throughout Norway. Since their inception, their top priority has been to innovate the fitness industry by providing a value chain where the management of members and customers takes place over the Internet rather than through a receptionist. They have become increasingly more focused on empowering customers to do as much as possible on their own, and they have made greater use of digital technology to accomplish this goal. According to the CEO, this way of thinking has attracted a large number of people from the new market, as well as people who have never worked out at a fitness centre in their lives before. The goal is to keep information technology at the centre of everything they do and to combine it with their overall strategy of personalization. Customers and business strategies have benefited so far from the data collected, which includes information on demography and other demographics. Firm B's key factors for digital transformation are primarily found in the external environment, which is referred to as the external environment.

"What we offer is a whole digital value chain prior to the physical training. How can we better adapt to give the customers the freedom and the great service we want them to experience. However, the end-product is still analogue which is why it is important to look into that aspect as well" (CEO, Participant B)

Firm C: Firm's profile

Participant C is a senior from a company that specialises in the development of mobile applications, which can be found in the mobile solutions sector. The company is well-known on the Norwegian market for the products it manufactures and develops. For many years, they have been in this industry and have seen an increase in competition from other firms that have established themselves in the marketplace. The key drivers of digital transformation for participants C's companies are largely derived from the external environment, according to the report. As more companies offer app development services to their customers, increased competition and increased expectations from customers for high-quality mobile solutions have increased the importance of external factors.

"We are a technology company and quite tech savvy. Our segment is app-development, which is our most important brand out. This is the segment we are trying to be best at in Scandinavia". (Senior, Participant C)

Digital technology is at the heart of the company's operations. They are distinct from firms A and B in that they are in the business of technology. In addition, the CEO has a long and successful career as a programmer who is particularly interested in new digital technologies. According to the senior, Firm C, on the other hand, has always made use of digital technology, even before it became widely accepted in the current market. They were early adopters of digital technology and have continued to do so with a variety of other new digital technologies. An internal driver for digitalisation is their willingness to be open to new digital technology that can solve the limitations of existing technology and to put those technologies into practise within the organisation.

Firm D: firm's profile

Participant D is a senior from a company which specializes in developing system solutions which is used by a number of housing construction companies. A housing construction company, in general are the ones that build and facilitates the apartments and then organized into housing association what is typically translated into *Borettslag* in Norwegian. Since the housing construction delivers consulting within advisory, courses which the board member from the different housing association can attend to and being a support towards the board in terms of setting up maintenance. These tasks require a good digital solution which makes these tasks easier to perform which is what Firm D is responsible for.

Firm D encourages digitally minded employees and has focused on developing their digital maturity. Having the right digital skills is valued which is why they have focused on recruiting the right employees the last couple of years which has contributed to the digital maturity growth they have experiences over the years.

Firm E: Case firm's profile

Participant E is a senior executive from a Norwegian recruitment firm that is a subsidiary of a larger international recruitment firm. In addition to providing staffing and recruiting services, it focuses on providing people who are experts in a particular field, as well as executives who can serve as both international and local candidates for Norwegian businesses. The positions are primarily in the fields of Finance, marketing and sales, information technology and Digital, and human resource management. The primary difference between this company and other companies is that it focuses its recruiting services on hiring experts and executives rather than other types of employees.

Firm F: firm's profile

Participant F is the CEO of an insurance firm that is a subsidiary of a larger Norwegian insurance firm. Company F has an IT system for handling insurance cases, but it strictly adheres to the parent company's parameters. In terms of the firm's overall digitalization, participant F explained that they do not have any internal IT-resources or developments; instead, it is the parent company that introduces new technology, which is implemented as they deem necessary.

4.2.4 Firms: Challenges

Obstacles to overcome with the legacy system

Respondents A, C, E, and D all agreed that a challenge they faced in their everyday work life was dealing with old systems, also known as legacy systems, which were in place at the time. These companies can be divided into two categories based on how they are being impacted by this. Either the old legacy systems contribute to a slower way of working by having too many systems that do not really communicate with one another, which in turn results in less efficiency, or the old legacy systems contribute to a higher chance of not getting the right numbers or having to spend a lot of time making sure that the number the legacy systems show is correct, which in turn results in less efficiency, or the old legacy systems contribute to a higher chance of not getting the right numbers or having to spend a lot of time making sure that the number is in fact correct.

Respondent B expressed that to counter this challenge their firm is working on an IT roadmap that will transform the firm within the next three to five years. These involve looking into their core processors, ERP-system, CRM, field force, and other tools to help them in their digital journey towards better maturity. These are being looked into because their system is outdated, and they want higher efficiency, but acknowledges that one significant change will be too time-consuming, which may disrupt and result in lesser engagement over time.

As stated by respondent E, their company has experimented with a variety of digital technologies; however, implementing newer systems that could automate some of the tasks currently performed internally would free up more time while also making the company less susceptible to human error, which would be beneficial. Respondent E goes on to say that this would enable the company to move to the next stage in terms of digitizing a portion of their sales cycle. As things stand today, a customer must call in to inform an employee of the type

of service they would like to receive. After that, the employee and the employer agree on a time for the service, and the process is complete. In response to this concern, the senior stated,

"We understand our customers' needs; however, it is about moving this to a digital platform in which the process of getting rid of pest is easy for the customer to request, in which the customer can monitor the status of the process digitally, and in which at the same time resources are freed up for our company to manage the pest control." (Senior, Participant E.)

Among the reasons for these modifications is that the company wants new technologies to be integrated into its core business operations. It was made clear by the senior executive that the process was being driven by an increase in customer satisfaction because the new solutions allow both the firm and the client to save time and resources because the amount of time spent in back-and-forth exchanges through phone calls and emails would be limited in comparison to how the process is streamlined today.

Organizing and prioritizing daily operations

According to the key findings gleaned from the interviews, five out of six respondents stated that a lack of resources, specifically in the areas of time, interest and expertise, was one of the primary reasons for their failure to become more technologically adept than would otherwise be the case. Beyond the financial implications of implementing digital technology, the fact that most businesses are small makes it difficult to find the time, resources, and access to necessary infrastructure for implementing new digital projects. Respondents D and E believed that the primary reason for this is that it diverts resources away from everyday operations, resulting in the company being unable to implement digital changes at the pace with which they would have liked to be able to do so on top of everything else they are responsible for, according to the survey results. Respondent B stated that the company does not actually have any employees who are proficient in information technology. This contributes to increased implementation time, which ultimately has the effect of creating the perception that the daily operations of the company are being disrupted.

Respondent A and Fgoes on to emphasize the importance of not performing a complete overhaul of the company's digital maturity at once, but rather that doing so over time and with ongoing projects is the key to achieving a satisfactory level of digital maturity in the long run. Respondent A gave the example of how, in their company's digital transformation, projects with the goal of increasing digital maturity had been running for more than two years, which

he thought was a good example. Additionally, they have projects that they intend to work on and would classify them as ongoing projects

Scarcity of expertise to oversee digitization initiatives.

A common theme that emerged from the interviews was the lack of IT competency among the employees of the various companies interviewed. This has been a problem, as it has resulted in little action on the digital development front within the companies themselves. According to respondent A, D, and C, one of the reasons for the lack of digital maturity was a lack of digitally minded employees who could drive the know-how among the employees in terms of discovering and implementing ways to increase the IT competency. Respondent B and E, on the other hand, believe that even though internal factors were lacking in terms of increasing digital maturity, having the financial muscle to bring in external skills in the form of consultants with the appropriate digital expertise to assist in implementing and driving the IT competency and know-how among employees was a way to mitigate the problem.

Respondent E stated that, on the one hand, this allows us to have the most up-to-date knowledge to use in our projects while also being confident that the projects will be successful on the other hand. On the other hand, a challenge that has been identified is the ability to formulate the appropriate needs for the company while also being able to obtain what they require from the consultants. Instead of not knowing exactly where they had a knowledge gap, they could pinpoint it to the consultants and have them fill the gap, as they had done previously. Much in the same way that Respondent B and F described it, but with the added emphasis that the disadvantages that were discussed as a result of the high independence of external skills were always being reliant on external help to push the digital maturity of the firm, less control over the costs associated with the projects, and a lack of follow-up after the projects have been implemented. An alternative approach to addressing the firm's digital requirements was discussed, which included developing or hiring new employees with the appropriate digital mindset in order to increase internal competency in-house.

Seeking workers who can devote time to improving the company's technology and capabilities

There were many different aspects of development challenges that were mentioned by respondents. Finding and removing employees from their current tasks, as well as ensuring that they have the time and patience to continue developing the company's technology and capabilities, were all cited as major challenges of digital transformation by all of the interview

participants. Their respective statements stated that the employee had been relieved of his or her rented work as well as the common tasks that they were performing for either their client or on-site at the corporation. Time constraints and costs associated with large projects, which can sometimes spiral out of control and necessitate the allocation of additional resources by the project's leaders, were the most significant challenges they had encountered thus far, according to both of them. The importance of having a strong work ethic and understanding, on the other hand, was stressed by respondent C in order to progress toward digital maturity, according to the findings in the interviews.

"Because we have limited resources to divert employees' attention away from their daily tasks, we encourage them to make positive changes after work hours, which many of them are doing and which is contributing significantly to the digital maturity growth that we are experiencing here in the company."

Table 4.2: Overview and summary of the challenges discovered put into the different dimensions

Dimensions	Challenges
Vision & Strategy	Lack of Resources
Organizational and Culture	Keeping traditional roles/principles
	Transformation not aligned with the firms' existing culture
	Various aspects of firm organisational culture contribute to a variety of challenges.
Leadership	Leaders lacking effective communication skills
Competence & Availability	Lack of digital talent and qualified workforce to lead digitization initiatives
	Inabillity to scale – Lack of time for the employees continue developing the

	company's technology and capabilities - Time-pressure and the costs
	Challenges with the legacy equipment - Manage old business systems

Increase the effectiveness of the customer journey

Participants A and C see digitalisation as a company that makes data-driven decisions based on information, while the rest of the participants wanted to emphasize that, overall, digitalisation is intended to improve the customer-focused experience by increasing the amount of time that companies spend focusing on their clients and customers. The focus on costumers was also shared by the other respondents where the main takeout was the emphasized the importance of managing customers, being available to customers, and providing excellent customer service, which includes responding to their questions quickly and accurately, as well as providing a high level of customer service to them.

Because they had invested in digital technology, informants B, E, and F believed they were miles ahead of the competition in their industry. By utilizing new tools and services developed with the assistance of cutting-edge technologies, they believed they were able to provide a more straightforward and faster client experience. In as much as this allows the company to stay one step ahead of the competition, it will benefit. Implementing pest control in the Internet of Things (IoT), which can calculate the number of rats in a customer's residence and provide an instant update on the status without the company's presence, is one of the opportunities mentioned in the interview that has been used to improve the customer journey through digitalization and has been successful. A platform that notifies clients of the arrival and departure times as well as the locations of maintenance technicians can also be included.

Increase the accuracy and tangibleness of customer personalization through more specific business strategies.

Firm B has been able to differentiate itself from its competitors as a result of advancements in digital technologies. Examples include putting both registration and off-registration on the same page, putting chatbots on the homepage, and utilizing digital technology to empower

customers to be more self-sufficient in their own lives and businesses. As new and innovative digital technologies are developed and implemented by one company in the industry, the CEO believes that the time it takes for firm B to discuss and experiment with them is relatively short.

The increased use of digital technology by firm B and D has made it possible for the company to more effectively personalize its marketing efforts in the future. The CEO is referring to advertisements that appear on social media platforms such as Facebook, Instagram, and other similar platforms. Meanwhile, the CEO mentions that they have recently attempted to incorporate artificial intelligence into their operations. In a similar vein to the previous implementation, the fitness center's data analysis system would be based on the data collected through membership. Because of advancements in artificial intelligence and machine learning, it is now possible to use this data to make predictions. Firm B has been experimenting with predicting which members are most likely to discontinue their fitness center memberships by utilizing the tool. If possible, try to determine what they have in common and what can be done to influence their behavior once that has been established. This is also used when evaluating business and personal investment opportunities, to name a few examples.

In the future, additional investments in extracting and utilizing existing member data will be made, and these investments will be used to target a targeted prospective member group and business ideas over time as a result of these investments. He stressed that the industry is still driven by human behavior, as evidenced by the companies' continued emphasis on analog technology, and that potential gym locations must still be visited and evaluated by humans before being considered for investment.

Maintain the flat organizational structure and entrepreneurial spirit.

It has been the flat organizational structure of firm C, D and A that has provided them with numerous advantages since they were first established. Over the years, this has proven to be critical in order to maintain the digital maturity level. At the very least, when comparing the organizational structure to that of even larger corporations, firm C has demonstrated a noticeable increase in the number of creative initiatives from employees across all departments over the last couple of years. In the case of the digital tools that they have employed, this is particularly evident. According to the interviewer, the agility and prototyping have been beneficial in being able to use these digital tools at work. As long as this can result in a more efficient way of working, there isn't anything really standing in the

way of the organization collaborating with this tool. As far as recognizing the potential of this way of thinking is concerned, the interviewer wishes to emphasize that not being afraid of experimenting with new and unproven digital tools is something that we intend to continue to do. Apart from that, understanding how these tools can improve our daily work and ensuring that everyone understands and uses the digital tools properly are also important considerations.

4.2 Results of quantitative research: Survey

The survey results indicate the current digital maturity the participants felt the firm that they worked for had achieved. Thus, they give an indication of which dimension best describes the company based on the self-assessment. Table 4.1.1 summarises participants' perceptions of their companies' ability to develop leadership capabilities, while table 4.1.2 examines the various firms' digital capabilities. To delve deeper into each question, an average score for each statement and subtopic was calculated. Aside from the tables shown below, the comprehensive graphs and figures from this study can be found in Appendix A under the photo section.

A closer examination of the subtopics reveals the overall high and low scores. When average scores were compared, Technology Leadership had the lowest mean score of the subtopics, at 4.44. At 3.00, the statement "We pursue digital initiatives based on a common set of key performance indicators" received the lowest score. On the other hand, engagement received the highest score of 5.58. The statement with the highest overall score was "Digital technology enables us to improve internal operational processes."

The results of a two-by-two matrix are shown in Table 4.1.3. A two-by-two matrix was created using the average and total scores for each of the ten questions. The x-axis represents the score for leadership capability, while the y-axis represents the score for digital capability. Westerman et al. (2014) define digital masters as organisations with 42 or more digital scores and 43 or more leadership scores.

Table 4: Employees' perceptions of digital capability were used to calculate a self-assessment score and a mean score for the companies.

Digital Capabilities		Forsikring	Tjenesteyting	Økonomi	Treningssenter	Consulting	Rekruttering og rådgivning	Average	Average per subtopic
Kunde	1. Vi benytter oss av digital teknologi for å forstå våre kunder bedre (analyseverktøy, sosiale medier og/eller andre verktøy)?	6	6	5	7	5	6	5,83	5,37
	2. Vi bruker digitale kanaler som for eksempel sosiale media for å markedsføre våre produkter og tjenester	5	6	2	7	7	6	5,50	
	3. Vi selger våre tjenester og produkter gjennom digitale kanaler (dvs. internett)	5	2	3	7	4	3	4,00	
	4. Vi benytter oss av digitale kanaler for å yte best mulig kundeservice	5	4	6	7	5	4	5,17	
Operasjonelle prosesser	5. Digital teknologi gir oss muligheter til å forbedre drifte og øke produktiviteten internt	5	7	6	7	7	6	6,33	5,38
	6. Våre kjerneprosesser er automatiserte[Kjerneprosesser = Arbeidet og utstyret som benyttes for å utføre aktiviteter for å nå virksomhetens mål]	5	4	6	6	6	5	5,33	
	7. Vi har en tett og sømløs koordinering knyttet til drift og kundeinformasjon på tvers av avdelinger, organisasjoner og systemer	6	5	4	5	5	6	5,17	
	8. Vi benytter oss av analyseverktøy for å ta bedre driftsmessige beslutninger	4	6	5	5	5	3	4,67	
Business Modeller	9. Vi benytter oss av digital teknologi til å øke produktiviteten og tilføre merverdi i sortimentet vårt og tjenester vi tilbyr	5	6	6	4	7	5	5,50	5,33
	10. Vår forretningsmodell er basert på å utnytte digital teknologi	5	3	6	6	7	4	5,17	

Table 5: Employees' perceptions of the capabilities of their company's leaders as measured by their self-assessment scores and the mean result

Leader Capabilities		Forsikring	Tjenesteyting	Økonomi	Treningssenter	Consulting	Rekruttering og rådgivning	Average	Average per subtopic
Transformativ visjon	1. Ledelsen i vår virksomhet har en klar visjon om hvordan digital teknologi kan forme selskapet vårt i fremtiden	6	5	6	5	6	4	5,33	5,50
	2. Toppledere og mellomledere i vår virksomhet har en felles forståelse for muligheten som i ligger digital teknologi	5	7	6	5	7	4	5,67	
Engasjement	3. Alle ansatte kan ta del i diskusjonene knyttet til digitale endringer i virksomheten	5	3	6	6	7	6	5,50	5,58
	4. I vår virksomhet har vi en kultur som verdsetter utnyttelse av digital teknologi	4	5	6	6	7	6	5,67	
Sterk styring	5. I vår virksomhet investerer vi mye for å sikre at ansatte forbedrer sine digitale ferdigheter	5	4	5	4	7	6	5,17	5,00
	6. Vi koordinerer effektivt på tvers av avdelinger/enheter for å innføre eller forbedre digital teknologi	5	5	4	5	6	4	4,83	
	7. I vår virksomhet er roller og ansvar for styring av digitale initiativer klart definert	3	7	6	4	6	4	5,00	
Teknologisk lederskap	8. Vi følger opp digital initiativer basert på et sett med nøkkelindikatorer (KPIer)	2	2	3	2	6	3	3,00	4,44
	9. IT-avdelingen og ledelsen samarbeider godt og har god kommunikasjon mellom seg knyttet til digitale initiativer	4	6	6	4	7	4	5,17	
	10. IT-avdelingen bidrar sterkt til digitalisering av vår virksomhet	4	5	6	7	5	4	5,17	

According to the self-assessment of all participating companies, they have been ranked as "Digital Masters," meaning that they have all received scores higher than 42 on their digital capabilities and higher than 43 on their leadership capabilities, respectively. When comparing these six companies, the insurance company receives the lowest score for digital capabilities and is only narrowly classified as a fashionista. The staffing solution industry has the firm with the lowest level of leadership ability among its members. The positions held by the participants in their respective companies are an important aspect of this quantitative response. None of these employees was employed by the company's information technology department, but rather by the company's commercial division. If employees from the

information technology department had participated in the survey, a more nuanced analysis could have been produced. Other scientists who conducted this test included representatives from both the business and information technology departments in order to determine whether the employees from each company were on the same page or whether there were indeed internal differences within the company.
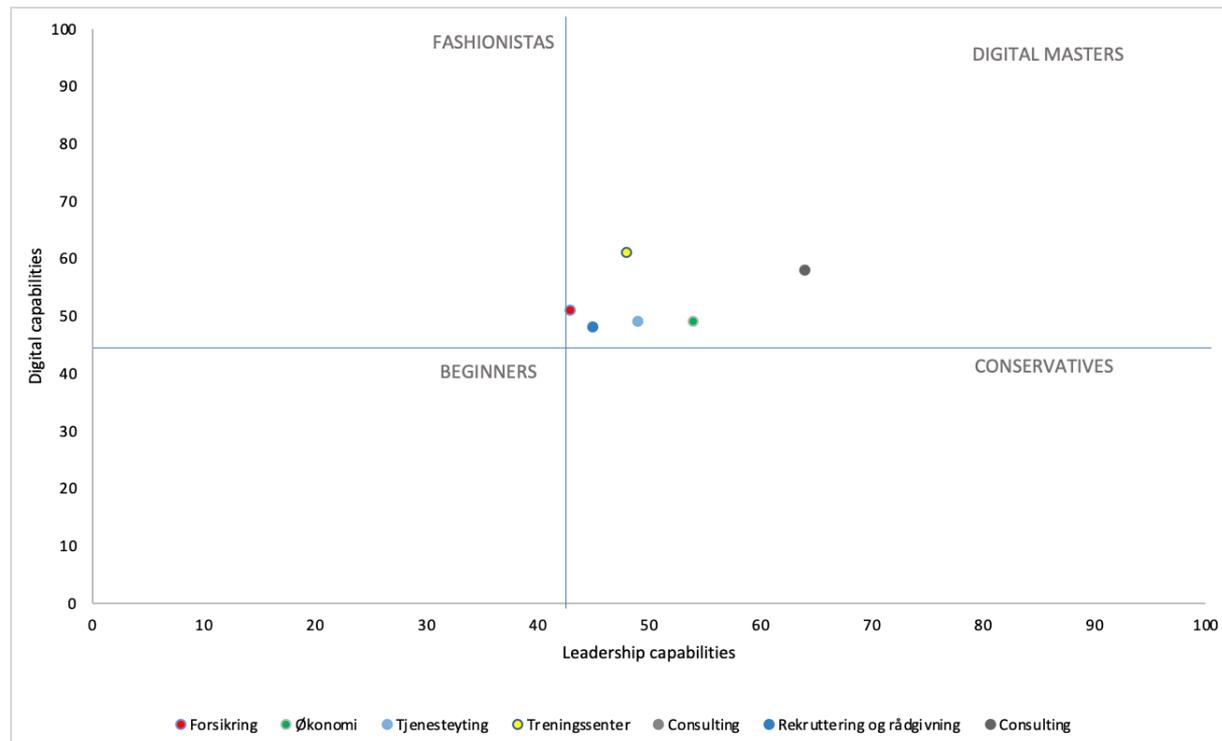

Figure 5: An illustration of the various levels of digital maturity broken down by industry

5.0 Discussion/Analysis

This study contributes to a better understanding of the overall challenges, factors and solutions to the digital maturity in Norwegian small and medium-sized businesses, as well as digital maturity built around Westerman et al's framework. According to the findings of the study, the majority of respondents' businesses are attempting to keep up with digital progress in a variety of ways. They have made significant investments in digital and leadership capabilities, for example, to manage internal procedures and customer service requests. Despite the fact that the sizes of the companies vary, there is an attempt to find digital solutions and an effort to improve the level of digital maturity among the businesses studied. To varying degrees, businesses are aware of the benefits and opportunities that can be realised as a result of a high level of digital maturity. On the other hand, the results show that among

the companies polled, transformation initiatives relating to digital capabilities, such as offering services or selling products online, using analytical tools to make business decisions, and following up digital initiatives with standardised KPIs in leadership capabilities lag behind given the scores. This was evident in the survey, as respondents gave these three topics lower ratings than other questions. In the digital capabilities questionnaire section, respondents scored quite high on their understanding of how digital technology can contribute to higher firm productivity. Two questions were scored equally among the leadership capabilities: having a culture that values digital technology and having the leadership and employees within the organisational structure have a shared understanding of the opportunities that digital technology provides. This is supported by Westerman's (2017) theory, which contends that one of the advantages of SMEs over larger firms is easier communication.

Meanwhile, Androile (2017) argues that digital maturity is more than merely an enhancement effort or a software update. It all boils down to utilising digital technology effectively and digitally changing current company processes. Most organisations have achieved considerable progress in terms of customer experience digitalization, but they lack the capacity to develop their enterprises via the application of vision and dedication (Androile, 2017).

In order to answer the three research questions, the results of the questionnaires and interviews are analysed and discussed in relation to the academic literature in this chapter. Finally, specific recommendations, further research, limitations, and a conclusion will be provided.

5.1 The Digital Mastery Framework: Analysis of the survey results

According to the results of the self-assessment questionnaire, senior executives in SMEs appear to believe that their companies have reached a high level of digital maturity. As a result, they all scored highly in the survey and are regarded as digital masters. This sub-chapter will then address the following issues:

Research Question 1: What is the digital maturity among the SMEs in Norway?

Firm A: firm's profile

When compared to the average, Company A scored higher on all of the subtopics, with the exception of the customer subtopic, which had a lower average score. Company A

demonstrates a supportive and empowering approach to digital technologies, but the subtopic of customers falls a little short of the mark. Which is primarily related to the second and third questions found within digital capabilities. This could indicate that the companies, in comparison to the other respondents to the survey, are less effective at increasing their companies' visibility on the web and digital platforms (e.g., Instagram, Facebook). Customer's subtopic is rated low, indicating that the firm has the potential to attract more customers by increasing its visibility and leveraging business data to measure success and engagement around their online presence. Company A has received a score of 49 in digital capabilities and a score of 54 in leadership capabilities, putting them in the category of digital masters.

Firm B: firm's profile

In this study, Company B is ranked as the second most digitally mature company. In the following subtopics, Company B scored on average higher than the other companies: customers, operational processes, and engagement. However, Company B scored on average lower than the other companies in the following subtopics: business models, transformative vision, strong management, and technology leadership. The company received a poor rating for strong management aspects, specifically Q5 in leadership capabilities, where there is a lack of training among employees on how to use digital tools effectively and efficiently. In the study results, Company B stated that they have a large number of employees who have transitioned from being personal trainers to working in administration, as well as advancing to higher positions within the organization, where an emphasis on digital skills has not been sought after or focused on enough in terms of developing these skills within the organization. Despite having the highest customer satisfaction rating, Company B needs to improve the digital customer journey it provides to customers and the way it uses the data it collects from customers. Then and only then will they be able to fully reap the benefits of digital technologies to their fullest extent. The level of engagement in the company is quite high. An example of strong employee engagement is the fact that the company's employees can participate in discussions about how the various digital projects can assist them in their continued growth within the fitness centre industry. Since the company's inception, they've had the goal of having a fully automated fitness centre on site. In addition, Company B recognizes that more work needs to be done in terms of customers, as well as the need to provide innovative and new digital services to them. In terms of digital capabilities, Company B scored 61 points, while its leadership capabilities scored 48 points, placing them among the

top ten digital masters. This is in line with the goals of Company A, which is to create a customer journey that is better for customers while also being more time-efficient for the company, in order to gain a competitive advantage in the fitness centre industry by doing so.

Firm C: firm's profile

Company C received an averagely higher score on every subtopic with the exception of customer service, which received a slightly lower score. This indicates the company's ongoing use and establishment of effective technology, as well as the flat organisational structure that was made abundantly clear throughout the interview. As an illustration, Company C has a large number of employees who come from technical backgrounds in the information technology industry. The abilities people possess vary depending on their educational background, previous work experience, and personal interests. Furthermore, they have a variety of digital tools that are being used, which distinguishes them from larger or other SME enterprises in that it is relatively simple to develop and use new digital tools that the employees believe would benefit their own job or the work of the company as a whole. However, there is still potential for development in this area, as was pointed out during the interview with the participants. Take, for example, the usage of digital tools, which may be simplified in the sense that there are not too many digital tools that are frequently utilised. As a result of the limited number of simplified tools available in the company, productivity may suffer as a result of this as well. As a result of their total score of 58 on digital capabilities and 64 on leadership capabilities, Company C is classified as a Digital Master. Company C's representative indicated during the interview that the company is an information technology company that generates income by developing extraordinary applications and distinguishing itself from other information technology firms. According to the results of the questionnaire, Company C received the top scores in practically every category. On the other side, one of the most significant drawbacks was that the firm did not actively employ digital technology to better understand their clients, which was one of the most significant shortcomings.

Firm D: firm's profile

Firm A received a lower score on business models on digital capabilities, and the following lower scores were found engagement and technology leader. As shown in Tables 1 and 2 in the results chapter, firm A received an average fairly high score in both transformative vision and strong management in leadership abilities. Firm A received a lower score on the

following subtopics business models on digital capabilities and the following lower scores were found: engagement and technology leader. That Company A takes a supportive and empowering approach to digital technologies, both from a management and operational standpoint, is indicated by this. A high level of understanding of how digital projects can benefit the entire organisation in terms of profit, productivity, and performance is demonstrated by companies with a high transformative vision score. Therefore, Company A wishes to take advantage of a variety of technological tools in order to improve cost efficiency while also shortening lead times. The fact that the firm scored poorly on "engagement" indicates that there is still room to involve and inform employees about the firm's digital strategy. This demonstrates that, even though the leadership understands the importance of having digital projects, the need to include all employees is still felt to be necessary. Similar results are obtained when evaluating "customers," which indicates that there is potential for expanding their service to digital platforms such as the internet. Company A explained that the client order process is time-consuming, and that customer service representatives would have more time to spend with customers if there was a system in place that could handle this for them. Having a system that handles client orders would free up time for customer service, resulting in an increase in time available to serve customers rather than managing daily routines, according to the interviewee. As a result, they would be able to devote more time to meeting customer needs. The digital maturity model developed by Westerman assigns a score of 49 in both digital and leadership capabilities to Company A. As a result, they are classified as digital masters. To gain a competitive advantage, digital masters deconstruct traditional ways of working and concentrate on how digital projects can increase productivity for them. This is reflected in the results of Company A's interview session.

Firm E: firm's profile

The digital maturity level of Company E is the lowest when compared to the other three case companies. In the self-assessment, the organisation received an average score that was lower than the overall subtopics. Three points were earned in each of the company's weakest areas: Q3 from digital capabilities, Q8 from leadership capabilities, and Q8 from financial capabilities. This indicates that Company E does not have adequate support from using digital tools to make decisions based on the data they have, but it also indicates that they do not offer their services through online services, which puts them at a competitive disadvantage when compared to other competitors who make their services more readily available on the internet, such as Amazon. As stated in the interview, there is a lack of digital vision within the

organisation, which has a detrimental impact on the subtopics as a result. Currently, Company E has received a total score of 48 in digital capabilities and 45 in leadership capabilities, putting it in the digital master category. The company came within two points of becoming fashionistas, but fell short by two points. As evidenced by the answers of the questionnaire, there is potential for improvement across the board in all of the subtopics examined. However, it is critical at this time to concentrate on improving the entire digital vision and making this felt by the workforce in such a way that top management and employees work together to create a competitive edge. A digital vision inside Company E can be fostered through the adoption of short- and long-term strategies in conjunction with proper support from senior management in order for the company to fully reap the benefits of digital technologies. Following consideration of the organisational aspect, attention should be directed into the technological dimension. That is, for the organisation to acquire a greater level of digital maturity, it would need to make significant investments in digital technology and provide its staff with appropriate digital tools.

The companies' degree of maturity

It is not possible to position the companies on an exact scale in accordance with the Westerman et al. (2012) maturity model and levels of maturity, but some trends have been identified and examined as a result of the study's findings. Westerman et al. (2012) identified patterns in the results that place the companies in the levels of digital masters in the maturity model, and these patterns were confirmed by the results. It is because of this ability to link together plans, visions, digital investments, and digital capabilities that corporations are placed at the level of digital masters. This allows them to increase the productivity of their organisations. But there is a risk that they will not be able to effectively transition employees to a more digital workday (for example, through the use of digital tools and new digital implementations that free up time so that employees may focus on other new duties). There are some indicators from the findings of this investigation that those hypotheses are correct. Respondents' firms assumed to learn new digital capabilities by experimenting with various digital technologies and solutions; nevertheless, several of the companies surveyed lacked the strategy and leadership necessary to achieve and stimulate this transformation. These are characteristics that are extremely frequently observed in businesses that operate in the digital fashionista space. It is a reasonable assumption, given that the findings of the study and the theory indicate that small and medium-sized businesses are generally open to trying out new

approaches to improving their digital maturity, such as observing what other businesses are doing while adjusting and adapting to their own needs. This is described by a number of the respondents.

According to Blatz et al. (2018), small and medium-sized enterprises (SMEs) are typically part of a bigger organisation and value chain and must adapt to the needs of other business partners. They also need to carefully evaluate each step because they are typically constrained by time and by the number of employees they have available at any given time. This is particularly crucial for small and medium-sized firms to bear in mind. In the past, there have been limitations on the scale of businesses and the resources they have available, both in terms of staff availability and in terms of time and skill. It is also evident from the findings of this study that some of the issues raised by the respondents are specifically related to time, as opposed to other factors such as abilities and priorities. This will be discussed further on in sub-chapter 5.2.

5.2 The four dimensions of Digital Maturity: Challenges

According to the theoretical component of the research, there are significant challenges facing the business community, particularly small and medium-sized enterprises (SMEs), in terms of digital maturity. Several of these points were recognised and emphasised by participants in the chapter four interviews. There are numerous challenges, such as those related to the dimension of vision and strategy, organisational and cultural issues, leadership, competence, and resource availability, to name a few (Kane et al., 2015; Westerman et al., 2012). Several of the challenges were discovered to be shared by all of the participants, while others were discovered to be unique to their respective businesses. This is also supported by the study's empirical findings, which are discussed in greater detail later in this section. Those areas that stand out as particularly difficult for businesses may be linked back to their level of competence in those areas. This section will explain the discoveries made in relation to the problems, as well as provide solutions to each issue that was discovered to be answered:

Research Question 2: What challenges do managers commonly face when they strive to gain digital mastery, and what solutions might they pursue?

5.2.1 Vision and Strategy: Discussion and a Proposed Solution

During the interviews, many of the participants described this topic as particularly difficult. Which is not surprising, given that a lack of vision and strategy has been linked to difficult-to-overcome challenges in the past (Vogelsang, et al., 2019).

One of the key differences between a digitally mature firm and a less digitally mature firm is consistent with previous research by Kane et al. (2017). A more in-depth look at these challenges will be provided below.

Lack of Resources

The scarcity of resources is consistent with previous research. According to Kane et al. (2017), in order to achieve digital maturity, one must overcome the challenges of a lack of resources. Some previous studies (e.g., Spilling, 2016) have found that SMS lack financial resources to increase their digital maturity. However, the participants in my study stated that their firms did have sufficient financial resources to invest in improvement projects. One reason is that they were subsidiaries of multinational corporations with considerable resources. One might then wonder why more companies had not progressed further with their projects at that point. According to Westerman et al (2012), this could be as a result of a lack of motivation to proceed with projects unless they are absolutely necessary or if it has been demonstrated that a particular project within digitalisation will result in better results for the company in question. Rather than the financial holding the firms' back from growing their digital maturity. On the one hand, this is understandable, specially when a firms have a top-down management and is dependent on the leader to provide signals or initiatives on projects that will be done. On the other, it is not. because not being willing to fail, take initiatives or fail to follow up initiatives also has a negative impact on the overall growth of the company because the firms allocate all their resources or almost everything into their core business (Karimi and Walter, 2015).

However, one critical aspect supported by Bouee (2015) and Kane et al. (2017) is the importance of not implementing what is perceived to be trendy. Instead, the emphasis should be on developing a digital strategy that demonstrates how digital tools can improve the work and goals set, as well as how digitalisation can provide additional differentiation from competitors.

5.2.2 Organizational and Culture: Discussion and a Proposed Solution

Various aspects of firm organisational culture contribute to a variety of challenges.

The lack of cultural change was found in some of the companies. In particular, where it was common to get a response which said that "We did this before and it worked, so there was no need to make any dramatic changes". This is aligned with what some researchers have said before, but fails to take into consideration that the firm actually might gain an advantage from exploring the different digital technology options that are out there. As mentioned before, several of the firms mentioned that they had the resources to invest. This is in addition to the characteristics of SMEs, which are described as being less complicated and more formal (Wuest & Thoben, 2011). On the other hand, the problem which might be quite common among SMEs, which also might be among the firms interviewed, is that the SME culture frequently lacks the economic flexibility to experiment with and evaluate new technologies (Mittal et al.,2018). This might indicate that a cultural change might be needed to harvest the full potential of digital technologies, while at the same time being able to increase the economic flexibility to experiment with new technologies.

Researchers have suggested that SMEs should hire a chief digital officer who could come in and make sure that the digital maturity gained from adding and exposing new ways of working as a result of advanced digital solutions yields positive results for the company. In addition, for SMEs who are part of bigger corporations, the bigger corporations also take responsibility for making sure that the daughter firms age rightfully in terms of the digital solutions that are out there and can contribute to better results for the firm.

5.2.3 Leadership: Discussion and a Proposed Solution

Leaders lacking effective communication skills

The theoretical sections with Fitzgerald et al. (2013) and Bughi and Catlin (2017) both stated in the theoretical section that this was a critical dimension to master. Overall, respondents believe that leadership issues are critical for keeping up with digital maturity, but that they themselves need to improve in order to do so effectively.

The lack of strong leadership identified in this study resulted in some employees being unsure of how to proceed when discussing the digital strategy with the entire organisation, resulting in confusion.

Leadership must communicate their vision to their employees well ahead of any potential implementation in order to overcome this challenge. Specifically, it is necessary to communicate the main takeaways of why a change in behaviour is required, according to

Armenakis, Harris, and Mossholder (1993). Second, according to Burdett (1999), preventing poor information quality by improving internal communication may be beneficial.

5.2.4 Competence & Availability: Discussion and a Proposed Solution

Lack of digital talent and qualified workforce to lead digitization initiatives

Some of the previous research suggests that there is a lack of digital competency and knowledge. According to Mittal et al. (2018), SMEs face challenges due to lower revenue, which limits their ability to invest in further research and development of their own company, which in this case is to develop digitally. They also face difficulties in attracting the right digitally savvy individuals who can help them advance their digital maturity. This problem, however, is more prevalent in larger corporations, which typically invest more in training programmes than SMEs (Wagner, 2018). According to a Deloitte (MIT) survey, seventy-two percent of companies lack the necessary talent, but only twenty percent are developing the talent that is already available. According to the findings of this study, utilising the digital capabilities already possessed by employees may pose an additional challenge.

To meet this challenge, it is critical that they invest in the right employees with the right digital capabilities and skills, which may improve their digital mindset, as well as taking into account that the participants have mentioned that the financial aspect is in order. As in, try to persuade the owners that investing more in the right people will yield better results. Fitzgerald et al. (2013) and Kane et al. (2017) agree, claiming that this is the best way to improve.

Second, work on improving the digital capabilities of current employees. Working on this has showed to be the main critical success factor according to Kumar et al. (2017). This is accomplished by investing in and implementing better training programmes, as well as implementing two-way communication with feedback on how well the training programme was perceived by employees. Try to introduce new digital tools that will improve their way of working and allow them to focus on other tasks. not only introducing new digital tools, but also ensuring that these tools are used correctly This may not only help employees improve their digital capabilities, but it may also help their revenue. Nieminen and Mannonen (2007, 178-181) propose. Furthermore, the same researchers emphasise the importance of knowing the employees' tasks ahead of time in order to know exactly how the introduction of digital tools might improve their work-tasks and if it is the correct digital tool to use for those specific tasks.

Inabillity to scale – Lack of time for the employees continue developing the company's technology and capabilities - Time-pressure and the costs

The key issue here is that the time to value is being felt upon by SMEs in having employees that focuses on their customers and not having the time and the productivity to make sure that. The importance of this challenge was repeatedly mentioned by all of the managers I questioned.

To meet this challenge, it is critical that the primary projects within the firms are not impacted by the various digital projects. However, it is critical that initiatives like these are followed up on and not abandoned because employees must return to their client projects. Then it is preferable to hire employees who can work on these internal projects, whether they are brought in-house by hiring employees or brought in externally by hiring consultants, which can be less expensive for the firm in some cases. Then, to ensure that there is a deadline, try to include some of the employees who have been with the company for several years and can bring ideas.

Challenges with the legacy equipment - Manage old business systems

The presence of old ERP-systems, also known as legacy-systems, is a common issue in this study, as well as among researchers such as Muehlburger et al., 2019 and Sarvari, et al., 2019. This is not surprising given that, as researcher El Hamdi et al (2018) discuss, ERP-systems are the "backbone" of achieving a digitally mature company. Higher productivity and control can be expected with a more modern ERP-system that connects the firm even more tightly.

To meet this challenge, a change to the ERP-system is required. A number of factors should be considered, such as determining which type of ERP-system is desired and achieving their digital strategy goals. The new ERP-system should significantly strengthen the firm while not weakening the processes or tasks performed at that firm. On the one hand, modernising the old ERP-system will take time, which could take several years. Instead of simply implementing new digital technology, organisations must ensure that it serves a purpose, that people can actually use it, and that it is properly maintained (Kane, 2017). However, having leadership that understands the timeframe and tries to fully understand the main takeaways from going through a digital transformation is unquestionably critical in this transition.

Table 5.0: Obstacles and Solutions

Challenge	Solution

Lack of Resources	- Develop a digital strategy
Keeping traditional roles/principles	- Look into hiring new positions which can strengthen the digital capabilities in the firm - A new look into how this traditional roles still contribute to the firms success
Leaders lacking effective communication skills	- Communicate the vision early on to the employees - Strengthening the internal communication
Lack of skilled digital talent and qualified workforce to lead digitization initiatives	- introducing better training programs to enhance digital skills - Implement a two-way communication with feedback from the employees
Inabillity to scale – Lack of time for the employees to continue developing the company's technology and capabilities - Time-pressure and the costs	- Create a budget that reflects the various projects that may be required internally at the firm - Rather than viewing the projects as a cost and something that takes away billable hours, view them as an investment that will pay off in the future.
Challenges with the legacy equipment - Manage old business systems	- Change ERP-system - A new overview of what function that is need by the new ERP-system - Having a leadership that understands that implementing and transition

	time of new ERP-system will take time

5.3 Drivers: External and Internal factors

This study confirms that both external and internal factors influence the drivers found in these firms. It is not uncommon to see a distinction between external and internal elements. This has previously been done by a number of researchers. The majority of the drivers identified were *Improve the customer, Deliver accurate and keep improving the flat.*

The findings show that external factors were the most important factors for the opportunities mentioned by interview participants. While the internal elements were the primary causes of the challenges mentioned by the participants. This subchapter will discuss the drivers' findings in relation to the third research question:

> *Research Question 3: Which factors both external and internal are driving smaller and medium-sized businesses (SMEs) to become more digitally mature?*

5.3.1 What are the common factors that pushes digital maturity among the firms

Out of the three common drivers discovered, two were identified as external factors, whereas the customers were the ones who caused a shift in digital maturity among the firms. According to the findings in Chapter 4, customers expected more firms to be effective. Furthermore, according to the World Economic Forum (2016), customers and the market are increasingly expecting more from businesses in terms of digital interaction. According to several participants, one way to be effective is to focus on technology development that can be implemented in a smart way, where customers get better solutions and services as a result of improved technology. Customers exposed to new digital innovation in terms of new digital functions, such as better technological features in services provided by larger companies across industries, pushed these smaller firms to try to leverage technology even more. As there are firms working hard to improve their digital maturity and bring their customers along for the ride (Bharadwaj et al., 2013), the smaller firms in this study wanted to join them.

The third common driver, which was identified as an internal factor, was taking advantage of the flat organisational structure more effectively. All of the participants agreed that having a flat organisational structure had the advantage of allowing for quick and direct communication. However, both participants C and A agreed that additional benefits of the

structure would be required to make it easier to build a more digitally mature firm. Not everyone felt they had this in place internally, but it was something that some of the firms were working on. Adopting a flat organisational structure has also been shown to be efficient in terms of becoming more digitally mature, which is closely related to findings from several researchers.

5.3.2 Why does external elements play a significant role in drivers becoming digital mature

According to the findings of the interviews, the motivation for improving digital maturity at the firms presented was strongly linked to having the customers as their primary focus and how the increase in digital maturity in each firm could benefit the customers. This could imply that internal factors (internal processes and employees) are less important in terms of

It is possible that the drivers mentioned in the interviews are a way for the companies to improve and develop a better experience for their customers while also increasing revenue. Salesforce (2021) backs up the finding, claiming that 67% of customers would pay more if the customer experience was better. One aspect is to continue to improve and see opportunities by continuously developing the customer experience. Either it is improving the digital customer experience or the transition from customer experience to digital customer experience, which would need to be improved on a regular basis to keep customers willing to return and be satisfied (Bollweg et al, 2019). This was backed up by participant C, who stated how important it was.

Limitation

Before proceeding with the discussion, this study must be viewed in light of some limitations that may have resulted in a potential bias. For starters, due to the small number of respondents who completed the questionnaire and participated in the interviews. In fact, only six people responded to the questionnaire and interviews. The six respondents were all from the firm's business side, rather than its IT side. This means that the survey and interviews do not necessarily know what is going on in the firm's digital aspects or what the future goals are. resulting in a lack of spread and size, which also takes into account that just because the business and the IT work at the same firm does not necessarily imply that they collaborate on a high level. I intended to look at the influence of digital maturity on small and medium-sized businesses for my master's thesis. However, by demonstrating this subject with only six firms, it is difficult to generalise because the scenario may differ for other companies and industries not included in this study. When looking into further studies, a larger number of

small and medium-sized firms should be included, as well as a deeper look into owner structure and how different departments within a firm view their digital maturity.

By using Westerman et al's framework to determine the firm's digital maturity based on the individual objective perspective on what is lacking on the leadership and digital capabilities site of the firm the test fails to check how much the organization had improved over a certain period, but also assessing a smaller part of the firms digital aspects compared to a similar model such as Gartner's Magic Quadrant who have additional questions regarding the business models and customers experience which adds the possibility of analyzing the firms at additional dimensions instead of just digital and leadership capabilities

6.0 Conclusion and Further Research

It is critical for small and medium-sized businesses to increase their digital maturity in order to gain a competitive advantage and reap the benefits of digitalization. This study looked at digital maturity in small and medium-sized businesses and found that companies are generally aware of their challenges and, to some extent, have identified solutions to strengthen their digital capabilities and leadership capabilities. On the other hand, efforts to improve companies' digital maturity are falling behind. The Vision & Strategy and Competence & Availability theme areas were among those identified in the interview as challenging concerns in this study. Additional SMEs-identified challenges include e-commerce and resource issues such as costs and time.

SME master new digital capabilities through experimentation with various digital solutions. They put themselves to the test by imitating and adapting to others. This is largely due to a desire not to fall behind in digitalisation. As a result, it is reliant on getting ideas for solutions that can fit and be tailored to their business. Surprisingly, one of the main challenges identified among SMEs was a lack of financial resources, but this was not seen as a concern among the firms interviewed in this study. Even if this is correct, the cultures of the firms studied were quite similar to the typical characteristics of a SME, which tends to lack economic flexibility. To overcome these challenges with the resources they have means that businesses are reliant on experimenting with digital solutions due to the cost and based on the resources they have at their disposal, rather than necessarily on the costs that are associated. This also has an impact on the challenges associated with competence, as there should be resources for both identifying the need for skills and developing or recruiting new skills. However, the size and conditions of a company can also affect its geographical location,

which affects the candidates it can hire to fill the digital skills shortage that exists among firms. It can be more difficult to recruit new digital skills and thus raise the level of digital knowledge within a company when the company is located far from major cities. One of the services requested by the companies polled and interviewed was increased awareness and guidance on how to develop employees' digital abilities. Additionally, resource-effective support, implementation support, and the need for external firms to assist in raising digital maturity. Small and medium-sized businesses require assistance and external assistance to keep up with the competition as larger corporations push for system requirements and large digital solutions.

The research questions were addressed using a quantitative self-assessment and a qualitative data collection method based on semi-structured interviews with key personnel involved in the firms' business aspects. Figure 4 depicts the results of the quantitative self-assessment, and Chapter 5 discusses the results of the interviews in detail. The theory and framework presented in Chapter 2 served as the foundation for the discussion. Tables 4.1 and 4.2 summarise the thesis's challenges and solutions, as well as the key findings.

Despite the fact that many businesses are doing well in terms of increasing their digital maturity, previous research has revealed that many SMEs are falling short in this area. Despite the fact that much has been written about the numerous benefits of becoming a digitally mature organisation in terms of cost efficiency and revenue development, according to the findings of this survey, businesses today are aware that the pace of change is accelerating and that staying up with consumer and market expectations is critical in order to succeed. Being digitally mature in these SMEs is difficult, if not impossible, without proper leadership, but having digital skills in the business is critical to staying ahead of the competition, not just within sectors, but also across industries. The ability to perform effectively in digital and leadership competencies will make future digital growth easier for the company. The goal of this study was to determine the level of digital maturity attained by SMEs, as well as the perceived common roadblocks and solutions to these roadblocks, as well as the perceived drivers of becoming digitally mature, which could be divided into internal and external factors in this case.

People who work for the organisation are important factors for SMEs in Norway and the industries interviewed, similar to previous studies and findings about the challenges faced by SMEs in Europe. Those who have received extensive training and are highly motivated in this area can make a significant contribution to the firm's digital maturity. This includes having

the financial resources to hire individuals with the necessary digital skills who can help the company make the best decisions possible. As the research progressed, it became clear that organisational structure and culture have a significant impact on performance. For example, when considering how leaders can contribute to increasing employee engagement in a variety of ways,

Small and medium-sized businesses (SMEs) must carefully consider each step they take to achieve a higher level of digital maturity than their competitors because their resources and operational environment are limited. This entails increasing overall digital maturity through the acquisition of new skills. The business environment for medium-sized enterprises is changing, particularly for small and medium-sized enterprises. Just as conditions differ between "large companies" and small and medium-sized businesses, operating conditions within the range for small and medium-sized businesses also differ. The amount of money invested in digital technology and analytical tools varies greatly depending on the size of the company. Small businesses may have different goals than medium-sized businesses, and some companies may be at a higher level of digitalization than others. Small and medium-sized enterprises can achieve digital maturity regardless of location or industry as long as they have strong leadership or support in prioritising transformation and structural change strategies in the organisation and, in addition, cultural development has reached a certain level.

Some have recently embarked on their digital journey, while others may be significant later in the process. Overall, regardless of the differences among SMEs, what needs to be in place is leadership or conditions in the form of support to prioritise transformation initiatives so that internal structure and culture are altered to raise the degree of maturity.

6.1 Further research

Additional research should be conducted based on the survey data and interviews conducted, with the goal of looking more closely at one firm and then surveying and interviewing multiple people there to gain a better understanding of the firm. This could lead to more research into business and information technology and how they interact, as well as an investigation into operational differences discovered between top-level management and the rest of the workforce. However, the amount of data collected was insufficient; thus, a study with a larger dataset and more specific questions could produce more accurate results than the one conducted thus far. As a result, more insight may be gained, and a more in-depth examination of the various industries may be undertaken. - To find a general answer to the question, a larger sample of companies would have been preferable.

7 Resources

Allen, J. et al. (2007) 'Uncertainty during Organizational Change: Managing Perceptions through Communication', Journal of Change Management, 7(2), pp. 187–210. https://doi.org/10.1080/14697010701563379

Andervin, M., Jansson, J. (2016). *To lead digital transformation..* Helsingborg: Hoi Forlag AB.

Andriole, S.J., 2017. Five myths about digital transformation. MIT Sloan Management Review. Available at: https://sloanreview.mit.edu/article/five-myths-about-digital-transformation [Accessed April 20, 2021].

Armenakis, A. A., Harris, S. G. and Mossholder, K. W. (1993) 'Creating Readiness for Organizational

Change', Human Relations. Sage PublicationsSage CA: Thousand Oaks, CA, 46(6), pp. 681–703. https://doi.org/10.1177%2F001872679304600601

Ashwell, M.L., 2017. The digital transformation of intelligence analysis. Journal of Financial Crime, 24(3), pp.393–411. https://doi.org/10.1108/JFC-03-2017-0020

Beliaeva, T., Ferasso, M., Kraus, S. and Damke, E., 2019. Dynamics of digital entrepreneurship and the innovation ecosystem. International Journal of Entrepreneurial Behavior & Research, 26(2), pp.266-284.

Berghaus, S. and Back, A., 2021. "Stages in Digital Business Transformation: Results of an Empirical Mat". [online] Aisel.aisnet.org. Available at: https://aisel.aisnet.org/mcis2016/22 [Accessed 11 February 2021].

Bharadwaj, A., Sawy, O. A. El, Pavlou, P. A. and Venkatraman, N. (2013) 'Digital Business Strategy: Towards a Next Generation of Insight', MIS Quarterly, 37(2), pp. 471–482.

Blatz, F., Bulander, R. & Dietel, M. (2018). Maturity Model of Digitization for SMEs, 2018 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC), Available at: http://www.lusem.lu.se/library [Accessed 9 May 2020]

Bouée, C. E. (2015). Digital Transformation Doesn't Have To Leave Employees Behind. Harvard Business Review. https://hbr.org/2015/09/digital-transformation-doesnt-have-to-leave-employees-behind. [Accessed May 16, 2021]

Bryman, A., & Bell, E. (2011). Business research methods 3e. Oxford university press.

Bughin, J. and Zeebroeck, N. Van (2017). The best response to digital disruption. MIT Sloan Management Review. Available at: https://sloanreview.mit.edu/article/the-right-response-to-digital-disruption/

Burdett, J. O. (1999) 'Participation and Empowerment: An International Journal', An International Journal Iss Empowerment in Organizations Iss Personnel Review Iss Empowerment in Organizations, 7(3), pp. 180–193. Available at: http://dx.doi.org/10.1108/09684899410071699

Catlin, T. et al. (2017) A roadmap for a digital transformation | McKinsey & Company. Available at: https://www.mckinsey.com/industries/financial-services/our-insights/a-roadmap-for-a-digital-transformation [Accessed May 16, 2021].

Collis, J. & Hussey, R., 2014. Business research: A practical guide for undergraduate & postgraduate students, Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.

Chanias, Simon & Hess, Thomas. (2016), Understanding digital transformation strategy formation: Insights from Europe's automotive industry. *In Proceeding of the 20th Pacific Asia Conference on Information Systems*, Chiayi, p. 296. Available at https://doi.org/10.1016/j.techfore.2020.120343

Davison, R.M. & Ou, C.X.J., 2017. Digital work in a digitally challenged organization. Information & Management, 54(1), pp.129–137. https://doi.org/10.1016/j.im.2016.05.005

Easterby-Smith, M., Thorpe, R. & Jackson, P. R. (2015). Management and business research. London: Sage. https://doi.org/10.1177/1094428108315858

El Hamdi, S., Abouabdellah, A. & Oudani, M. (2018). Disposition of Moroccan SME Manufacturers to Industry 4.0 with the Implementation of ERP as a First Step. 2018 Sixth International Conference on Enterprise Systems (ES) (s. 116-122): Limassol, Cyprus: IEEE.

European Commission. (2020). The Digital Economy and Society Index. Brussels: European Commission.

Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2014). *Embracing digital technology: A new strategic imperative.* MIT sloan management review, 55(2), 1.

Gartner, "Gartner Magic Quadrant," 2017. [Online]. Available at: http://www.gartner.com/technology/research/methodologies/research_mq.jsp [Accessed June 16, 2021].

Gartner. (2019). *Information Technology Gartner Glossary.* Available at https://www.gartner.com/it-glossary/

Gurumurthy, R., & Schatsky, D. (2019). Pivoting to Digital Maturity. Deloitte Insights.

Halvorsen, K. (1992). Samhällsvetenskaplig metod. Lund: Studentlitteratur.

Harrigan, P., Ramsey, E., & Ibbotson, P. (2011). Critical factors underpinning the e-CRM activities of SMEs. Journal of Marketing Management, 27, ss. 503-529.

Higgs, M. and Rowland, D. (2005) 'All changes great and small: Exploring approaches to change and its leadership', Journal of Change Management, 5(2), pp. 121–151. https://doi.org/10.1080/14697010500082902

Kane, G. C. et al. (2015) 'Strategy, Not Technology, Drives Digital Transformation', MIT Sloan Management Review. Available at: http://www2.deloitte.com/content/dam/Deloitte/cn/Documents/technology-media-

Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N, 2016. Aligning the organization for its digital future. MIT Sloan Management Review. Available at: https://sloanreview.mit.edu/projects/aligning-for-digital-future/ [Accessed March 10, 2021].

Kane, G., Palmer, D., Philips, A., Kiron, D. & Buckley, N., (2017). Achieving Digital Maturity: Adapting Your Company to a Changing World. MIT Sloan Management Review and Deloitte University Press, (Accessed March 2021). Available at: https://sloanreview.mit.edu/projects/achieving-digital-maturity/

Karimi, J. & Walter, Z. (2015). The Role of Dynamic Capabilities in Responding to Digital Disruption: A Factor-based study of the Newspaper Industry. Journal of Management Informational Systems, 32, 39-81.

Kumar, R., Singh, H. & Chandel, R. (2018). Exploring the key success factors of advanced manufacturing technology implementation in Indian manufacturing Industry. Journal of Manufacturing Technology Management, 29(1): 25- 40. https://doi.org/10.1108/JMTM-03-2017-0057

Kvale, S. (1996). Interviews: An Introduction to Qualitative Research Interviewing. Thousand Oaks, CA: Sage

Kvale, S. & Brinkmann, S. (2015). *Interviews: Learning the craft of qualitative research interviewing*. 3. utg. Oslo: Gyldendal Norske Forlag AS.

Lars Bollweg, Richard Lackes, Markus Siepermann & Peter Weber (2020) Drivers and barriers of the digitalization of local owner operated retail outlets, Journal of Small Business & Entrepreneurship, 32:2, 173-201, Available at: https://doi.org/10.1080/08276331.2019.1616256

Li, F. et al., 2016. How smart cities transform operations models: A new research agenda for operations management in the digital economy. Production Planning & Control, 27(6), pp.514–528.

Lundberg, E. and Sletteng, P., n.d. 5 tips til digitalisering i SME bedrifter. [online] Nti.biz. Available at: https://www.nti.biz/no/blogg2/no/2018/digitalisering-SME-fem-tips/ [Accessed 11 February 2021].

Morgan-Thomas, A., 2016. Rethinking technology in the SME context: Affordances, practices and ICTs. International Small Business Journal: Researching Entrepreneurship, [online] 34(8), pp.1122-1136. Available at: https://journals.sagepub.com/doi/abs/10.1177/0266242615613839 [Accessed 10 March 2021].

Muehlburger, M. et al., 2019. A framework of factors enabling digital transformation. 25th Americas Conference on Information Systems, AMCIS 2019, pp. 1–10.

NTI (2021) 5 Tips Til Digitalisering I SME Bedrifter. (n.d.). 5 tips til digitalisering i SME bedrifter | NTI. https://www.nti.biz/no/blogg2/no/2018/digitalisering-SME-fem-tips/.

OECD. (2016). *Skills for a digital world, Background Paper for Ministerial Panel 4.2.* Available at: https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/IIS(2015)10/FINAL&docLanguage=En

OECD (2017). Critical issues for digital transformation in the G20. Berlin, Germany. Available at https://www.oecd.org/g20/key-issues-for-digital-transformation-in-the-g20.pdf [Accessed March 5, 2021].

Doi.org. 2021. OECD iLibrary | OECD SME and Entrepreneurship Outlook 2021. [online] https://doi.org/10.1787/97a5bbfe-en

OECD (2021), The Digital Transformation of SMEs, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, Available at: https://doi.org/10.1787/bdb9256a-en.

Müller, J.M., L. Maier, J. Veile, and K.I. Voigt. 2017. Cooperation Strategies Among SMEs for Implementing Industry 4.0. In Proceedings of the Hamburg International Conference of Logistics (HICL), 301–318. Available at https://doi.org/10.15480/882.1462

North, K., Aramburu, N., & Oswaldo, J. (2019). Promoting digitally enabled growth in SMEs: A framework proposal. Emerald Publishing, Limited.

Peter F. Merenda (1997) A Guide to the Proper Use of Factor Analysis in the Conduct and Reporting of Research: Pitfalls to Avoid, Measurement and Evaluation in Counseling and Development, 30:3, 156-164, https://doi.org/10.1080/07481756.1997.12068936

Price, C. and Whiteley, A. (2014) 'Corporate Culture and Employee Identity: Cooption or Commitment through Contestation?', Journal of Change Management. Taylor & Francis, 14(2), pp. 210–235. https://doi.org/10.1080/14697017.2014.896391

Reis, J. et al., 2018. Digital transformation: A literature review and guidelines for future research. Advances in Intelligent Systems and Computing, pp.411–421.

Sanner, J., Flåtten, S., Gundersen, G. and Aspaker, E., 2012. Representantforslag 110 S. [online] Stortinget.no. Available at: https://www.stortinget.no/globalassets/pdf/representantforslag/2011-2012/dok8-201112-110.pdf [Accessed 10 February 2021].

Sarvari, P.A. et al., 2019. Technology Roadmap for Industry 4.0. Springer, Cham, pp. 95–103.

Snow, C., Fjeldstad, Ø. and Langer, A., 2017. Designing the digital organization. Journal of Organization Design, 6(1). https://doi.org/10.1186/s41469-017-0017-y

Svahn, F., Mathiassen, L. and Lindgren, R. (2017) 'Embracing Digital Innovation in Incumbent Firms: How Volvo Cars Managed Competing Concerns', MIS Quarterly, 41(1), pp. 239–253. http://dx.doi.org/10.25300/MISQ/2017/41.1.12

NHO. 2021. Små og mellomstore bedrifter (SME). [online] Available at: <https://www.nho.no/tema/sma-og-mellomstore-bedrifter/> [Accessed 10 April 2021].

Nutek. 2004. SMEs in Sweden - Structural Change and Policy Development. [online] Available at: https://tillvaxtverket.eprint.se/System/TemplateView.aspx?p=E-View&id=48707ee9abbc44429ebe8ee42931d659&l=t&cat=%2FPublikationer%2FEndast%20för%20nedladdning&tc=%2FWeb%2FText%2FTopp_Listvy_App3&page=82 [Accessed 10 March 2021].

Remane, G., Hanelt, A., Wiesboeck, F. and Kolbe, L.M., 2017, June. Digital Maturity in Traditional industries-an Exploratory Analysis. European Conference on Information Systems, pp. 1-15. Available at: https://www.researchgate.net/publication/316687803_DIGITAL_MATURITY_IN_TRADITIONAL_INDUSTRIES_-_AN_EXPLORATORY_ANALYSIS

Salesforce (2021) What Is Digital Customer Experience?. (n.d.). What is digital customer experience. https://www.sitecore.com/knowledge-center/digital-marketing-resources/what-is-digital-customer-experience.

Sanchez, M., 2017. Framework to assess organizational readiness for digital transformation. Dimensión Empresarial, 15(2). doi: 10.15665/rde.v15i2.976.

Schallmo, D.R. & Williams, C.A., 2018. Digital transformation Now! SpringerBriefs in Business.
https://doi.org/10.1007/978-3-319-72844-5

Spilling, O., 2000. SME 2000 - fakta om små og mellomstore bedrifter i Norge. Bergen: Fagbokforlaget.

Van der Bel, M. (2018). Digital culture – your competitive edge. Available at:
https://www.linkedin.com/pulse/digital-culture-your-competitive-edge-michel-van-der-bel Accessed 17 January 2019

Wagner, S.M. (2008), "Innovation management in the German transportation industry", Journal of Business Logistics Vol. 45 No. 2, pp. 357-382. Available at:
https://doi.org/10.1002/j.2158-1592.2008.tb00093

Westerman, G., Calméjane, C., Bonnet, D., Ferraris, P., and McAfee, A. 2011. *Digital transformation: A roadmap for billion-dollar organizations*. MIT Center for Digital Business and Capgemini Consulting, pp. 1-68

Westerman, G., Tannou, M., Bonnet, D., Ferraris, P., & McAfee, A. (2012). *The Digital Advantage: How digital leaders outperform their peers in every industry*. MITSloan Management.

Wolff, J. and Pett, T., 2006. Small-Firm Performance: Modeling the Role of Product and Process Improvements*. Journal of Small Business Management, 44(2), pp.268-284.

World Economic Forum. (2016). Digital Transformation Initiative: Unlocking $100 Trillion for Business and Society from Digital Transformation. World Economic forum/Accenture.

Yin, R. K. (2011). Case Study Research: Design and Method (3rd), London: Sage Publications

Appendix A: Interview Guide: The initial explanation of the survey

Del 1 Spørreundersøkelse

Hei!

Tusen takk for din deltakelse.

Jeg ønsker at du svarer på 20 spørsmål. Disse spørsmålene tar for seg digitale evner (Digital Capabilities) og digitalt lederskap (leadership capabilities). Målet med disse spørsmålene er å kartlegge din virksomhets digitale modenhet (evnen deres selskap har til å ta i bruk teknologi for å skape konkurransemessige fortinn) og hvor digitale deres selskap er i dag. Konseptet er hentet fra boken «Leading Digital» av McAfee, Bonnet og Westerman.

Med «digital teknologi» menes teknologi som benyttes til å fornye, forenkle og forbedre. Det handler om å tilby nye og bedre tjenester, som er enkle å bruke, effektive, og pålitelige.

Jeg ønsker å presisere at resultatene av denne undersøkelsen hverken vil bli knyttet til deg som individ eller til din virksomhet. Besvarelsene vil være datagrunnlag som jeg vil benytte i masteroppgave.

Spørsmålene tar mellom 6-10 minutter å svare på. Spørsmålene har blitt fordelt med en skala fra 1-7, hvor 1 er sterkt uenig, 4 er nøytral og hvor 7 er sterkt enig.

Digital Capabilities	
Kundeerfaring	
1. Vi benytter oss av Digital teknologi som (analytiske verktøy, sosiale medier og andre teknologiske verktøy) benyttes i selskapet for å forstå våre kunder bedre 2. Vi benytter oss av digitale kanaler for å yte kundeservice 3. Vi selger våre tjenester og produkter igjennom digitale verktøy 4. Vi bruker digitale kanaler som for eksempel sosiale medier og andre digitale kanaler for å markedsføre våre produkter og tjenester	
Operasjonelle prosesser	
5. Ny teknologi gir oss nye muligheter til å forbedre operasjonelle prosesser som øker produktiviteten internt og som lar oss komme tettere innpå kundene og behovene deres 6. Våre kjerneprosesser er automatiserte[Kjerneprosesser = Arbeidet og utstyret som benyttes for å utføre aktiviteter for å nå virksomhetens mål] 7. Vi har en tett og sømløs koordinering knyttet til drift og kundeinformasjon på tvers av avdelinger, organisasjoner og systemer 8. Vi benytter oss av analyseverktøy for å ta bedre operasjonelle valg knyttet til driften	
Business Modeller	

9. Vi benytter oss av digital teknologi til å øke produktiviteten og tilføre merverdi i sortimentet vårt og tjenester vi tilbyr 10. Business modellen vår er basert på digital teknologier	

Leadership Capabilities
Transformativ visjon
1. Ledelsen har en klar visjon på hvordan digital teknologi kan forme selskap vårt i fremtiden. 2. Ledelsen har en felles forståelse for muligheten som i ligger digital teknologi
Engasjement
3. Alle ansatte kan ta del i diskusjonene rundt digitale endringer i virksomheten 4. Selskapet oppmuntrer til en god kultur hvor digitalisering er sentralt i selskapskulturen.
Sterk styring

5. Selskapet vårt investerer i ansatte med de riktige digitale ferdighetene 6. Digital initiativer koordineres på tvers av avdelinger eventuelt regioner hvor selskapet deres befinner seg 7. Roller og ansvar for styring av digital initiativer er klart definert 8. Digitale initiativer vurderes gjennom et felles sett med nøkkelindikatorer		
Teknologisk lederskap		
9. IT avdelingen og ledelsen samarbeider godt og har god kommunikasjon mellom seg 10. IT avdelingen oppfyller selskapets mål om		

Appendix C: Interview Guide

#	Spørsmål	Område
1	Kan du være fortelle litt om deg selv og din rolle i «Selskapet»?	Generelt
2	Kan du beskrive hva du personlig mener med begrepet: digitalisering?	Personlig definisjon av digitalisering
3	Hva oppfatter du at digitalisering betyr i ditt selskap i dag? Føler du det er en felles forståelse for begrepet innad i selskapet? (At alle mener det samme med begrepet)	Personlig definisjon av digitalisering
4	I forhold til digitalisering: Hvor tenker du at selskapet deres står? Hvor oppfatter du at selskapet er langt fremme og hvor oppfatter du at selskapet har en lenger vei å gå?	

	Dersom vi skiller mellom digitalisering og teknologi-utvikling. Altså ser bort i fra teknologiske innovasjon av utstyr og komponenter og heller ser på digitalisering av prosesser, føler du selskapet er langt framme eller at selskapet har en lenger vei å gå? *Sammenlignet med andre selskaper/bransjer?*	Digital transformasjonsprosess/Eksterne faktorer
5	Hva tenker du om ledelsen og digitalisering i deres selskap? *Oppfatter du at det er en felles oppfatning av behovet? (innad i ledelsen og gjennom organisasjonen)* Hvordan oppfatter du ledelsens sitt engasjement rundt digitalisering? Hvilket ledd i organisasjonen føler du har mest kompetanse på digitalisering?	Digital transformasjonsprogressjon/ Organisasjonskulturen
6	Hvem opplever du at det er som pådrivere av digitaliseringsprosessen i selskapet deres? Hvordan får de gjennomslag? Hva oppfatter du er bakgrunnen for fokuset dere har på digitalisering? Hva er det av ytre faktorer som har påvirket selskapet deres digitaliseringsstrategi?	
	Er det prosesser du skulle ønske var mulig å automatisere? I så fall hva da?	IT-anvedelse
7	(Nå bytter vi litt tema også vil jeg gjerne høre hvordan du oppfatter kulturen innad i selskapet.) Kultur er jo mye, for eksempel: verdier, normer, standarder, væremåter, som påvirker mennesker til å nå mål. Dersom du kort skal beskrive kulturen i selskapet i dag (rundt digitalisering) – Hva ville du trekke frem? *Hva er det i organisasjonskulturen deres som støtter implementeringen av digitalisering og hva kan hindre det slik du ser det?*	

	Hva vil du si at er deres selskaps-kultur sine «sterke» og svake sider i forhold til å tilpasse seg en digital hverdag.	
8	Jobbing med strategi er jo en kontinuerlig prosess. Dette vil mest sannsynlig være tilfelle også for digitaliserings strategi dere har. I en organisasjon er det alltid en utfordring å sikre endringsvilje og kontinuerlig fokus over tid. Vi kan starte med: Hvordan oppfatter du tidsperspektivet for den digitaliseringsprosessen dere har i dag? Er det klare initiativer (del-mål) med tidsfrister? Er det 5 årsplaner, 1 årsplaner? Hvordan oppfatter du at det jobbes for å sikre engasjement over tid? Sikre at det blir en kontinuerlig prosess? Sikre tilpassing til endringer i omgivelsene ? *Hvilke utfordringer ser du med å jobbe strategisk over tid?*	
9	For å evaluere digitaliserings-initiativer må beslutninger tas. Kan du beskrive litt; grunnlaget for beslutninger i selskapet i forhold til digitalisering? *Informasjonen/dataen beslutninger er bygget på? Når en beslutnings skal bli tatt, føler du at du har nok data som beslutningsgrunnlag? Når en beslutnings skal bli tatt, føler du at den relevante dataen blir brukt? Har du noe konkret forslag til hva som kunne vært gjort annerledes.*	
1 0	Jeg vil gjerne høre litt om samarbeid, innad i selskapet med dine kollegaer, og utad (med f.eks. kontraktører og rådgivere) Hvordan oppfatter du er samarbeidet på tvers av avdelinger og funksjonaliteter er innad? Informasjonsflyten? -Dialog G3/G5/G7 *-Data/informasjon* Hvordan beveger ider seg igjennom hierarkiet?	

	Fra bunn til topp?	
	Hvordan blir informasjon kommunisert fra topp til bunn?) Hvor effektivt er samarbeidet med eksterne partnere?	
	Informasjonsflyten?	
	Dialog	
	Data/informasjon	
	Kontrakter	
	Når det kommer til samarbeid:	
	Hvor ser du utfordringer og barrierer og hvor er man evt gode?	
	Har du noen konkrete forslag til forbedringer/tiltak?	
1 1	Dagens markedskrefter skaper stor konkurranse og tvinger små og mellomstore selskaper til å tenke nytt og bredt. Føler du selskapet deres satser nok på nyskaping eventuelt er flinke nok til å oppsøke hjelp? *Innenfor administrativ digitalisering?* *Føler du at selskapet er villig til å ta risker for å utvikle eller ville du kalt dem risk-averse (risiko-motvillig)? Når det kommer til administrativ digitalisering.*	
1 2	Avslutningsvis vil jeg gjerne høre litt om din forståelse av totalstrategien for digitalisering i selskapet ditt. Kan du snakke litt om totalstrategien for alle digitaliseringsinitiativene? *Føler du det er en overordnet plan som samkjører alle disse initiativ? Informasjonsflyten imellom løsningene*	

Appendix D: Information letter – Survey/Interview

Seniors' perspectives on the challenges they face as they strive for digital maturity, as well as the solutions to those challenges and the factors affecting their firms

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor hensikten med masteroppgaven, og derav dette intervjuet er å kartlegge deres digitale modenhet oppimot en digitalmodenhetsindeks, og med det kunne finne ut av hvor dere bør ligge. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Formålet med innsamling av data knyttet opp til denne masteroppgaven er å måle deres digitale modenhet med hjelp av et spørreskjema som tar utgangspunkt i teorien til Westerman et al(Mer om dette i selve spørreundersøkelsen). I tillegg er formålet med intervjuene være å finne ut av ulike problemer dere har opplevd i sammenheng med å bli mer digital modne, men også de ulike faktorene som er med på å fremme et sterkt ønske om å å bli mer digital modne. Samt vil løsninger knyttes opp til problemene som fremkommer i denne masteroppgaven. Ved å se nærmere på dette feltet kan dette prosjektet observasjoner som kan si noe om forholdet noen av de små og mellomstore selskapene har til digital modenhet, men også kanskje typiske forholde som også potensielt andre selskaper befinner seg i. Denne masteroppgaven ble tatt for seg i tidsperioden januar 2021- Juni 2021.

Forskningsspørsmål:

> **RQ1**: *What is the digital level among the SMEs in Norway?*

> **RQ2:** *What are the common challenges faced by managers in digitally mature firms, and what solutions might they pursue?*

> **RQ3:** *Which factors both external and internal are driving smaller and medium-sized businesses (SMEs) to become more digitally mature?*

Hvem er ansvarlig for forskningsprosjektet?

Norges miljø- og biovitenskapelige universitet er ansvarlig for prosjektet. I tillegg skrives oppgaven i samarbeid med BDO Norge, som har funnet de aktuelle kandidatene som skal intervjues og som også deltaer i spørreundersøkelsen

Hvorfor får du spørsmål om å delta?

Utvalget ble trukket som følge av at du enten er en kunde av BDO Norge eller er et selskap generelt som kan være av god interesse for å kunne besvare forskningspørmsålene i denne masteroppgaven. Henning Torgersen og Truls Ellingsen er mine kontakt og har skal være det opp igjennom hele perioden med oppgave skrivingen.

Hva innebærer det for deg å delta?

Om du velger å delta i prosjektet innebærer dette at vi foretar oss av et intervju hvor spørsmål som tar for seg disse områdene Visjonen & Strategien, kulturen, lederskapet og kompetanse & tilgjengelighet blir stilt. Opp igjennom alle intervjuene vil det tas opp et lydopptak av alle intervjuene med samtykke fra hver enkelt av deltakerne før intervjuene initieres. I ettertid vil et spørreskjema sendes ut og vil ta ca 6 minutter å svare på. Dette vil ta for seg to områder som har visst seg å være sentrale punkter innenfor digital modenhet, Digital capabilities og Leadership capabilities.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

Transkriptet fra intervjuene og svarene fra intervjuene vil oppbevares i et trygt og beskyttet servere frem til masteroppgaven har blitt skrevet og levert. Transkriptene inneholder ikke noe personlige sensitive informasjoner som kan identifisere personene. I samråd med BDO Norge vil dataen anonomiseres for å unngå at deltakerne kan identifiseres, samt selskapet de jobber for. Svarene fra både intervjuene og spørreundersøkelsen vil forbli anonymt selv etter at den har blitt publisert i siden til NMBU.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Opplysningene anonymiseres når prosjektet avsluttes/oppgaven er godkjent, noe som etter planen er i slutten av august 2021. Personopplysninger og opptakene vil bli sluttet ved prosjektslutt og sendt inn til NMBU.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Norges miljø og biovitenskapelige universitet (NMBU) har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke opplysninger vi behandler om deg, og å få utlevert en kopi av opplysningene
- å få rettet opplysninger om deg som er feil eller misvisende
- å få slettet personopplysninger om deg
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger

Hvis du har spørsmål til studien, eller ønsker å vite mer om eller benytte deg av dine rettigheter, ta kontakt med:

Norges miljø og biovitenskapelige universitet (NMBU) ved Førsteamanuensis Nicolay Worren kan kontaktes på e-posten(nicolay.worren@nmbu.no), men også på telefon: 672 31 124, Masterstudenten Chukwudi Ndu Nwachukwu kan kontaktes på Chukwudi.ndu.nwachukwu@nmbu.no

Vårt personvernombud: Hanne Pernille Gulbrandsen ved Norges miljø og biovitenskapelige universitet kan kontaktes på e-posten(personvernombud@nmbu.no) eller på telefon: 402 81 558

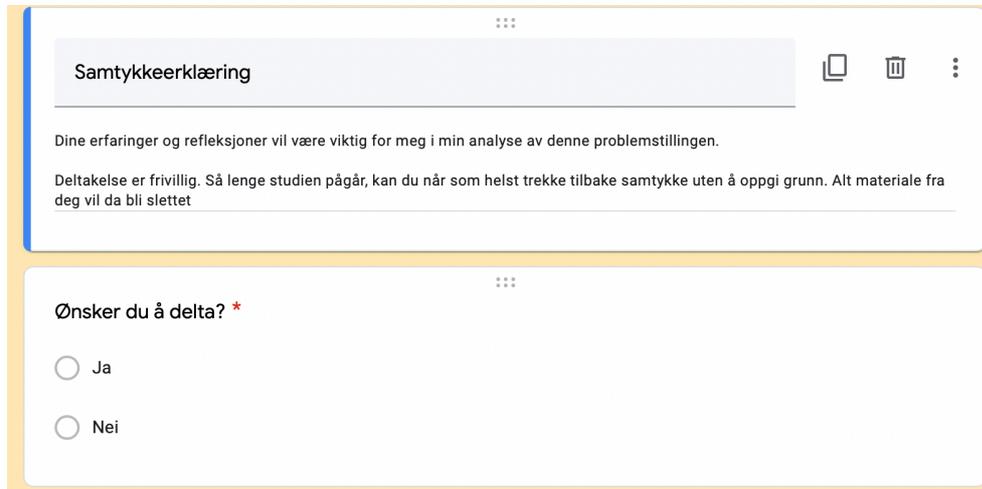Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:
- NSD – Norsk senter for forskningsdata AS på epost (personverntjenester@nsd.no) eller på telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig
(Forsker)

Samtykkeerklæring

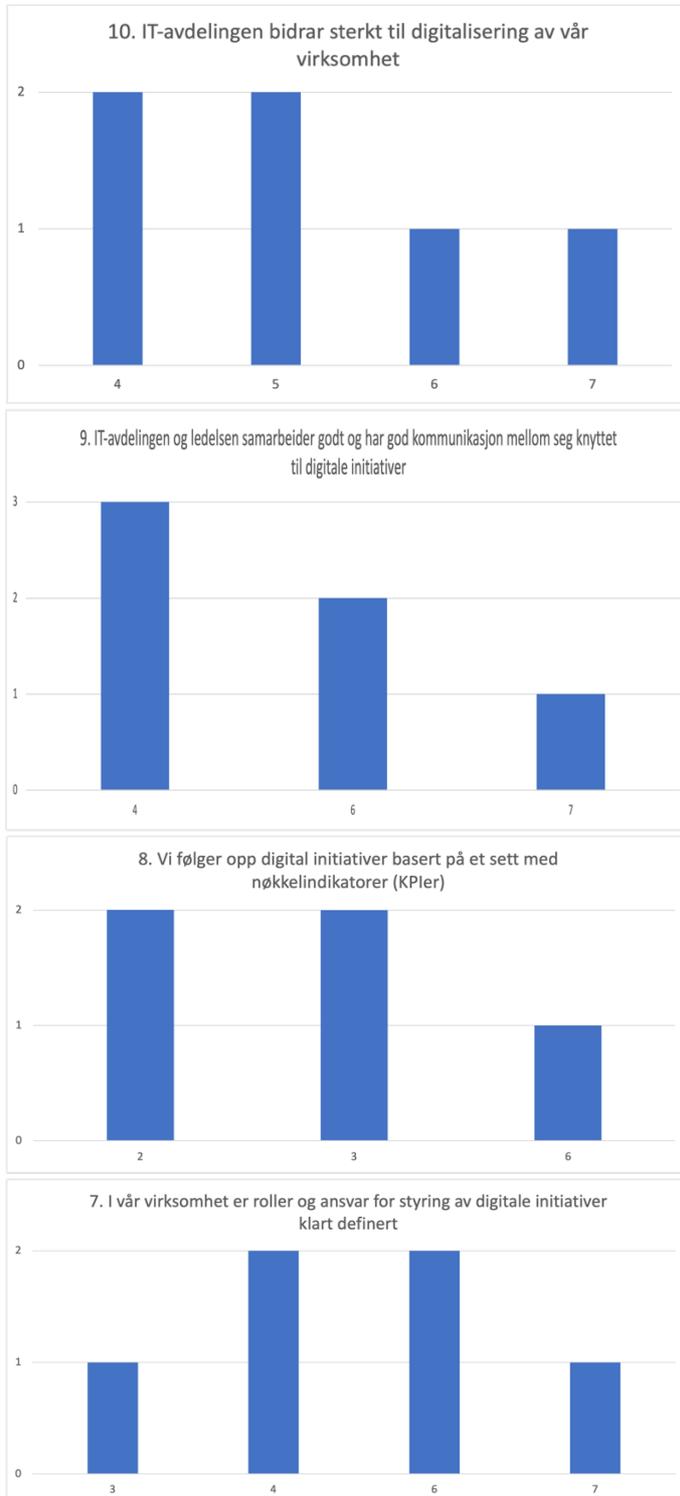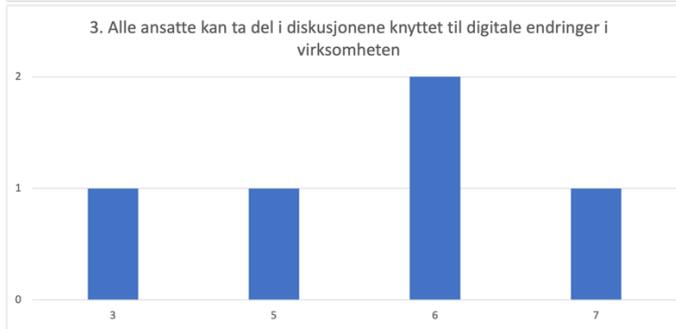Samtykke ble innhentet elektronisk med hjelp av Google Forms (Ref skjermbilde under):

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet

----

(Signert, dato)

Photos

Appendix A: Survey data: X-Axis – The score amounts, Y-Axis – The number of participants that answered.

10. IT-avdelingen bidrar sterkt til digitalisering av vår virksomhet

9. IT-avdelingen og ledelsen samarbeider godt og har god kommunikasjon mellom seg knyttet til digitale initiativer

8. Vi følger opp digital initiativer basert på et sett med nøkkelindikatorer (KPIer)

7. I vår virksomhet er roller og ansvar for styring av digitale initiativer klart definert

6. Vi koordinerer effektivt på tvers av avdelinger/enheter for å innføre eller forbedre digital teknologi

5. I vår virksomhet investerer vi mye for å sikre at ansatte forbedrer sine digitale ferdigheter

4. I vår virksomhet har vi en kultur som verdsetter utnyttelse av digital teknologi

3. Alle ansatte kan ta del i diskusjonene knyttet til digitale endringer i virksomheten

2. Toppledere og mellomledere i vår virksomhet har en felles forståelse for muligheten som i ligger digital teknologi

1. Ledelsen i vår virksomhet har en klar visjon om hvordan digital teknologi kan forme selskapet vårt i fremtiden

10. Vår forretningsmodell er basert på å utnytte digital teknologi

(bar chart, x-axis: 3, 4, 5, 6, 7; values: 3→1, 4→1, 5→1, 6→2, 7→1)

9. Vi benytter oss av digital teknologi til å øke produktiviteten og tilføre merverdi i sortimentet vårt og tjenester vi tilbyr

(bar chart, x-axis: 4, 5, 6, 7; values: 4→1, 5→2, 6→2, 7→1)

8. Vi benytter oss av analyseverktøy for å ta bedre driftsmessige beslutninger

(bar chart, x-axis: 3, 4, 5, 6; values: 3→1, 4→1, 5→3, 6→1)

7. Vi har en tett og sømløs koordinering knyttet til drift og kundeinformasjon på tvers av avdelinger, organisasjoner og systemer

(bar chart, x-axis: 4, 5, 6; values: 4→1, 5→3, 6→2)

6. Våre kjerneprosesser er automatiserte[Kjerneprosesser = Arbeidet og utstyret som benyttes for å utføre aktiviteter for å nå virksomhetens mål]

(bar chart, x-axis: 4, 5, 6; values: 4→1, 5→2, 6→3)

5. Digital teknologi gir oss muligheter til å forbedre drifte og øke produktiviteten internt

4. Vi benytter oss av digitale kanaler for å yte best mulig kundeservice

3. Vi selger våre tjenester og produkter gjennom digitale kanaler (dvs. internett)

2. Vi bruker digitale kanaler som for eksempel sosiale media for å markedsføre våre produkter og tjenester

Verdi	Antall
2	1
5	1
6	2
7	2

1. Vi benytter oss av digital teknologi for å forstå våre kunder bedre (analyseverktøy, sosiale medier og/eller andre verktøy)?

Verdi	Antall
5	2
6	3
7	1