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Strategic leading of digital transformation in large established companies – a multiple case-study

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In the recent years, the rapid development of digital technologies has enabled companies across the industries to compete and create value in completely new ways. To leverage these possibilities and to respond to possible threats, many established companies have systematically started to enhance their digital capabilities and resources. This phenomenon is often called digital transformation. The recent literature has focused mainly on certain aspects of digital transformation. However, a holistic view of the digital transformation is missing even though it is a top-priority phenomenon for companies' executives.

Given the importance of digital transformation and the lack of understanding, this thesis aims to investigate how large established companies strategically lead the digital transformation. The study focuses on drivers of digital transformation, executives' leading practices, and changing aspects of strategy and operations. The theoretical part of this thesis synthesizes the recent literature regarding digital innovations, digital disruption of industries, and companies' digital transformations. Based on the literature, a conceptual framework of the digital transformation is constructed. The empirical part of the study examines and evaluates digital transformations in three large Nordic companies. These companies operate in financial, industrial, and media sectors. An inductive case study is employed through interviews with companies' executives and consultants.

The results of this thesis suggest that there are major differences how companies strategically lead the digital transformation. There are multiple drivers, such as customers' liquid expectations and new digital entrants, which push companies to digital transformation with varying intensity. Further, companies' executives lead the change by utilizing different practices to establish and drive digital transformation. For example, they build a digital vision and use publicity to show the priority of digital transformation. The results of the thesis indicate that companies change their strategy and operations in digital transformation extensively but the magnitude of the change varies between the companies. This thesis provides a systematical approach called a digital transformation compass to holistically evaluate companies' digital transformations. In addition, concrete recommendations are presented to help companies to analyze how they could approach digital transformation.

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Viime vuosina digitaalisten teknologioiden nopea kehitys on mahdollistanut yrityksille uusia tapoja kilpailla ja luoda arvoa kaikilla toimialoilla. Hyödyntääkseen näitä mahdollisuuksia ja vastatakseen mahdollisiin uhkiin monet vakiintuneet yritykset ovat alkaneet järjestelmällisesti kehittämään digitaalisia kyvykkyyksiä ja resursseja. Tätä ilmiötä kutsutaan usein digitaaliseksi transformaatioksi. Kirjallisuus on tähän mennessä keskittynyt tiettyihin digitaalisen transformaation osa-alueisiin. Kokonaisvaltainen ymmärrys digitaalisesta transformaatiosta sekä yritysten johtamismalleista kuitenkin puuttuu, vaikka digitaalisen transformaation on todettu olevan yksi tämän hetken tärkeimmistä ilmiöistä yritysten johdolle.

Ottaen huomioon digitaalisen transformaation tärkeyden sekä kokonaisvaltaisen ymmärryksen puutteen, tämän diplomityön tavoitteena on tutkia kuinka suuret vakiintuneet yritykset strategisesti johtavat digitaalista transformaatiota. Tutkimuksessa käsitellään digitaalisen transformaation pääsyitä yritykselle, johtajien käytäntöjä johtaa muutosta, sekä yrityksen strategian ja operaatioiden muutosta digitaalisessa transformaatiossa. Työn kirjallisuuskatsaus koostaa digitaalisiin innovaatioihin, toimialojen digitaaliseen murrokseen sekä yritysten digitaaliseen transformaatioon liittyvän viimeaikaisen tutkimuksen. Kirjallisuuteen pohjautuen työssä luodaan käsitteellinen viitekehys yritysten digitaalisesta transformaatiosta. Tutkimuksen empiirinen osuus tarkastelee kolmen suuren pohjoismaalaisen yrityksen digitaalista transformaatiota. Nämä yritykset toimivat rahoituksen, teollisuuden, sekä viestinnän toimialoilla. Induktiivinen tapaustutkimus toteutetaan yritysten johtajien sekä konsulttien haastatteluilla.

Tutkimuksen tulokset osoittavat, että yritysten välillä on suuria eroja digitaalisen transformaation strategisessa johtamisessa. Useat eri syyt, kuten muuttuvat asiakastarpeet ja uudet digitaaliset kilpailijat, ajavat yrityksiä digitaaliseen transformaatioon vaihtelevalla voimakkuudella. Yritysten johtajat käyttävät useita keinoja digitaalisen transformaation luomiseen sekä ajamiseen eteenpäin. He esimerkiksi luovat yrityksen digitaalisen vision sekä käyttävät julkisuutta osoittaakseen muutoksen tärkeyden. Tulokset myös implikoivat, että yritykset muuttavat strategiaa ja operaatioita digitaalisessa transformaatiossa laaja-alaisesti, mutta muutoksen suuruus vaihtelee yritysten välillä. Työssä esitellään digitaalisen transformaation kompassi, joka auttaa arvioimaan kokonaisvaltaisesti yrityksen digitaalisen transformaation tasoa. Tämän lisäksi konkreettiset suositukset auttavat yrityksiä arvioimaan, kuinka he voivat kehittää yrityksen digitaalista transformaatiota.

Avainsanat: digitaalinen transformaatio, digitaalinen murros, digitaalinen innovaatio, organisaation muutos, digitaalinen strategia	Julkaisukieli Englanti

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1 INTRODUCTION

This thesis studies strategic leading of digital transformation in Nordic established firms. The study is divided into the theoretical and empirical part. The theoretical part consists an extensive literature review on digital innovations, digital disruption of industries and digital transformation of companies. The empirical part of this thesis examines digital transformations of three large Nordic companies, and it is conducted by interviewing executives and consultants of the companies.

This first chapter is an introduction to the study. First, I present the background and motivation of this thesis. Then, I define the research problem as well as three research questions. After that, I discuss the objective and the scope of the study, and finally, I introduce the structure of the study.

1.1 Background and motivation

We are living in an era where digital innovation has become one of the most powerful forces for business and social innovation (Barrett, Davidson and Vargo, 2015). Rapid development and lowering cost of digital technologies have enabled companies to compete with digital innovations in completely new ways (Yoo, Henfridsson and Lyytinen, 2010; Heppelmann and Porter, 2014). Digital innovations are unique because they bring previously separate user experiences and industries together, they digitalize previously non-digital products, and they can be reprogrammed (Yoo, Henfridsson and Lyytinen, 2010; Yoo *et al.*, 2012). These distinctive features of digital innovations are one of the main reasons that digitally advanced companies, such as Apple, Google, Amazon, and Facebook, are nowadays the most valuable companies in the world (Hunter, Zaman and Liu, 2017).

An important implication of this recent development has been the digital disruption of industries (Nunes and Downes, 2013). By leveraging technological development and basic features of digital innovations, new entrants have been able to start competing with completely new ways, thus disrupting entire industries (Christensen, 1997; Lyytinen and Rose, 2003). This disruption has changed, and often destroyed, the competitive position

of traditional large companies (Bughin and Zeebroeck, 2017). Take, for example, the impact of Google Maps on GPS device industry. Only two years after the launch of Google Maps as much as 85 % of the market capitalization of the top makers of stand-alone GPS devices had disappeared (Nunes and Downes, 2013). Similarly, Amazon and its Kindle e-reader created profound changes in the industrial structure of publishing (Yoo, Henfridsson and Lyytinen, 2010). These kinds of examples create a sense of urgency in all industries about the possible impact of the digital disruption (Hess *et al.*, 2016).

In order to respond to this threat of digital disruption and to leverage opportunities of digital technologies and innovations, many established (also the term 'incumbent' is used in this thesis) companies have started intentionally enhance their digital capabilities and resources (Sebastian *et al.*, 2017; Svahn, Mathiassen and Lindgren, 2017). This phenomenon where incumbent companies aim to become digitally more advanced is often referred as *digital transformation* (abbreviation *DT* is also used in this thesis) (Hess *et al.*, 2016; Sebastian *et al.*, 2017; Singh and Hess, 2017). The term "transformation" refers to the comprehensiveness of the change as organizations aim to gain business improvements from the new technologies such as mobile, analytics, cloud and Internet of things (Sebastian *et al.*, 2017; Singh and Hess, 2017). The interest in the topic of digital transformation in the information systems research has been growing, but existing literature on the topic is still scarce (Gerster, 2017). As Hess *et al.* (2016) note, recent work in academia has focused on providing guidance on certain aspects of digital transformation, but the literature on companies' holistic approach to digital transformation is not addressed. Yet, more and more companies are setting up digital transformation initiatives to advance their digital capabilities and resources (Kane *et al.*, 2017). This has created a research gap: companies are increasingly setting up company-wide digital transformation initiatives, while the academic literature does not cover holistically these new initiatives and how companies are leading them.

This thesis explores the phenomena of digital disruption and digital transformation, as well as the actions that large Nordic incumbent companies are taking in digital transformation. It is well known that global incumbents, such as GE, DBS, and LEGO are investing significantly in their digital transformation (El Sawy *et al.*, 2016; Sia, Soh and Weill,

2016; Sebastian *et al.*, 2017) but current digital transformations of Nordic incumbent companies are not well studied. For example, what drives these companies to become digitally more advanced? How do executives of the companies lead digital transformation? How significantly digital transformation change companies' strategy and operations? By understanding better the digital transformation and how companies are leading it, companies can learn what the different practices are, how do they work, and what are the difficulties in them. The enhanced understanding of digital transformation contributes to different fields of research as digital transformation is an organization-wide phenomenon. It sheds light, for example, on digital disruption of industries, digital innovation processes, leading practices of executives, and operational changes of organizations. The holistic understanding of current digital transformations of Nordic companies makes it easier for companies, researchers, and other stakeholders to focus on the subject more in-depth, and thus develop the knowledge of digital transformation further.

1.2 Research problem

The above-discussed research context creates the foundation for the research problem. The identified research gap will be studied with the following research problem:

How can large established companies strategically lead digital transformation?

This thesis aims to understand better the phenomenon of digital transformation: what drives companies to do it, how do executives lead it, and how it changes companies' strategy and operations. Thus, the research problem can be further divided into three different research questions:

RQ1: What drives companies to digital transformation?
RQ2: How do executives lead digital transformation?
RQ3: How does digital transformation change companies' strategy and operations?

The RQ1 aims to create an understanding of companies' drivers of change and thus create a sufficient foundation to answer RQ2 and RQ3. Academic literature regarding these questions is first examined in Chapter 2 where conceptualization of companies' digital transformations is built. As the digital transformation is a nascent concept in literature, a

good understanding of the underlying factors, concept, and different practices are needed for the empirical part of the study.

1.3 Objective and scope of the study

The objective of this study is to provide a holistic understanding about strategic leading of digital transformation in established companies. The phenomenon of digital transformation will be conceptualized, the drivers of digital transformation will be explained, executives' practices of leading digital transformation will be examined, and case companies' actions in digital transformation will be analyzed.

The theoretical objective of this thesis is to provide a thorough understanding of digital innovations, digital disruption of industries, and companies' digital transformation. The academic literature of digital transformation is scarce, and it is mostly concentrated on practice-oriented publications (Gerster, 2017). Thus, this thesis will provide a comprehensive literature review of digital technologies, digital innovation, digital disruption of industries, and companies' digital transformation. This is important because current literature lacks a full understanding of underlying mechanisms through which digital innovations cause shifts in the competitive environment. By synthesizing this body of literature, I create a basis for studying strategic leading of companies' digital transformation and enable understanding why companies' approaches may differ. For academic research, this thesis aims to provide knowledge of companies' approaches in digital transformation, thus facilitating branches of future research.

The practical objective of this thesis is to provide knowledge regarding digital transformations in Nordic established companies. The goal is to understand how these companies approach digital transformation. By understanding drivers, leadership practices and changes regarding digital transformation, this thesis will provide valuable information to established companies about different practices in digital transformation. Also, by analyzing companies' digital transformation and reflecting it with current literature, this thesis will give valuable insights about the current state of digital transformations in Nordic companies. Based on the analysis, this thesis will give concrete recommendations for practitioners to approach digital transformation.

As the focus area of this thesis is broad and the digital transformation has not been studied widely, it is required to set some limitations to the scope of the study. This thesis is performed as a qualitative case-study, and data collection is done by using interviews and public materials of companies. The approach to study digital transformation is strategical: different technical aspects and barriers are excluded from the empirical part of the study. Thus, the focus of this thesis is on strategic leading of digital transformation.

The interviewees are aimed to be people who have a strategical view on companies' digital transformations: C-level executives, VP's, Directors, and companies' senior consultants. As the research regarding companies' digital transformations is scarce, the goal is to cover multiple industries, while focusing on Nordic established companies. However, as the topic of this thesis is wide, the number of companies will be limited to three in order to ensure the required depth of the analysis.

1.4 Structure of the study

This thesis is divided into five parts: (1) introduction, (2) theory and literature, (3) research methodology, (4) findings, and (5) discussion. The second chapter of this thesis is a theory and literature review where relevant academic literature is presented to provide a solid foundation and understanding of the phenomenon. The focus of the chapter is to understand the features of digital innovations, how they cause digital disruption, and what are the actual practices that companies are implementing in digital transformations. Following Chapter 3 presents the methodology used in this thesis. The research setting, methodology, data collection, and data analysis are overviewed comprehensively. Chapter 4 presents the findings from the empirical part of the study. The structure of this chapter follows research questions: first companies' context and drivers of change are analyzed, then executives' practices to lead digital transformation are examined, and finally changes companies make to strategy and operations in digital transformation are evaluated. The final Chapter 5 provides a discussion of the study. It concludes the answers to the research questions and gives concrete recommendations for companies. The most important practical and theoretical implications are provided, and study limitations are critically discussed. Finally, concluding remarks are provided to summarize the thesis.

2 THEORETICAL BACKGROUND

In this chapter, I present the theoretical background for companies' digital transformation. This chapter aims to provide a sufficient foundation for the empirical part of the thesis and link this thesis to current academic literature. The literature review is divided into two main parts. Firstly, Sections 2.1 and 2.2 examine the underlying mechanisms through which digital innovations change competition and thus disrupt industries. This in-depth examination is required in order to understand the reasons why digital transformation is a high priority phenomenon for companies and to facilitate the latter part of the literature review. The latter part of this literature review, Sections 2.3 and 2.4, examine what does digital transformation mean for companies today and how executives are leading it. In the end of the chapter, the different sections of this literature review are linked together with a conceptual framework of digital transformation.

2.1 What makes digital innovations special?

In order to understand comprehensively the reasons why companies are trying to transform digitally, we need to take an in-depth look at the underlying mechanisms through which digital innovations are changing companies' value creation and capture logic.

2.1.1 Digital innovation

Digital innovation – defined as "creation of (and consequent change in) market offerings, business processes, or models that result from the use of digital technology" (Nambisan *et al.*, 2017, p. 224) – has become the driving force of business and social innovation (Barrett, Davidson and Vargo, 2015). During the last decade, rapid technological development in areas such as mobile, social media platforms, cloud computing, analytics and Internet of Things has enabled radically new (re)combinations of digital and physical components that produce novel products and services (Yoo, Henfridsson and Lyytinen, 2010; Barrett, Davidson and Vargo, 2015). These new combinations rely on digitization, i.e. the encoding of analog information into digital format. Digital innovation encompasses a wide range of innovation possibilities, such as new products, platforms, services, and customer experiences (Nambisan *et al.*, 2017).

To understand why digital innovations are different from normal innovations, it is necessary to understand how digital technologies differ from earlier technologies. According to Yoo, Henfridsson and Lyytinen (2010), there are three distinctive characteristics of digital technologies, namely the *reprogrammability, the homogenization of data, and the self-referential nature of digital technology*. *The reprogrammability* allows a digital device to perform a wide array of different functions and these functions can be reprogrammed any time. Thus, the scope, features, and value of digital offerings can continue to develop and expand even after the launch of innovation (Nambisan *et al.*, 2017) *The homogenization of data* means that any digital contents (audio, video, text, and image) can be stored, transmitted, processed, and displayed using the same digital devices and networks, thus separating the content from the medium. Thus, innovations are inexpensive and fast to scale as almost any device can process any content. *The self-referential nature of digital technology* means that diffusion of digital innovations accelerates the use of digital technologies, which in turn fosters digital innovation. Thus, a positive virtuous cycle emerges lowering entry barriers, decreasing learning costs, and accelerating diffusion. (Yoo, Henfridsson and Lyytinen, 2010)

It is also noted that digital technologies have a dual role in digital innovations. On the one hand, they act as an *operand resource* enabling digital connectivity, which in turn reduces communication cost and increases speed and reach (Lusch and Nambisan, 2015; Lyytinen, Yoo and Boland, 2016). For example, digital technologies nurture innovation by establishing value network and allowing sharing of resources and knowledge in that network (Barrett, Davidson and Vargo, 2015). On the other hand, digital technologies act as an *operant resource* initiating innovation and creating novel opportunities (Lusch and Nambisan, 2015; Lyytinen, Yoo and Boland, 2016). As an example, digital technologies may seek and pursue novel opportunities and new innovations on their own by mining data and creating bridges across different resources (Lusch and Nambisan, 2015).

Together, these distinctive characteristics of digital technologies create a new level of fluidity to innovation processes which allow them to unfold in a nonlinear manner (Nambisan *et al.*, 2017). Yoo *et al.*, (2012) argue that digital innovations have two unique

features that give them their distinctive nature: *convergence* and *generativity*. Convergence means that previously separate user experiences are brought together (e.g. Internet, phone, and TV), digital technologies are embedded to previously nondigital products, and previously separate industries are brought together by the convergence of media and products (Yoo *et al.*, 2012). Generativity refers to technology's "overall capacity to produce unprompted change driven by large, varied, and uncoordinated audiences" (Zittrain, 2006 p. 1980). Generativity of digital innovations emerges in several ways. For example, because digital technologies can be reprogrammed, new capabilities can be added after a product or a service has been launched (e.g. smartphone apps) (Yoo, Henfridsson and Lyytinen, 2010). This can lead to unexpected changes in the performance of a service or a product. Also, the use of digital technologies leaves huge volumes of digital traces as by-products which can be used to new innovations which were not expected by the original innovators (Yoo *et al.*, 2012). As a result, generativity can create completely new affordances to digital innovations.

2.1.2 Competition in the digital world

It is now apparent that digital innovations have their distinctive characteristics but how does it impact on the way firms operate and compete in the digital world? As noted in the literature, digital innovations can blur industry boundaries and bring industries together (Yoo, Henfridsson and Lyytinen, 2010; Lyytinen, Yoo and Boland, 2016). In turn, this industry transformation can open new opportunities and create new threats for existing companies.

One important implication of digital innovations for the competition is a layered modular architecture (Yoo, Henfridsson and Lyytinen, 2010). As firms embed digital technologies to physical products layered modular architecture emerges (Figure 1). This architecture is a hybrid between the physical modular architecture and the digital layered architecture. Thus, a digitized product can be both a product and a platform. For example, iPad can be used as a product straight out of the box, but its functionality can be expanded with new applications and hardware accessories.

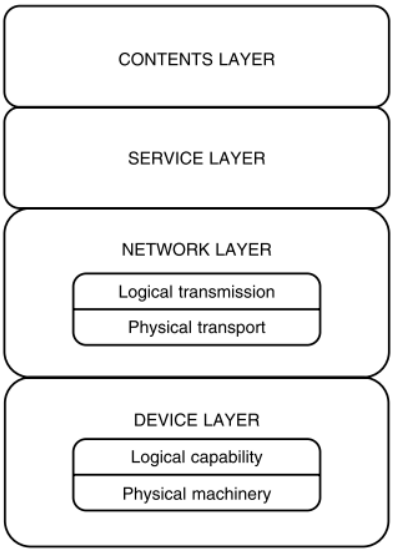

Figure 1: The layered architecture of digital technologies (Yoo, Henfridsson and Lyytinen, 2010)

The layered architecture consists of four layers: devices, networks, services, and contents. Device layer consists both physical machinery layer (e.g., computer hardware) and a logical capability layer (e.g., operating system). Networks layer includes both physical transport layer (e.g. cables and transmitters) and a logical transmission layer (e.g. TCP/IP). Service layer includes application functionality that directly serves users as they interact with content. Finally, the content layer contains data such as texts, sounds, images, and videos which are stored and shared. (Yoo, Henfridsson and Lyytinen, 2010)

Digital technologies embedded to products create a layered architecture, which in turn creates generativity. This generativity enables possibilities to create completely new affordances for a product that were not originally expected (Yoo *et al.*, 2012). For instance, digital cameras can be used as a video player, photo editor and Internet client besides normal use as a camera. Thus, a layered modular product remains fluid and open to new meanings which in turn can change the way how companies create and capture value.

The layered modular architecture enables companies to compete and cooperate in new ways. As an example, Apple's iPhone (device layer) has been an important component for Google's search services (service layer). Similarly, Google Maps (service and content layer) is an important component for Apple's iOS platform (service layer). However, when Apple introduced their own navigation application (service and content), they

started to compete on the same layer. Similarly, Google and Apple compete head-to-head on a device layer with mobile phones. As can be seen, competition happens on different levels in a layered modular architecture and shifts in competition can happen rapidly.

In addition to the new ways to compete, digital innovation allows companies to grow rapidly and use new ways to generate innovation opportunities. Huang *et al.* (2017) found three mechanisms through which digital ventures innovate to rapidly scale their user base: *data-driven operation, instant release* and *swift transformation*. Data-driven operation refers to company's ability to frame and monitor innovation opportunities through analyzing large volumes of data. Instant release means company's ability to minimize the time gap between service idea and deployment by running user-responsive trialing and modification. Swift transformation refers to firm's abilities to rethink the core in-house digital technology for a new business context and ability to redefine its identity. By using these mechanisms, a Chinese digital venture, WeCash, was able to reach 600,000 users in the eight months following its establishment. (Huang *et al.*, 2017)

2.2 Digital disruption of industries

As discussed above, digital innovations have opened new opportunities to compete and achieve competitive advantage. It has been acknowledged that digital technologies have disruptive nature which can lead to industry transformation (Lyytinen and Rose, 2003). There are several examples from the industries such as publishing, media, and telecommunications where entire industries have been transformed by digital innovations (Yoo, Henfridsson and Lyytinen, 2010; Nunes and Downes, 2013; Heppelmann and Porter, 2014). These industries have faced disruptive innovations which have thoroughly changed incumbents market position and customer behavior. The term disruptive innovation refers to innovations which are truly transformative and can alter existing rules of competition (Christensen, 1997; Lyytinen and Rose, 2003). These examples raise a question how digital innovation disrupt industries.

For the past decades, Christensen's (1997) work on disruptive technologies and innovations has been one of the most influential theories in the field of innovation management. The main idea of the disruptive innovation is that in the beginning new innovation has

worse performance than current solutions on a primary performance dimension, but it performs better on an alternate dimension. Over time, new innovation improves on the primary dimension so that it appeals to mainstream customers and thus it causes disruption in the market. As incumbent firms have focused on serving mainstream customers and their expectations, they fail to recognize new competitors from niche markets that could take over the market. This can cause leading firms to fail because their products offer inferior value to customers and at this point, it is too late to reach the new entrant. (Christensen, 1997)

Even though Christensen's (1997) work has contributed significantly to the strategy literature and it is highly praised by managers, many scholars have challenged and criticized it in several aspects. Danneels (2004) brought up five themes about disruptive innovations that are questionable: (1) the actual definition of disruptive technology; (2) predictive use of the theory of technological disruption; (3) explanation of the success of incumbents; (4) the implications of the theory for the merits of being customer-oriented; and (5) the merits of creating a spin-off to commercialize the disruptive technology. In addition, Tellis (2006) studied these themes and argued that, in contrast to the Christensen's theory, technologies do not evolve along S-curves, they do not cross in performance only once, and they do not always start below and end above the prior technology's level of performance. To define the disruptive innovation better, Markides (2006) proposed that not all disruptive innovations are the same, but they should be categorized by technological, business-model and new-to-the-world product innovations. Thus, based on these factors, Christensen's theory should be used more as an indicator of possibilities that may happen, but avoid using it as a complete truth.

How, then, digital disruption of industries happen? In the literature, there are different views of the underlying logic of digital disruption. Firstly, Nunes and Downes (2013) argue that we are in a new era where industries transform by "big-bang disruptions". Unlike Christensen's (1997) theory suggest, new technology and competitor does not start from unserved customers with different needs. Rather, it targets all customer segments because of its better performance at a lower price and greater customization. Three defin-

ing characteristics of "big-bang disruption" are unencumbered development, unconstrained growth, and undisciplined strategy. Examples of such disruptions include smartphone navigation apps with their impact on navigation-product makers, Skype and Whatsapp with their impact on calling and messaging and Spotify with its impact on radio and recorded music. This view on digital disruption can be linked to the layered modular architecture and distinctive characteristics of digital technologies introduced above (Yoo, Henfridsson and Lyytinen, 2010). As digital innovation happens on service or content layer, it is possible to diffuse innovation rapidly and with nearly zero-cost. Also, because of the layered architecture, disruption can come from unexpected directions why it is hard to defend. For example, when Google introduced its Google Maps (content and service layer) application on Android platform (service layer), every Android phone turned to be a navigator. This kind of rapid diffusion from previously separate industry is hard to defend which in turn led to steep business decline among navigation-product makers.

Secondly, Pagani (2013) studied how value creation and capture shift in digitally enabled value networks in response to incremental innovations and cross-boundary industry disruptions. The study recognizes three types of value networks (control point constellations): (1) *closed vertically integrated model*, which describes the short-term static properties of industry structure (e.g. analog TV broadcasting); (2) *loosely coupled coalition model*, which refers to the emergence of an incremental innovation (e.g. digital TV); and (3) *multisided platform model,* which characterizes the emergence of cross-boundary industry disruptions (e.g. emergence of Apple TV and Netflix). As value networks evolve from one model to another, the most critical change happens in the value creation and value capture logic. In the closed vertically integrated model, the value creation and capture are characterized by the presence of large, strongly connected members. The loosely coupled coalition model is characterized by the management of relations and value with partners along the value chain. In this model, most of the value will be captured by service providers as they act as "bottlenecks". Multisided platforms bring together two or more distinct groups of customers, building an infrastructure which creates value by reducing distribution, transaction, and search costs. Value capture happens by collecting revenue from each side, although one side is often subsidized. To sum up, as value networks evolve because of technological advancement, value creation and capture points

change, which in turn can cause industry disruption. This change in value networks can be rapid because of technological advancement why incumbents position can be negatively impacted. (Pagani, 2013)

Thirdly, Bughin and van Zeebroeck (2017) suggest that digitization disrupts incumbents business through two loop effects. The first loop that disrupts incumbents' business is new digitally enabled entrants that are creating new competitive dynamics. New entrants take market share from incumbents, put pressure on price, alter customer behavior and change value distribution. The study found that these effects are larger in more digitally advanced industries and that effect hurts slower-growing companies the most. The second loop that can impact negatively on incumbents' business is the reaction of legacy companies to each other. This is called "red-queen" competition where legacy companies create a self-reinforcing process where they first imitate digital entrants and then one another. For example, when UPS and FedEx started to compete in the overnight package-delivery market, both companies launched digital innovations, but soon innovation gave way to imitation where competitors responded to moves with countermoves. The results of the study indicate that these two loops have a nearly equal negative impact on incumbents' revenue and profits. According to the study, digital new entrants and red queen competitors each cut down about 30 % of incumbents' revenue and profit growth. Compared to Nunes's and Downes's (2013), and Pagani's (2013) perspectives on digital disruption, this view brings up an important point about the impact of incumbent companies' competition on digital disruption.

2.3 Elements of digital transformation

It is now evident that digital innovations are something that companies should consider if they want to keep their competitiveness. In order to respond to the threat of digital disruption and to leverage possibilities of digital innovations, many companies have started to intentionally enhance their digital capabilities and resources (Sebastian *et al.*, 2017; Svahn, Mathiassen and Lindgren, 2017). This phenomenon where incumbent companies aim to become digitally more advanced is often referred as *digital transformation (DT)* (Hess *et al.*, 2016; Sebastian *et al.*, 2017; Singh and Hess, 2017). Digital transformation concerns mostly incumbent companies who need to address the possibilities and

threats that digital innovations pose to their current business. As discussed above, digital innovations may alter competitive dynamics of industries rapidly and severely which is why digital transformation has a high priority in many companies (Hess *et al.*, 2016).

Academic literature about digital transformation is scarce. A literature review by Gerster (2017) revealed that only 2,3% of articles published in the leading IS journals between 2007 and 2016 cover topics of digital transformation, innovation, and digital technologies. As he notes, aspects of transformation are covered well by practitioner literature and increasingly by scientific literature. However, a holistic view of digital transformation is not addressed which is why contributions to that area would be important.

As digital transformation is not a well-covered topic in academic literature, it lacks clear definition. However, in practice-oriented literature, the topic of digital transformation is gathering more attention. Practice-oriented literature regards digital transformation as the use of new digital technologies and innovations to change different elements of an organization to achieve business improvements (Bonnet, McAfee and Westerman, 2014; Hess *et al.*, 2016; Kane *et al.*, 2017). This raises a question what are these elements of an organization which change in digital transformation? Many of the practice-oriented publications cover the topic of digital transformation from a bit different angle which makes it more difficult to define what are the changing elements of companies in digital transformation. Hess *et al.* (2016) presented a digital transformation framework which comprises four key dimensions: the use of digital technologies, changes in value creation, structural changes, and the financial aspects. In turn, Sia, Soh and Weill (2016) examined DBS bank's digital transformation through four elements: structure, process, technology, and people. Further, Kane *et al.* (2017) noted that in order to achieve digital maturity, companies need to align their strategy, workforce, culture, technology, and structure to meet the expectations of different stakeholders. As can be seen, digital transformation is an organization-wide phenomenon which means that a holistic view of the organization is needed when the digital transformation is studied.

Based on above observations of digital transformation elements, I will deploy an analytical framework to facilitate structured examination of companies' digital transformations. Four elements of this digital transformation framework are *strategic decisions of digital*

transformation, *transition of value creation and capture*, *alignment of governance mechanisms, renewal of digital competencies and culture*. Digital technology is essentially the underlying factor which changes and enables these four elements as discussed above in Sections 2.1 and 2.2. Next, these elements are used to facilitate further examination of literature regarding digital transformation.

2.3.1 Strategic decisions of digital transformation

Digital transformation creates new characteristics to strategizing, and it also brings new strategic decisions for managers. As companies adopt digital innovations, it enables several new possibilities in companies' strategies that were not possible before. Bharadwaj *et al*, (2013) synthesized these new possibilities to four key themes of digital business strategy: the scope, the scale, the speed, and the sources of business value creation and capture.

The scope of a firm can be extended by understanding the power of digital resources to craft new strategies around new products and services. For example, Amazon created cloud services (AWS) as their key digital resource to support underlying connections between e-retailing, hardware (e.g. Kindle) and online video streaming (Prime video). This way they first entered the service layer, and thus enabled new possibilities on device and content layers (Yoo, Henfridsson and Lyytinen, 2010). Also, the use of digital platforms enables firms to break traditional industry boundaries and extend the scope of the firm that way. For example, Apple redefined mobile entertainment ecosystem with its iPhone by creating a way to acquire and consume text, video, and music in one portable device. This, in turn, broke industry barriers by entering to book and newspaper industry, movie industry, and music industry. (Bharadwaj *et al.*, 2013)

Digital innovations also enable firms to scale business in new ways. Firstly, increased availability of cloud computing services provides a strategic dynamic capability for firms to scale up or down its business as needed. By using cloud services, companies can flexibly adjust resources as competitive pressure demands. Secondly, as more and more products and services become digital and connected, network effects emerge within multisided platform which in turn creates rapid scale potential. This theme has played out already in,

for example, mobile app stores but this idea can be extended to other areas, such as automobiles and healthcare, as they become digitally more advanced. Thirdly, an increased amount of information enables new possibilities to scale business. As Huang *et al.* (2017) found, one of the case company's keys to rapid scaling was company's ability to frame and monitor innovation opportunities through analyzing large volumes of data. Finally, the scale of business can be grown through alliances and partnerships as companies share digital assets with other companies in the areas where they do not see a competitive advantage. For example, many banks are opening their application programming interfaces (APIs) to enable 3rd party developers to create their own apps using banks' data. This enables better customer service for banks' customers while the bank does not need to use its own resources for development. (Bharadwaj *et al.*, 2013)

By leveraging digital innovations firms can gain competitive advantage through speed. When firms add digital dimensions to their business, the clock speed of product launches can be increased. Huang *et al.* (2017) found that the case company was able to minimize the time gap between service idea and deployment by running user-responsive trialing and modification. This was possible because digital technologies enable separation of content from the medium, and there is the possibility to add features after the product launch (Yoo, Henfridsson and Lyytinen, 2010). Digital innovations also enable firms to speed up decision making. This can be seen both as management's ability to get synthesized information from multiple streams and customer service's ability to respond to requests in real time through different platforms such as Facebook and Twitter. The speed of supply chain orchestration becomes an important driver of competitive advantage as well. Digital innovations enable new ways to optimize supply chains in extended interfirm networks which in turn can ensure availability of new products on a global basis right after new product launches. (Bharadwaj *et al.*, 2013)

The digital business strategy brings also new aspects to the nature of value creation and capture. First, digital innovations create new opportunities to create value from information. Even though there have been information-based businesses for a long time, digital innovations allow companies to create more personalized and insightful business models

as the examples of Google and Facebook show. Rather than selling data of their customers, they sell highly targeted advertisements. Second, digital business strategy increases the importance of multisided business models. As Pagani (2013) found, when value networks evolve to multisided platforms the value creation and value capture logic changes so that companies collect revenues from different sides of the platform. This can be exemplified with layered modular architecture: Google gives away Android and applications (e.g. Maps and Photos) on service and content layer, while it monetizes advertising (content layer) and mobile phone sales (hardware layer). Finally, digital innovations can redefine value appropriation through control of digital industry architecture. For example, as Apple has been able to create higher appeal to the end consumer, they can earn profits not only through its products but also through follow-on revenue that the telecom carriers earn from the end users. (Bharadwaj *et al.*, 2013)

Besides new characteristics of strategizing, digital transformation brings new strategic decisions for companies' managers. These decisions are mainly related to the transition from traditional business to digital business. This transition creates ambidexterity where managers need to balance between exploitation of the traditional business and exploration of the new digital business. The difficulty arises when the needs of these two businesses are contradicting and managers need to make strategic decisions between them.

Firstly, Gregory *et al.* (2015) found that managers need to employ ambidextrous resolution decisions in IT transformation programs. They need to ensure short-term IT contributions while at the same time work towards IT transformation program success which is a foundation for business transformation. This creates ambidextrous resolutions that managers need to face. These resolutions are, for example, IT efficiency versus IT innovation and IT program control versus IT project autonomy. They conclude that resolving these ambidextrous situations plays an important role in achieving IT-enabled competitiveness in digitized business environments.

Secondly, Svahn, Mathiassen and Lindgren (2017) studied Volvo's connected car initiative and found ambidextrous areas in their digital innovation process. They found that incumbent firms face four competing concerns: capability (existing versus requisite), focus (product versus process), collaboration (internal versus external), and governance

(control versus flexibility). They conclude that firms need to manage these concerns by continuously balancing new opportunities and established practices.

Finally, Kaltenecker, Hess and Huesig (2015) studied software companies' transformation from the still profitable on-premises market to an, as yet unprofitable, on-demand market to survive. They build on top of Christensen's (1997) work and recognize nine different management strategies, such as creating a spin-off and partnering with technology leader, for managing potentially disruptive innovations. All management strategies have their own pros and cons which is why using combinations of these strategies might be advisable to manage potentially disruptive innovations.

2.3.2 Transition of value creation and capture

Companies' key activities to create and capture value are in transition in digital transformation. This transition includes changes in external and internal business processes, partnering with stakeholders, and working methods. By leveraging possibilities of digital innovations, companies can build new ways to create and capture value, and thus improve business performance.

Digital technology makes it possible to digitalize many external business processes i.e. the processes of interacting with customers. As Barrett, Davidson and Vargo (2015) note, ICT-enabled customer self-service is an opportunity for firms to achieve greater efficiency, cost reduction and potential customer convenience. Digitalization of customer interfaces includes, for example, e-commerce, self-service systems, and customer support. Even though digitalization of customer interface creates many benefits for companies, some caveats should be taken into consideration. For example, Ba, Stallaert and Zhang (2010) found that over-reliance on self-service automation can lead to lowered customer satisfaction. To avoid this risk, Scherer, Wünderlich and von Wangenheim, (2015) highlighted that a mix of self-service and human service channels helps to maintain customer retention and loyalty. Thus, companies should consider how much and in which way they digitalize their customer interfaces.

Besides external business processes, digital technology allows digitization of many internal business processes. Many services that needed human intervention a decade ago can

now be done automatically by using digital technologies (Ba, Stallaert and Zhang, 2010). Examples of such services include tracking courier packages, scheduling car maintenance, and accounting services. Besides automating internal business processes, digital technologies create new digital tools that improve working efficiency. For example, a cloud-based service called Clio offers digital tools for lawyers (e.g., documentation and billing tools) which improve their working efficiency (Ning and Tanriverdi, 2017). As Ba, Stallaert and Zhang (2010) note, the spectrum where digital tools can improve efficiencies expands more and more as digital technologies develop. Technologies such as artificial intelligence keep developing rapidly, which in turn means that companies can digitalize even more complex internal processes. For example, Sia, Soh and Weill (2016) found that DBS bank is using artificial intelligence in their wealth management division to glean insights on market research and transactional behaviors.

Digital technologies enable better connectivity between different stakeholders, which in turn increases the importance of partnering in digital transformation. This increased importance of partnering creates multiple implications for firm's value creation and capture processes. First, digitized business processes and digital business platforms, that are based on standards and integration, enable ecosystems and business communities which can improve firms' performance (Markus and Loebbecke, 2013). These ecosystems are typically assembled by "orchestrators" who set the boundaries and rules of an ecosystem. For example, OEMs in the automotive industry act as orchestrators in their ecosystem. They set the standardized business processes and shared digital platforms for other companies. Markus and Loebbecke (2013) argue that it would be valuable to examine business communities which consist overlapping ecosystems and competing orchestrators in defined areas. By developing commoditized business processes and business community platform, companies could create truly efficient and dynamic business interoperability. Efficient business communities have not yet emerged since orchestrators pursue competitive advantage through customized business processes and closed digital platforms. However, the paper argues that larger benefits would lie in these business communities if the business processes and platforms would become commoditized and open.

On the other hand, partnering becomes more important because digital technologies enable new ways to co-create value with stakeholders. Svahn, Mathiassen and Lindgren (2017) studied Volvo's connected car initiative and found that as the company utilizes solutions from a new type of companies (such as TuneIn or Spotify), the relationship shifts from traditional supplier relationship to the new type of partnership. Volvo and its new partners co-created in-car applications together but did not exchange any money. Instead, Spotify and TuneIn made their money from other sources (e.g. commercials) which is why the relationship between Volvo and them became more equal: there were new types of legal agreements, purchasing contracts, and requirements for both parties. This, in turn, implies that good partnerships between value co-creators become more important in order to create the best possible outcomes.

In addition, Keen and Williams (2013) suggest that in the broader digital ecosystems the strategic challenge is to identify and capture dynamic sources of value creation which is why companies need to embrace new types of collaboration, new processes, and new infrastructures. As there are ever-continuing shifts in value, developing an innovation ecosystem with external partners makes it possible to tackle these new challenges. As an example of such partnering, DBS bank created a new partnership with research institutions, technology partners, startups, and retailers to harness the external expertise and thus accelerating the rate of its digital innovation (Sia, Soh and Weill, 2016).

Companies' methods of working also transform to faster and more experimental mode in digital transformation. Digital innovations increase the speed of change why there was a need to develop agile development methods to cope with this change (Yoo, Henfridsson and Lyytinen, 2010). There are many different agile development methodologies, such as Scrum, Kanban, DevOps, and SAFe. These agile methods encourage failure in early stages of a project and aim to leverage these learnings later (Dremel *et al.*, 2017). Because of digital technologies' basic feature of reprogrammability, they are particularly suitable for digital innovations. As companies emphasize digital innovation more and more, these methods become increasingly important. For example, Sebastian *et al.* (2017) found that companies that were building new digital services relied on new delivery methods such

as DevOps and most viable products (MVP). This also changed traditional funding models since old models were too slow for continuous delivery of digital services and thus new as-needed basis funding was put in use (ibid). In turn, Dremel *et al.* (2017) found that by using agile software development method AUDI was able to strategically prioritize resources more effectively across the multitude of parallel projects, ensure transparency across the different business departments, and orchestrate domain knowledge, analytics skills and IT competencies across departmental boundaries. Thus, when a company aims to leverage and create digital innovations, new working methods become increasingly important.

2.3.3 Alignment of governance mechanisms

Alignment of governance mechanisms refers to company's efforts to set organization in motion and keep everyone moving in the right direction in digital transformation (Bonnet, McAfee and Westerman, 2014; Hess *et al.*, 2016). This includes changes in company's digital leadership roles, organizational design, and key performance indicators (KPIs).

To drive digital transformation across the organization, companies are creating new leadership roles (Bonnet, McAfee and Westerman, 2014). These new digital leadership roles include roles such as chief digital officers (CDO) and digital champions. CDO is often created as a complementary role besides chief information officer to drive the change in the organization (Horlacher and Hess, 2016). Horlacher and Hess (2016) found that CDOs devise and implement digital strategies as entrepreneurs and they also offset cultural resistance as spokespersons and leaders. In contrast, CIOs focus more on the technical aspect of the transformation. Besides having CDO to drive digital transformation, Sia, Soh and Weill (2016) found that DBS bank's senior business executives were trained to be "digital warriors" championing digital innovation in their respective business domains. By creating these types of roles, the organization adds authority and ownership to digital transformation and thus increases the chances to succeed (Hess *et al.*, 2016).

Companies also need to decide which kind of organizational design fits best for their digital transformation. Organizational designs for digital transformation can broadly be categorized into three different options: centralized, decentralized and hybrid. Brown and

Magill (1998) found that the best design solution for information systems function depends on opportunities for IT-related cross-unit synergies and business-level contingencies. Business-level contingencies include strategic role of IT and business managers IT knowledge. Different design options are summarized in Table 1.

Table 1: Design options for IT function (adapted from Brown and Magill, 1998)

		Opportunities for IT-related cross-unit synergies	
		High opportunities	Low opportunities
Business-level contingencies	No strategic IT role	*Centralized*	*Centralized*
	Strategic IT role and high IT knowledge	*Hybrid (matrix)*	*Decentralized*
	Strategic IT role and low IT knowledge	*Centralized but shared*	*Hybrid (subdivide)*

This framework of design options can give guidance for organizations as they consider optimal organizational logic in digital transformation. It is important to consider these different options as each one has their pros and cons depending on company situation and ambition. For example, Hess et al. (2016) studied the digital transformation of three media companies and found that they all had different organizational designs for their digital transformations. One company wanted that digital transformation happened close to the traditional business and had integrated design. Another company wanted that digital initiatives are not influenced by the existing business and had a decentralized design while the third company separated activities that went beyond mere complementary products thus having a hybrid design. Hess et al., (2016) note that as it is not clear whether the centralized or the decentralized approach should be preferred, companies should consider the distance between digital transformation efforts and firm's current core activities. The greater this distance is, the stronger the boundary between new and old operations should be.

To ensure that company's digital transformation efforts are going to the right direction and key people are committed to change, it is important that KPIs and incentives are also

aligned to support digital transformation (Fitzgerald *et al.*, 2013). According to Westerman, Bonnet and McAfee (2014), companies should have a strategic scorecard which encompasses both financial and digital (e.g. customer experience, operational processes) measures to track digital transformation efforts. It is noted, however, that establishing KPIs to measure the impact of digital transformation is difficult because calculating KPIs for many digital transformation initiatives (e.g. cultural change) is not a clear process (Fitzgerald *et al.*, 2013). Aligning incentives with digital transformation KPIs is one way for executives to drive company-wide digital transformation forward (ibid). Incentives can be financial, but Bonnet, McAfee and Westerman, (2014) note that intangible rewards, such as status, reputation, expertise, and privileges, are also good ways to drive digital transformation forward. In addition, utilization of digital innovations such as gamification offers new possibilities for firms to incentive their employees (Bonnet, McAfee and Westerman, 2014).

2.3.4 Renewal of digital competencies and culture

Finally, digital transformation has a significant impact on companies' people aspect. This includes changes in competencies and culture of a firm. As companies aim to embrace digital technologies and innovations, it often means that competencies and culture of a company need to change as well.

Firstly, as digital innovations often require new capabilities that companies do not have, they need to emphasize competence development. Hess *et al.* (2016) recognized four different ways to acquire new competencies for digital transformation: internal development, external sourcing, takeovers (mergers and acquisitions), and partnerships. In their study, the case companies relied mainly on internal competencies and development of them. For example, one of the case companies had established personal development program that helped to foster the necessary digital mindset and skillset. As another way to develop digital competencies, Dremel *et al.* (2017) found that AUDI used external consultants first to get needed competencies and then a step-by-step their employees learned the needed skills. Besides traditional competence development methods, digital innovations enable new types of learning methods, such as collaborative learning platform and

idea sharing communities, which can help companies to develop digital competencies more efficiently (Kane *et al.*, 2017).

Acquiring talent from external sources is another way to enhance digital competencies. As traditional companies recruit new digital talents, they face an intense competition of the employees because most of the digital competencies are not industry specific. This is why Kane *et al.* (2017) argue that organizations should become talent magnets that attract and develop digital talent which in turn makes successful digital transformation possible. Partnering and acquisitions are other ways that companies can use to gain competencies in a faster way (Hess *et al.*, 2016). Partnering reduces the risk of failure but keeps competencies outside the company and thus increases dependencies on third parties. As digital competencies become core-competencies of companies, acquiring the partner company can be a feasible option for ensuring that competencies will retain in-house (ibid)

Digital transformation also has an impact on many aspects of company culture. As digital transformation merges many different functions of the organization and changes the working methods, a shift in companies' culture is often required (Sebastian *et al.*, 2017). This shift can be difficult because a new type of working requires more engagement with the external ecosystem and networked arrangement which shapes firm identity and organizational culture (Svahn, Mathiassen and Lindgren, 2017). This, in turn, can create new tensions in the organization.

Because of possible tensions in a cultural shift, cultivation of digital culture is important in order to succeed in digital transformation. Kane *et al.* (2017) found that digitally the most advanced companies cultivate culture that embraces collaboration, risk-taking, and continuous learning. Some of the ways to cultivate digital culture are, for example, organizing teams cross-functionally, rewarding collaboration and encouraging experiments (ibid). Digital culture cultivation is important because it creates a positive virtuous cycle where digital culture increases adoption of digital business which in turn cultivates digital culture (ibid). Thus, this virtuous cycle accelerates company's digital transformation. However, cultivation of digital culture can turn out to be difficult for many incumbent companies. For example, Sia, Soh and Weill (2016) found that for DBS mindset change was the hardest area of change and they spent the most time and effort developing that.

2.4 Executives leading digital transformation

As can be seen, digital transformation changes organizations thoroughly, but what are the concrete actions and practices that executives utilize to lead the transformation? It is recognized that executives should have an active role in digital transformation (Bonnet, McAfee and Westerman, 2014; Hess *et al.*, 2016; Svahn, Mathiassen and Lindgren, 2017). Yet, literature regarding executives' practices to lead digital transformation is scarce. However, some of the ways that executives can utilize to lead digital transformation have been discussed in the existing literature.

Firstly, executives can lead by showing the example and by listening their environment actively (Kane *et al.*, 2015). Leading by example means that companies' leaders utilize, for example, new social media channels to engage people but they also are involved in day-to-day work of digital transformation. They also have the needed digital fluency to be able to support and help teams, and show them how teams' work fits bigger picture. Leaders should also be able to listen to the environment and learn from it. This means that leaders listen to employees regarding new ideas and improvements but also external channels to find new ideas, talent and partners. Digital technologies, such as social media, enable efficient ways to listen to stakeholders which increases importance of these channels when leading digital transformation. (Kane *et al.*, 2015)

Further, managers can lead by building a clear vision of their firm in the digital world and engaging organization to work towards that vision (Bonnet, McAfee and Westerman, 2014). Crafting a transformative vision and aligning top management to communicate that to the organization and other stakeholders help the organization to work towards a common direction. As digital transformation breaks many traditional organizational boundaries, a common shared vision can help the company to drive the change across the traditional silos. However, a vision of the future is only the start. Engaging employees to work towards that vision is the bigger challenge for leaders. Bonnet, McAfee and Westerman (2014) recognized three ways to engage the organization in digital transformation: connecting the organization by using digital technologies, encouraging open conversation, and co-creating digital transformation with own employees. By using social

platforms leaders can engage employees in real-time on a global scale. In order to encourage people in open conversation, leaders need to be able to lead by example and engage large enough group of people to get the change moving. Practical ways to encourage people to get involved are, for example, digital champions across the organization and reverse mentoring programs. Also, by co-creating digital transformation roadmap together with own employees, leaders can engage employees in the journey more efficiently since employees feel more involved in the transformation. (Bonnet, McAfee and Westerman, 2014)

2.5 Summary of literature review

By now, I have synthesized a large body of literature regarding digital innovation, digital disruption of industries, companies' digital transformation, and executives' practices of leading digital transformation. The focus of this chapter was to explain and understand why companies are conducting digital transformation, as well as define what the elements of digital transformation are, and how executives are leading the transformation. In order to link these topics together, Figure 2 compiles the main implication of this chapter. This framework also works as a basis for the empirical part of this study.

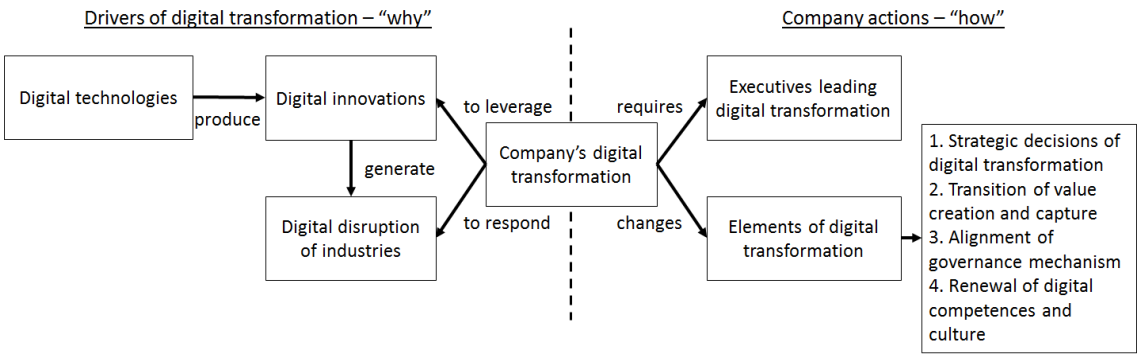

Figure 2: Conceptual framework of companies' digital transformation

The framework is divided into two main sections: drivers of digital transformation defines *why* companies are conducting digital transformation while company actions define *how* companies are conducting digital transformation. As discussed above, digital technologies and their distinctive features are the underlying factors which produce digital innovations. These digital innovations, in turn, generate digital disruption of industries as they

enable new ways to compete and create value. As a result, incumbent companies are conducting the digital transformation to leverage digital innovations more efficiently as well as to respond to digital disruption of industries.

Correspondingly, companies' digital transformation includes two main components: executives leading digital transformation and elements of digital transformation. As discussed above, executives play a key role in companies' digital transformation why their actions in leading digital transformation are important. In turn, elements of digital transformation define how companies are changing in digital transformation. This includes four main elements as discussed above: strategic decisions of digital transformation, transition of value creation and capture, alignment of governance mechanisms, and renewal of digital competencies and culture.

This framework facilitates structured approach for the empirical part of the study. Firstly, by studying RQ1, drivers of companies' digital transformation, we will get a better understanding *why* companies are conducting digital transformation. In other words, we will understand how digital disruption of industries appear to the companies and do companies see the digital transformation as a way to leverage digital innovations more efficiently. Secondly, there is little literature about *how* executives lead digital transformation which is why studying RQ2 will give us a better understanding of the role of executives in digital transformation. Finally, the main elements of digital transformation were recognized from the literature, but there is little knowledge what are the main actions that companies take regarding these elements. That is why studying RQ3 will improve our understanding of the companies' actions in digital transformation. Next, the following chapter will discuss the methodology of the research, and after that, the results of the empirical part will be presented.

3 RESEARCH METHODOLOGY

This chapter describes the research methodology used in the thesis. First, I present the research setting of the study. Then, I explain the approach to the study, and finally, I describe the data collection and the data analysis methods that were employed.

3.1 Research setting

This study explores the phenomenon of digital transformation in Nordic incumbent firms. The thesis was conducted in collaboration with a global management consulting firm who provided the topic of the thesis and needed resources. The firm advises many large corporations on the topics related to companies' digital transformation which is why this topic was highly relevant and interesting for them. This collaboration provided a unique possibility to gather an outside-in understanding of case companies' digital transformations, and it also provided a good way to organize the interviews with case companies' executives.

The phenomenon of digital transformation has emerged increasingly during the past five years in large incumbent corporations. As Hess *et al.* (2016) and Sebastian *et al.* (2017) note, digital transformation is nowadays a high priority phenomenon for the executives regardless the industry. This set the basis for the study. The aim was to understand the phenomenon of digital transformation and analyze how the established companies are strategically leading it. Approach to this study was exploratory because the digital transformation is a nascent phenomenon, but at the same time, the aim was to describe and evaluate companies' practices in digital transformation.

There is a lot of publicity around the digital transformation of companies, yet there is little academical research on the topic. For example, by examining Google Trends with the keyword "digital transformation", it is possible to see that the interest towards the topic has grown rapidly in the past five years. However, most research about digital transformation is focused on practice-oriented publications such as consulting companies reports and business magazines while the academic literature is scarce. Gerster (2017) found that between 2007 and 2016 in eight leading IS journals only 0.2% of the articles address the

impact of digital transformation on IT and 2.3% covers the topics of digital transformation, innovation, or digital technologies. These examples show that the topic of digital transformation in established companies requires more academic understanding.

3.2 Methodological approach

This section explains in detail the methodology used in this thesis. The qualitative research and inductive approach are presented at first, and then the case study as the research strategy is described.

3.2.1 Qualitative research

The focus of this thesis is to understand and describe a nascent phenomenon in a real-world setting which is why the qualitative research method was chosen for this study (Golafshani, 2003; Ritchie and Lewis, 2014). Qualitative research is usually used to describe the form or nature of what exists, examine the reasons for or associations between what exists, appraise the effectiveness of what exists, and aid the development of theories, strategies or actions (Ritchie and Lewis, 2014). As Strauss and Corbin (2012) note, the main reason to choose qualitative research is to understand the world from the perspective of participants and thus make discoveries that contribute to the development of empirical knowledge. As already discussed above, the digital transformation is weakly studied phenomenon. Therefore, an explorative study is required to understand the phenomenon better. Because of these factors, qualitative research methods can be used to answer the research questions presented in Chapter 1 and explore the phenomenon more in-depth.

As the theory around the digital transformation is scarce, an inductive approach was selected for this thesis. In the inductive approach, the data is collected without any specific theory in mind, and the result of the data analysis can be a formulation of a theory (Saunders, Lewis and Thornhill, 2008). An inductive approach is appropriate when the topic of the research is new, it is creating much excitement, and there is little existing literature (ibid). This is the case in the topic of digital transformation: there is a lot of excitement about the topic but little existing literature.

3.2.2 Case study

Case studies are the preferred strategy for investigating a contemporary phenomenon within its real-life context and when the research on a topic is in the early phases (Eisenhardt, 1989; Yin, 2003). The focus of the case study research is to understand the existing dynamics within single settings (Eisenhardt, 1989). In a case study research, multiple sources of evidence are used and triangulated to conduct an analysis of a chosen phenomenon (Eisenhardt, 1989; Saunders, Lewis and Thornhill, 2008). Even though case studies are most commonly associated with qualitative data, they can utilize quantitative data as well (Eisenhardt, 1989) In addition, a case study is a suitable strategy for inductive theory building (ibid). Because of these factors, a case study research is used in this thesis.

In this study, the multiple case study strategy was chosen. Yin (2003) identifies four case study strategies based on two dimensions: (1) single case vs. multiple cases; (2) holistic vs. embedded. The first dimension concerns the number of cases examined in the study and the second dimension examines the unit of analysis i.e. if several units are studied in one case. As the topic of digital transformation is novel and practices that companies utilize vary across the industries, multiple industries and companies as cases were chosen. In turn, a holistic unit of analysis was chosen because the main interest was how the companies are changing in digital transformation. A single case study would have examined the phenomenon in a selected case rather than exploring the phenomenon of digital transformation. However, the focus of this thesis is not to make generalizable results, but to explore digital transformation in Nordic incumbent companies.

Eisenhardt (1989) presents a case-study research process that is based on previous work on qualitative methods, the design of case study research and grounded theory building. There are eight steps in the process: (1) getting started; (2) selecting cases; (3) crafting instruments and protocols; (4) entering the field; (5) analyzing data; (6) shaping hypotheses; (7) enfolding literature; and (8) reaching closure. This process was followed to facilitate a structured approach. First, initial research questions were defined to focus the efforts on right topics. These were still preliminary research question, and they sharpened as more information was gathered. Next, the cases were selected from the specified population. The information-oriented selection was used to get extreme cases. This was a

good way to maximize the utility of information from small samples and to obtain information on unusual cases that were especially interesting (Saunders, Lewis and Thornhill, 2008). Next, multiple data collection methods were chosen, and data collection from the field started. Data collection and analysis were overlapped in order to speed up the analyses and to understand what are the aspects that need to be adjusted in data collection. In the data collection, several methods were used such as interviews, company presentations, annual reports and media articles were used to take advantage of emergent themes and unique case features.

As enough data was collected, the analysis of the cases started. At first, interviews were examined individually and then gradually cross-interview and cross-case pattern search started in order to see evidence through multiple lenses. Based on the constructs found from the data, initial hypotheses were shaped. This was an iterative process where evidence for each construct was tabulated and then compared across the cases. Cross-case comparison allowed to support or disagree the initial hypotheses. To build internal validity, evidence for causality behind relationships was searched. Findings were also compared with conflicting and similar literature. This comparison built internal validity, raised the theoretical level and sharpened both construct definition and generalizability. Finally, the last step was to reach theoretical saturation where new data findings made only a small marginal improvement. However, because of the limited timeframe of master's thesis and limitations of data, this was not always possible.

3.3 Data collection procedures

This section explains in detail the data collection procedures used in this thesis. First, the process of selecting case companies as well as case companies' profiles are presented, and then the data collection approach is described.

3.3.1 Selection of case companies

The selection of case companies was based on theoretical sampling where the aim was to choose extreme cases and polar types so that they provide the maximum amount of interesting observations for a limited amount of cases (Saunders, Lewis and Thornhill, 2008). Initially, a long list of possible industries was formed. As discussed in the Theory chapter,

different industries have been impacted differently by digital disruption. Because of this, the goal was to select industries that vary in terms of digital disruption. I ended up in three industries: media, financial services, and industrial equipment. The choice of these industries was based on the Theory part, discussion with people in the consulting company where the thesis was done, the suitable companies in the Nordic region, and author's own experience.

Next, the case companies in the respective industries were chosen. One company in each industry was chosen to ensure that the depth of examination would be sufficient. Eisenhardt (1989) suggests that four to ten case-studies provide a good basis for analytical generalization. However, because of the wide topic of the thesis and limited timeframe, it was seen better to keep sample size smaller. Selected companies had taken systematic steps to develop digital innovations, and they had publicly discussed these initiatives. Companies were selected so that they are large (revenue over 1 B€ and over 1 000 employees) established businesses (age over > 20 years) and their headquarters are in the Nordic countries. Based on these criteria, I selected three case companies: *Financial Corp, Media Corp, and Industrial Corp*. From now on, I will use these pseudonyms to keep case companies' anonymity. Table 2 introduces company profiles and sources of case data. More detailed description of the case companies is presented in Section 4.1.

3.3.2 Data collection approach

In order to study selected companies' digital transformation, a wide variety of different techniques in data collection were utilized. The primary data source was interviews with the case company managers and consultants. Table 2 presents the complete list of conducted interviews. The titles of the interviewees will not be revealed in the results sections to secure interviewees anonymity. In total, I conducted 19 interviews in fall 2017. About half of these interviews were conducted with the case company managers and another half with case company consultants. The length of the interviews varied from 20 minutes to 60 minutes, and some of them were conducted in pairs while some individually. The interviews were conducted as semi-structured interviews. As Saunders, Lewis and Thornhill (2008) mention, semi-structured interviews are appropriate for exploratory and explanatory research, and they allow interviewees to express their thoughts in their own

words. Appendix A presents the interview guide used in the interviews. However, the interview guide was not strictly followed. Rather, it acted as a structure for the interview and ensured the natural flow of the topics discussed. Interview questions were mostly similar in each interview, but a different emphasis was put on different questions depending on interviewee's role and expertise.

Table 2: Description of the case firms and case data

Characteristic	Industrial Corp	Financial Corp	Media Corp
Industry	Industrial equipment manufacturing and service	Banking & Insurances	Media & Entertainment
Market	B2B	B2B and B2C	B2B and B2C
Number of interviews	7	6	6
Internal informants	President, business division President, business division Manager, digital innovation	Executive Vice President, business unit Executive Vice President, business unit Program Director	Chief Technology Officer Chief Transformation Officer Senior Vice President, business unit
External informants	Consultant, Partner Consultant, Partner Consultant, Senior Manager Consultant, Senior Manager	Consultant, Partner Consultant, Senior Manager Consultant, Senior Manager	Consultant, Partner Consultant, Senior Manager Consultant, Senior Manager
Public data	Annual reports 2012-2016 Press releases Company websites Media articles Social media	Annual reports 2012-2016 Press releases Company websites Media articles Social media	Annual reports 2012-2016 Press releases Company websites Media articles Social media

The first interviews were conducted with companies' consultants in order to get an understanding of the industry and company situation. Interviewed consultants were chosen so that they had an extensive experience of the case companies. Thus, they were persons who were responsible for the client relationships or persons who had been working at the case companies for a long time. They had good relationships with executives of the case companies which is why they had a good knowledge of the top-level matters in digital transformation. These interviews provided valuable outside-in knowledge of the case companies. As consultants had seen different companies in different industries, they had a good view how the case companies were performing in relation to other companies. As

Gibbert, Winfried and Wicki (2008) note, by adopting different angles from which to look at the same phenomenon, the study constructs validity which, in turn, creates rigor in the research. Based on these interviews, I made the first notes about distinctive characteristics of case companies digital transformations.

After the consultant interviews, interviews with company executives were conducted. In these interviews, more emphasis was put on more detailed aspects of companies' digital transformations. Interviewees were chosen so that they were on top-levels of the organizations and they were preferably part of the executive board. Besides top-management members, one middle-manager was chosen in each company. This can remove biases and inaccurate reports, thus increasing the validity of the research (Huber and Power, 1985). After the interviews, a short recap of the main findings of the interview was made.

In addition to the interviews, secondary data was collected from media articles, company websites, annual reports, press releases, company presentations, and social media. Media articles were collected by searching articles where company executives talk about their digital transformations. Company websites and presentations were a good way to see how companies prioritize digital transformation. Some of the case companies had put emphasis to communicate their digital transformation efforts whereas others did not communicate this at all. In social media, it was possible to see how companies' executives are advocating their digital transformation, which in turn created interesting observations as will be discussed in the next section. By combining these different secondary data sources, the research construct validity which improves the accuracy of reality (Gibbert, Winfried and Wicki, 2008).

3.4 Data analysis

In inductive research, the interviews and data analysis are usually aligned. Therefore, the analysis started after the first interviews. After the interviews, the data was transcribed from audio files into digital notes. Following the Gioia method, interview transcripts were analyzed using open coding i.e. the codes were created and named (Gioia, Corley and Hamilton, 2013). The themes used in interview guide were initially used to categorize the

emerged codes, but they were refined as the amount of data increased. This was an iterative act which started from the first-level constructs and then moving on to second-level theory-centric themes which were then distilled into overarching themes (Gioia, Corley and Hamilton, 2013). As an illustration of this process in the drivers of companies' digital transformations, the first-level constructs were individual quotes from the interviewees. Second-level constructs were recognized drivers of digital transformation, e.g. "changing customer needs". These reasons were then categorized to third-level aggregate dimensions which were themes such as "External pressure to change". As this analysis was an iterative process, some of the drivers were first categorized to wrong aggregate dimensions, and they had to be categorized again to reach coherent categorization.

After the data was coded and categorized under emerged themes, companies' and executives' actions were rated in order to understand and elaborate the differences between companies' digital transformations. This rating followed approach introduced by Santos and Eisenhardt (2009), and it was applied to all research questions. Drivers of digital transformation and executives' actions in digital transformation were rated by assigning "0" if the action was not identified, "+" if action was identified, "++" executives were particularly distinctive in the action. This rating was based on the author's own interpretation of the interviews, media articles, and social media presence. Similarly, to rate the magnitude of change in strategy and operations in digital transformation, each firm was rated by assigning a score of "+" if action a small level of activity was identified, a score of "++" was assigned if a moderate level of activity was identified and a score of "+++" was assigned if a large level of activity was identified. These ratings were also based on the author's own interpretation of the interviews, media articles, annual reports, company websites and press releases. An example of this rating can be found in Section 4.4.

4 FINDINGS

This chapter presents the results of the data analysis in four sections. The first section gives a short introduction of case companies' profiles and their market situation to enable further analysis. The next section 4.2 examines the drivers of case companies' digital transformations, and thus addresses the research question Q1. The following section 4.3 evaluates executives' practices of leading digital transformation, and thus answers the research question Q2. Finally, section 4.4 analyzes changes that case companies are implementing in digital transformation, and thus addresses the research question Q3. The analysis leads to interesting findings of case companies' practices in digital transformation.

4.1 Case companies' profiles

Financial Corp
In its main operating country, Financial Corp is one of the largest financial services provider in terms of market share and number of employees. Their three main business segments are banking, non-life insurances, and wealth management. They are a well-known company in their industry, and their history goes back over 100 years. In recent years, they have been doing good results, and they have been able to capture market share across all business units.

There are many ongoing changes in Financial Corps' market environment which impact to their digital transformation. Regulation in financial services industry is changing because of PSD2 (Payment Services Directive) and GDPR (General Data Protection Directive) which in turn push banks to digitalize their operations. Technological development has enabled banks to automate many of their current processes. It has also allowed banks to develop many new services in digital channels. Because of these shifts in the market environment, Financial Corp is now actively trying to leverage digital innovations and respond to digital disruption of the industry.

Industrial Corp
Industrial Corp manufactures industrial equipment such as engines and gears. They operate in global markets and some of their business segments have significant market shares.

Their history goes back over 100 years, and they are one of the largest companies in their home country. In recent years, they have been doing steady results, but their revenue growth has been stagnant.

Industrial Corp's industry has been waking up for digital development, and there have been some new entrants. Their main competitors are large global companies who have been mainly driving the change. Recent technological developments in, for example, analytics, cloud computing, and sensors have enabled new possibilities for these companies. It has also allowed the emergence of smaller competitors which mostly focus on certain niches where they can compete effectively. To accelerate development of digital capabilities and resources, Industrial Corp has started a large digital transformation program that aims to renew many aspects of their operations. As they have not been growing in the past years, one of the main goals of this transformation is to find new sources of growth.

Media Corp

Media Corp is one of the leading media companies in the Nordic countries. They operate mainly in publishing and broadcasting businesses and they have a leading position in many of the segments where they operate. Media Corp's history goes back over 100 years. In recent years, the company has had difficulties financially: their revenue has been decreasing steeply, and their profitability has been low.

Media and entertainment sector has faced a large digital disruption in the recent years which has impacted on Media Corp's operations. Mobile development has shifted customer behavior from traditional magazines and newspapers to mobile channels which, in turn, has changed the market structure radically. Also, the entrance of social media giants has eaten advertisement revenue from traditional media companies. These shifts in the market environment have forced Media Corp to develop their digital offering as well. Compared to other case companies, they did not have similar corporate-level digital transformation program. Rather, the transformation is more integrated into the business units. In Media Corp, business units had a lot of autonomy which can partly explain this different approach. Even though the company has been struggling financially, it has recently been able to improve its digital offering and find some positive indicators of the future.

4.2 Drivers of digital transformation

This section explores the drivers of digital transformation in the case companies. The analysis brought forward two aggregated themes that drive companies to digital transformation: external and internal pressure to change. These drivers are presented in Table 3 which summarizes the recognized drivers of digital transformations. I will discuss these identified themes separately in the following subsections.

Table 3: Drivers of digital transformation

Aggregate dimension	Drivers of digital transformation	Industrial Corp	Financial Corp	Media Corp
External pressure to change	Changing customer needs	+	++	++
	Responding to competitive pressure from the market	+	+	++
	Defending the long-term competitive position	++	+	0
	Growing competition due to regulation	0	++	0
	Ending life-cycle of legacy systems	0	++	0
Internal pressure to change	Finding new growth sources	+	0	+
	Finding ways to decrease costs	0	++	+

[a] To rate different drivers, each firm was assigned a score of "+" if the driver was identified. A score of "++" was assigned if the driver was particularly strong and a score of "0" was assigned if the driver was not identified.

4.2.1 External pressure to change

Firstly, the digital transformation of companies is driven by the external pressure. There were five underlying themes related to the external threats that emerged from the data: *changing customer needs, responding to competitive pressure from the market, defending the long-term competitive position, growing competition due to regulation* and *ending life-cycle of legacy systems.*

Changing customer needs. Companies saw that their customers' needs were changing which created pressure to respond to shifting needs by offering new digital solutions. This was especially apparent in Financial Corp's and Media Corp's digital transformations. Financial Corp's manager noted: *"We follow the customer. As customer behavior changes*

and it goes more and more to digital channels, and away from physical channels, we have to offer the best channels and solutions there.". Interestingly, the interviewees saw that customers' expectations had risen because leading digital companies (e.g. Facebook, Netflix) had set the bar. Financial Corp's consultant remarked: *"There is a lot of talk about liquid expectations. So, when you use Netflix, you start to think why your bank is not working similarly.".* When customers experience better digital offerings in other sectors, the general expectations of digital offerings rise and transfer to other sectors as well. This same phenomenon was noted by Financial Corp's manager: *"Customer experience is determined greatly by the example of completely different industries. Like how easy it is to play music or watch movies.".* Media Corp followed their customers closely and aimed to serve them in the channels that were wanted, as their executive noted: "*We follow customers' pace. Our customers want more and more digital services but also traditional media products*.". This shift had been ongoing for a longer time, and they saw that they were living a "hybrid-time" where customers want both digital and traditional services.

Responding to competitive pressure from the market. In all companies, there were shifts in the competitive environment which created pressure to change. New entrants and existing competitors' new services were a catalyst for Media Corp's digital transformation. As Media Corp operated in technologically advanced industry, it allowed an entrance of new global players that threatened their current business. This shift in media market due to digital innovations was illustrated by their executives: "*And in a way, the large entry barrier vanished. In the past, you had to invest to printing presses, or at least you had to have lots of euros to enter the market, but suddenly Internet took those investments away*.". For example, companies like Netflix, Facebook, and Google had entered into Media Corp's markets which posed a big threat to their business. This entrance of new players was illustrated by Media Corp's executive: "*At one point there were some feelings of fear so that what will happen to us. That they come and crush us*.". As these companies had advanced digital offerings, it created a strong pressure on Media Corp to respond to this competitive pressure by developing their own digital offering.

Similar competitive pressure reasons can also be observed in Financial Corp's and Industrial Corp's digital transformation, but their pressure was not as hard as Media Corp's. In

Financial Corp, there was competitive pressure created, for example, by fintechs, global technology giants, and traditional competitors. However, large shifts in the competitive environment had not yet emerged. Industrial Corp's competitors created pressure by building hype of the future offering, as their consultant explained: "*Competitor 1 is out in the market talking about these amazing things that they are building, and they are building stuff, but they are definitely behind compared what they announce. Compared what they communicate. That creates pressure though in the market. There is an expectation set by Competitor 1, and with it, the whole industry needs to fill new expectations*.". This shows how in digital offerings competitive pressure can be created not only by promoting current products but also by promoting future vision.

Defending the long-term competitive position. A common reason for the digital transformation of the companies was their willingness to defend the long-term competitive position. Industrial Corp and Financial Corp saw that they need to develop their digital offering now so that they have a solid competitive position in the future. As Industrial Corp's consultant noted*: "You could say that there is not that much digital business yet. Most of the competition is still based on product development. But the competition of future position on that future market, which has not been defined yet, I think that is clearly fierce."*. Similarly, Financial Corp's manager noted about their new businesses: *"If you don't want to lose your current revenue levels because of disruption and increasing competition, you need to think where to get new earnings. That is the foundation why we do this."*. These observations imply that companies seriously believed that digital disruption could change their competitive position in the future why they were putting efforts to respond proactively to the threat of digital disruption.

Growing competition due to regulation. Further, there were changes happening in regulation which opened the market to new entrants and new types of competition. This was apparent in Financial Corp's situation. For Financial Corp, there were large changes happening in regulation (PSD 2 and GDPR) that forced them to develop their operations to more digital to defend against possible new threats. Manager of Financial Corp recalled: "*On the other hand, regulation drives to develop that [digital transformation]. Now regulation forces banks to provide access to their customers' payment accounts which opens*

a possibility for fintech companies to enter the market. [...] In that sense, regulation and consequently increased competition force banks to develop new services and drive own operations more and more digitalized.". As regulation forced them to open interfaces to 3rd parties, they wanted to develop their own digital competencies to respond to increased competition. A big threat that Financial Corp was afraid of was that some 3rd party firm would capture the customer interface and they would become a back-end provider.

Ending life-cycle of legacy systems. The threat of losing business because of old legacy systems also emerged from data. This was especially seen as a challenge in Financial Corp. In general, banks have lots of old IT systems which do not accommodate future needs why they need to renew them widely to ensure future business. This was noted by Financial Corp's consultant: "*So, they renew their systems in every sector. Every sector has ongoing renewals. They are absolutely mandatory. Many of them are absolutely mandatory. Those renewals are driven by the fact that the life cycle of the systems has come to an end*.". These legacy systems were seen as a burden for the many other aspects of digital transformation as well. Financial Corp's manager noted: "*It is a fact that in banking sector these old legacy systems are causing slowness and expenses […] When you have at the same time millions of customers and millions of transactions which you need to run 24/7, it is not that easy to just try new technologies*.". This is why digital transformation from a technical point of view was difficult for Financial Corp: they needed to balance between the renewal of old heavy systems and creation of new lean offerings.

4.2.2 Internal pressure to change

Secondly, companies' digital transformation is driven by internal pressure. Companies had pressure to grow revenues and cut costs, and the digital transformation was seen as a vehicle to do that. There were two underlying themes related to the internal pressure that emerged from the data: *finding new growth sources* and *finding ways to decrease costs*.

Finding new growth sources. Industrial Corp and Media Corp had not had much growth in the past years why they were looking for new growth sources in their digital transformation. Industrial Corp's revenue had stayed rather stagnant for the past five years, and the management was looking for new ways to grow. Thus, digital innovations were seen

as a way to grow their business. Industrial Corp's consultant remarked: "*But then when you look at their only challenge, which every company in the industry has, there is not much growth. The company has stayed the same size in terms of revenue […] So, to conclude, I think digital transformation is their logical vehicle to find new growth*.". The importance of creating growth in the digital transformation was also emphasized by another Industrial Corp's consultant: "*Top-line revenue growth. This is not an efficiency exercise. Top line revenue growth, so disrupt and differentiate. Do not defend*.". Digital innovations were seen as a way to differentiate from the competitors and thus create new growth for the company.

Media Corp's revenue had been in decline for the past years, and they tried to find new sources of growth actively. As Media Corp's consultant noted: *"The biggest question is that where is the growth? When you look at Media Corp's financials, the biggest question is that where is the future growth?".* As they had shifted more and more to digital channels, the challenge had been to monetize them. Their executive noted that this shift had been "*from analog dollars to digital pennies*". Because of this Media Corp's revenue had been in downfall and the stakes were high to create new sources of revenue.

Finding ways to decrease costs. Financial Corp and Media Corp were also looking for ways to decrease costs by using digital innovations. As discussed in the Theory chapter, digital innovations allow companies to digitalize and automate processes which in turn leads to better efficiency. Financial Corp had a relatively high cost-income ratio and digital innovations were seen as a way to improve that. Financial Corp's manager noted: *"Of course, digitalization enables much more efficient processes which in turn gives us a possibility to automate many of our current tasks and improve significantly improve our cost-efficiency."*. Media Corp had had difficulties with the profitability, and they aimed to improve their cost-efficiency with the digital innovations. They had stated that one of their focus areas is to improve profitability through cost innovations. As their manager noted: "*Our transformation has covered all our businesses […] One of the areas that have been aimed to achieve is cost innovation.* ".

4.3 Executives leading digital transformation

This section goes over how companies' executives lead the digital transformation. It emerged from data that executives *establish digital transformation* and they *drive digital transformation forward*. These themes and executives' actions are discussed and evaluated in the next sections.

4.3.1 Executives establishing digital transformation

Companies' top management plays a key role in digital transformation by establishing the phenomenon. It emerged from data that executives establish digital transformation by *building a company-wide vision, recruiting new managers, and establishing conditions*. The identified practices are presented in Table 4 with an evaluation of executives' actions.

Table 4: Executives establishing digital transformation

	Overall rating[a]	Building a company-wide vision	Recruiting new managers	Establishing conditions
Definition		Executives build a digital vision that guides digital transformation	Executives recruit new managers to establish digital transformation	Executives launch digital transformation and set the needed structures
Industrial Corp	*Moderate*	+ Executives launching and promoting new visions	++ Hired an external CDO and several new VP's *"There's a new leader, who brings the pressure to change."*	+ Launched the DT with a big event, created a new organization *"the initial kick-off but also continuous support comes from the top level."*
Financial Corp	*Strong*	++ Executives had a strong role building the vision *"Everything started from building a shared future vision"*	++ Hired a new CDO and many lower-level managers	+ Established the DT with the new strategy, changed organization, and set the targets
Media Corp	*Weak*	*0* Business unit level visions, no company-wide vision	+ Some new digital leaders e.g. Chief Data Officer, mostly lower-level managers	0 No DT that would be driven by top management, executives give autonomy to BU's

[a] To rate executives' actions, each firm was assigned a score of "+" if the action was identified. A score of "++" was assigned if executives were particularly distinctive in the action and a score of "0" was assigned if the action was not identified.

Building a company-wide vision. It emerged from data that companies' executives play a key role in building a digital vision that guides companies' digital transformation. It was clear that Financial Corp's executives were particularly distinctive in this area. For them, the push to build a digital vision emerged from their CEO's personal awakening, as outlined by their executive: *"The awakening and example of our CEO had a huge impact on our renewal [...] Our CEO was probably one of the first ones who woke up and realized that this industry could change radically and we need to react."*. After they had realized the need to change, their top management a had a critical role to build a future vision, as their executive noted: "*Everything started from building a shared future vision. Which means that we did not think about our own choices, but we thought from multiple perspectives how the world would look like in the future."*. By building a future vision together, they learned about the digital innovations which served as the foundation for strategy building as well. Industrial Corp had also created future visions for the company and business units. However, executives were not promoting and emphasizing the role of future vision building as much as Financial Corp's executives Yet, they communicated these visions actively in their public channels. In contrast, Media Corp did not have a company-wide digital vision that would steer their development, but some of their business units had their own visions that were created by business unit leaders.

Recruiting new managers. Executives establish digital transformation by recruiting leaders to drive the change. This was particularly distinctive in Industrial Corp and Financial Corp. Both had recruited Chief Digital Officer (CDO) to drive the change. For Industrial Corp, CDO's role was to coordinate and push the change. An executive of Industrial Corp remarked: "*[At] some point we decided to hire Chief Digital Officer. In order to coordinate the activities, but also to orchestrate the activities and orchestrate the business*.". Industrial Corp's consultant saw this recruitment as a more radical change to create a sense of urgency: "*They recruited an external leader for the whole digitalization endeavor so that they would really create pressure on the organization. And they have chosen really demanding, really straight-forward, really not-nice person to rock the boat*.". In both Financial Corp and Industrial Corp, their CDO was part of the company top-management team which shows the importance of these leaders. Besides recruiting CDO,

Industrial Corp had hired many other high-level managers to drive their digital transformation. Similarly, Financial Corp had recruited many high-level leaders to drive the transformation. In contrast, Media Corp had hired new leaders to push the change, but none of them were part of company's top management. For example, they had hired a new Chief Transformation Officer and Chief Data Officer to drive the change, but their role was located in the management of business units.

Establishing conditions. Executives launch the digital transformation and set structures for the transformation. This means that they give an initial kick-off for the digital transformation, and decide what kind of structures they create. Industrial Corp had the most tangible kick-off for the digital transformation of the case companies. They had a digital transformation event where they launched the company-wide endeavor. This was a high-profile event where top management wanted to emphasize the importance of their digital transformation as their manager explained: "*we had this digital transformation event where our full top management was there. And 500 people from Industrial Corp were brought there. Where the digital transformation was launched. Why are we doing this, how are we doing this and what is this and what is interesting for those 500 people".* Financial Corp did not have a similar event to launch digital transformation. However, they started to talk and emphasize digital transformation after they had announced their new strategy. In comparison, as Media Corp did not have a similar digital transformation, they did not have any distinctive kick-off for digital transformation.

Executives establish conditions also by deciding structures and the level of autonomy in digital transformation. It emerged from data that Financial Corp and Media Corp gave a lot of autonomy to business units to design and implement digital transformation. Media Corp's manager noted about his role: "*And what I have understood during the years is that the key task for managers on my level is to establish conditions for working so that people can work without worrying"*. In Media Corp, business units had almost full autonomy to drive digital transformation forward, and top management was supervising the change, as an executive of their business unit noted: "*We have full autonomy to do own things. Management is, of course, aware of the details in the most important businesses*.".

Similarly, Financial Corp's top management had decided to give responsibility and freedom of implementation to business units, as their manager noted: "*It is more our acceleration centers and business units that decide what we can do with this money. You have to trust that organization has enough capabilities to implement and drive forward digitalization and new service development*.". In contrast, Industrial Corp's top management was more involved in actual digital transformation and had more control over different initiatives. This importance of executives to control and endorse digital transformation was emphasized by their manager: "*In our organization they are critical. Absolutely. We can't do it without them and without their endorsement*.". They had built more structured top-level governance around the digital transformation, and the top-management was actively following company's digital transformation.

4.3.2 Executives driving digital transformation forward

After the digital transformation is established, companies' top management plays a key role to drive it forward. It emerged from data that executives drive digital transformation forward by *supporting and committing to digital transformation, using publicity to drive digital transformation* and *allocating resources to digital transformation*. These identified practices are presented in Table 5 with the evaluation of case companies' executives' actions.

Table 5: Executives driving digital transformation forward

	Overall rating[a]	Supporting and committing to DT	Using publicity to drive DT	Allocating resources to DT
Definition		Executives give authority and support organization in DT	Executives use publicity to communicate the priority of DT	Executives make sufficient investments in DT
Industrial Corp	*Moderate*	+ Executives promote DT actively and show commitment, visionary leaders missing "They are quite active *promoting that this needs to be done "*	+ Executives have some media presence, mostly internal communications *"One of the main things is making sure that all our people get aware of the change that is happening"*	++ Allocated large resources to DT, could still be increased *"Yea, we have quite an okay budget. But it's nothing compared to what our traditional R&D or something gets."*
Financial Corp	*Strong*	+ Executives are visible in DT, deeper commitment is lacking *"Top management decides about things but they do not give any more specific guidance."*	++ Executives promote DT actively in newspapers, social media and internally *"They are good at leading the transformation through publicity.*	++ Allocate significant resources to DT *"We have increased our investment level significantly - about doubled. So yes, we have a significant investment in digitalization."*
Media Corp	*Weak*	+ CEO and board give actively sparring to managers *"CEO started to give sparring and it helped a lot."*	*0* Executives do not promote their DT in media or social media	+ Most of the investments allocated to DT, not always sufficient *"I wonder every now and then how little resources we have for developing things."*

[a] To rate executives' actions, each firm was assigned a score of "+" if the action was identified. A score of "++" was assigned if executives were particularly distinctive in the action and a score of "0" was assigned if the action was not identified.

Supporting and committing to digital transformation. Companies' executives drive digital transformation by supporting and committing to digital transformation. This supporting role of top management emerged in all companies, but it did not emerge distinctively in any of the companies. In Industrial Corp, executives' role in supporting digital transformation was seen vital. As their manager noted: "*I think that they are really important as ambassadors of digital transformation but also act as enablers, enabling their organization to spend the time that is needed on this.*". This supportive and committing role was also emphasized by their executive: *"[role] is fundamental. Because let's say, management is leading, first the buy-in of the concept, and then walking the talk through the commitment: with through visible commitment walking the talk".* As Industrial Corp was going through a large digital transformation which required a fundamental shift in many areas of the organization, executives were needed to show the commitment to the transformation.

In Financial Corp, executives showed their support and commitment by taking responsibility for strategic initiatives. Their executive noted: "*Every strategic initiative is led by top management member. I personally have four initiatives. So, we do not delegate these initiatives to somewhere deep in the organization*.". Even though this commitment to initiatives raised the profile of these initiatives, it was seen that executives did not play an active role in supporting the initiatives. This was outlined by Financial Corp's consultant: "*Top management decides about things, but they do not give more specific instructions. Or directions and metrics. Employees need to guess from this vision what we need to do. And then they are given a budget: 'Here is 100 million for you. Do a transformation with that' [...] When you start working with this kind of specification you know that the result can be damn good or something completely different*.". This shows that executives' strong support in digital transformation may have been lacking in Financial Corp.

In Media Corp, executives' role in supporting and coaching business unit's managers in the transformation was also seen important. As their executive noted about the interaction between him and the CEO: *"I would say that the exception is that it is possible to get sparring in technical subjects with CEO. You get real insight and good conversation out of that. And I think this is reality nowadays that you are more hands in the dirt rather*

than examining excel sheets in the ivory tower.". As Media Corp has had difficulties in their business, the support for new initiatives from the top management was seen important. The executive of newspaper business unit emphasized the role of CEO in the recent years: "*Our CEO started to give sparring for us. And it really helped a lot*."

Using publicity to drive digital transformation. One of the most interesting aspects of executives' role that emerged from data was how they used communication and publicity to drive digital transformation. Financial Corp was particularly distinctive in this area. Their top management was active in newspapers, social media and internal communications to promote digitalization and their digital transformation. As Financial Corp's consultant remarked: "*They are good at leading the transformation through publicity. They have many launches. They have lots of hype*.". This publicity was seen as a way to create an understanding of the change in the own organization, as Financial Corp's consultant noted: *"I have done similar transformations in my previous jobs. There you use publicity to communicate to your own organization that we need to change."*. Social media was an important channel to promote the change, and almost all members of their top management team were active on Twitter. Financial Corp's CEO was particularly active in social media and promoted digital transformation there actively. This was an important message for the organization as their executive noted: *"Our CEO sent a tweet in a live TV program. These are everyday things but still very visible examples. If you think about it, it was quite a strong message for the whole organization that we have a CEO who lives strongly in the digital world."*. Besides public channels, top management used internal channels to communicate about the change. By communicating actively about digital development to own organization, Financial Corp was able to prepare its employees for different future, as their manager noted: *"Of course it is clear that when you face a large change, you need to make people understand what is going to happen. And tell very openly about the topic. It is continuous interaction and communication."*. As digital technologies will most probably eliminate many jobs in the financial sector, Financial Corp wanted to be transparent and responsible for the future changes. This way they were able to prepare their own employees for the changes in the workforce and minimize the reputational damages.

Industrial Corp's CEO and CDO promoted their digital transformation in the media, but they were not as active as Financial Corp. It was noted that they could promote their digital development much more actively as their main competitors do. Their consultant noted: *"So I think that compared to Competitor 1, Industrial Corp is actually behind when it comes to communications. Compared what they are actually doing. I think they are doing more than they are talking about."*. Their communication about digital transformation was focused on their own communication channels (press releases, investor relations, and stakeholder magazine). For example, their CEO promoted their digital transformation in the half-year financial report by emphasizing how the investments in digital transformation will drive new business opportunities and thus strengthening their competitive position. In social media, Industrial Corp's executives had some presence, but it was small compared to Financial Corp. Their executives were active to communicate about their digital transformation in internal channels as their manager noted: *"They have all done small interviews, videos, that were published in communication channels of the organization. Why is this important, why we should endorse digital transformation, how everyone should get involved."*. This communication of the change to own employees was seen important as their executive remarked: "*One of the main things is making sure that all our people get aware of the change that is happening. That even if the business we've been doing so far is going to continue for a while, it is going to vanish in the future unless we transform it."*

In contrast, Media Corp's top management was not promoting their digital initiatives in media which illustrate their different approach to the change. Some individual executives had some social media presence, but it was minor compared to Financial Corp. It did not emerge from data that Media Corp's top management would use internal communication actively to drive digital transformation forward.

Allocating resources to digital transformation. Top management drives digital transformation forward also by allocating needed resources for digital transformation. Industrial Corp and Financial Corp had clearly increased investments to drive digital transformation forward. Industrial Corp did not reveal their investment levels to digital transformation, but by calculating their digital investments and acquisitions, it can be estimated that their

yearly investment was around 5-10 % of their revenue. They had made several acquisitions that accelerated their digital transformation. It was also apparent that their executives had allocated significant amounts to enable digital innovation development, as their digital innovation manager noted: "*Yea, we have quite an okay budget. It's nothing compared to what engine R&D or something gets. Compared to that it is absolutely nothing. But it's quite good. It is a substantial amount of money that allows us to do what we have to do at the moment.".*

Financial Corp had also increased their digital development investment level significantly. They had doubled their investments and it can be estimated that they invested 10-15 % of their annual income in digital transformation. Executives role in the allocation of these resources to needed areas was emphasized by their executive: *"where we invest the development money. Where do we invest and where we do not invest. So, making those choices.".* Financial Corp had made some acquisitions as well, but they were relatively small compared to Industrial Corp's acquisitions.

In turn, Media Corp's investments in digital development had been decreasing steadily in the recent years. By calculating their digital investments and acquisitions, it can be estimated that their investment level was around 3-5 % of their revenue. As Media Corp's revenue had been decreased in recent years, it can be assumed that executives had to decrease investments in digital transformation. Their executive noted that CEO had an important role in ensuring that company has enough resources to invest in digital development: *"It is the CEO who supervises the big picture so that we have a healthy financial foundation to do new things. So that we can manage this transformation. It was not too long ago when it did not look too good so that we would not have enough money to develop new service. I think they have done a lot of work now to be back on track.".* Now they had minimized the investments related to non-digital development, but still compared to Industrial Corp and Financial Corp digital investments were still smaller.

4.4 Elements of digital transformation

In this section, I go over how digital transformation changes companies' strategy and operations. Based on the digital transformation elements that were identified in the Theory chapter, I evaluated companies' digital transformations. These results are synthesized in digital transformation compass (DTC), presented in Figure 3. This compass synthesizes the main characteristics of companies' digital transformations and facilitates a structured approach to further analysis. Compass is divided into four main sections and each section has three dimensions of evaluation. Dimensions measure the magnitude of change in the company on a scale of small, moderate, and large. Based on the evaluation, it can be summarized that the total change was the largest in Industrial Corp which had a total score of 24 / 36. In turn, Financial Corp had the second largest change with the score of 22 / 36 while Media Corp's change was the smallest with the score of 17 / 36.

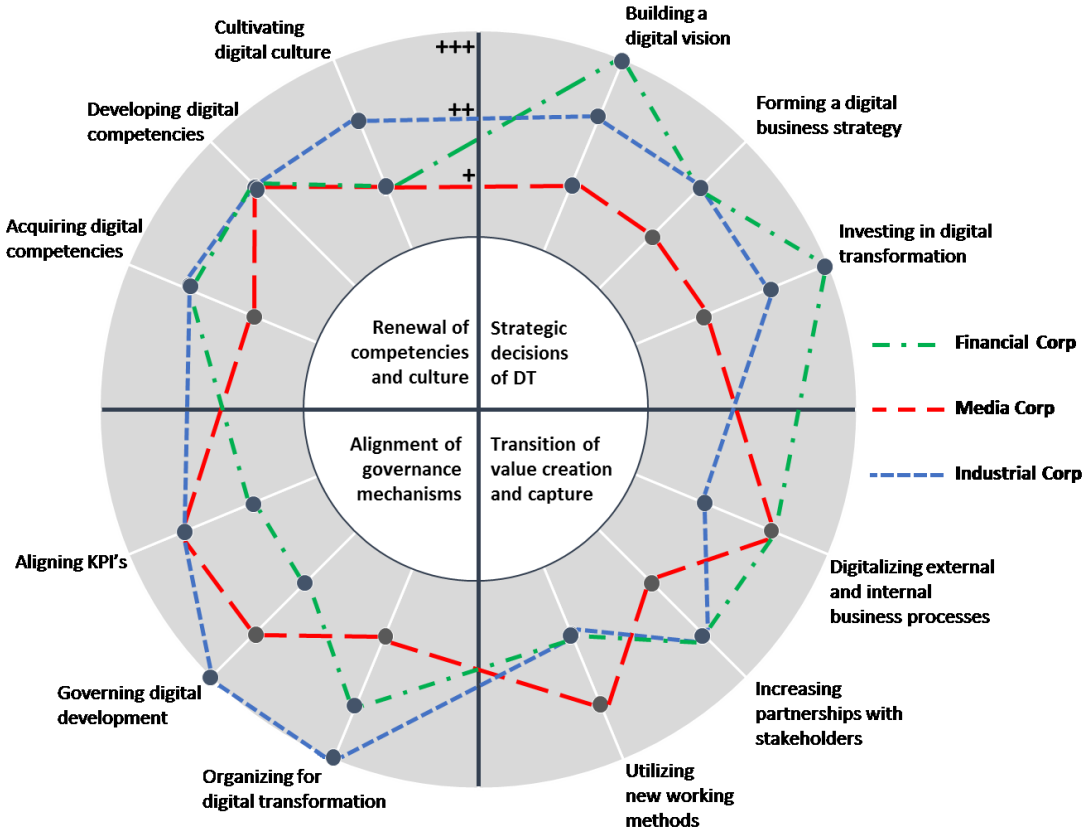

Figure 3: The corporate digital transformation compass (DTC)

In the next sections, I examine the elements of companies' digital transformations more in detail. Firstly, I examine companies' strategic decisions of digital transformation. Secondly, I go over the transition of value creation and capture in digital transformation. Thirdly, I evaluate how firms were aligning their governance mechanisms to control digital transformation. Finally, I analyze how companies were renewing their competencies and culture to adapt them to the requirements of digital transformation.

4.4.1 Strategic decisions of digital transformation

As companies are embarking on their digital transformation, it brings new strategic decision for managers. These include building a digital vision, forming a digital business strategy, and deciding the investments in digital transformation. All companies had made new strategic decisions related to their digital transformation, but it appeared that Financial Corp had made the most transformative strategic decisions. Table 6 presents the evaluation of companies' strategic decisions of digital transformation. Next, these decisions of digital transformation will be discussed more in detail.

Building a digital vision. A big difference between companies was how they used digital future vision to guide their digital transformation. Industrial Corp and Financial Corp had created a clear future vision, and their digital transformation was a systematical change of the organization to maximize the benefits of digital innovations to reach that vision. Industrial Corp's digital transformation vision was to become an agile technology company which is data and insights driven. Their business units had also build visions how they will transform the whole industry into a "smart ecosystem". These visions were visible both in interviews and public communications where they promoted them. For example, their manager noted how new company-wide vision had made a radical change: "*It has changed the purpose of the organization [...] It changed quite much to the direction that Industrial Corp is aiming to be a smart technology company. Not just an equipment manufacturer but a smart technology company.*"

Table 6: Strategic decisions of digital transformation

	Overall rating[a]	Building a digital vision	Forming a digital business strategy	Investing in digital transformation
Definition		Company builds a digital vision that is the foundation of DT	Company leverages digital innovations in strategizing	Company's investments in digital transformation
Industrial Corp	*Moderate change ++*	*++* Digital vision of transforming industry into a smart ecosystem *"It has changed the purpose of the organization."*	++ Ecosystem thinking emerging, developed new digital business models	++ Large investments (5-10 % revenue) to digital transformation, large digital acquisitions *"Their investment level is correct."*
Financial Corp	*Large change +++*	*+++* Strong digital vision of being a service company of modern era *"[They] have set a new strategy where the vision is very different from the previous one"*	++ New market entries utilizing digital innovations, ecosystem and platform thinking	+++ Significant investment (10-15 % of income) to drive DT, doubled investments *"I have to say that investments are significant"*
Media Corp	*Small change +*	+ No company-wide digital vision, some BU's have their own visions	+ Many initiatives to utilize digital business strategy, mostly incremental initiatives	+ Moderate investments (3-5 % of revenue) to DT

[a] To rate company's actions, each firm was assigned a score of "+" if action a small level of activity was identified. A score of "++" was assigned if a moderate level of activity was identified and a score of "+++" was assigned if a large level of activity was identified

For Financial Corporation, the vision of the digital transformation was to become a services company of modern era with strong financial capabilities. Their new strategy was built on this vision, and it embraced new business models in the sectors such as living, commerce, and financial management. The digital transformation was an intentional development of these new business models and digitalization of current business in order to reach this vision. This was a large strategic shift as their manager noted: "*It has changed enormously the things we do […] it [vision] synthesized well that financial services must*

be integrated to be elements of real needs. That are mobility, living, commerce, and security.". By having a wide but tangible digital vision, Financial Corp was able to link different new business models together and focus their development efforts.

In contrast, Media Corp did not have a similar approach to build a company-wide digital future vision and use that as a foundation of digital transformation. This was apparent in their communications as they did not promote their digital transformation in the same way than Financial Corp and Industrial Corp. They saw that digital business was already core business for them why it was not sensible to have a separate digital vision and digital transformation built around it. Therefore, company's business units had the independence to develop their own visions and autonomously decide how to develop digital offering.

Forming a digital business strategy. As discussed in the Theory chapter, digital innovations enable new themes of business strategy which in turn change the way how companies can compete in digital business. In the case companies, there were lots of ideas about new business models which would leverage possibilities to strategize with digital innovation, but the digital business strategy was still mostly driven by individual digital projects.

Industrial Corp was actively looking for new ways to innovate and create new business models with digital innovations. They were developing, for example, equipment-as-a-service concepts, and they had ideas how they would orchestrate their industry ecosystem. However, many of these new possibilities in the strategy were still on a concept level. Most of the developed new business models that leveraged digital innovations were related to services of the equipment. For example, they had developed guaranteed asset performance models which leverage digital innovations in order to ensure maximum asset performance for its lifecycle. This shift to performance-based agreements was outlined by their executive: *"I would say that aim is to create value to our customers. To really propose that performance-based relationship, for example, has changed very much our business."*.

Financial Corp was actively using their core financial business to expand in new sectors by using digital innovation. For example, they had developed new services such as a car-

as-a-service and an online forest wealth management service. These services had a link to their core business as a financial service provider, but they were still completely new market entries. With this kind of new business models, they were breaking traditional industry barriers and expanding the scope of their business. Even though these services were still small businesses it was seen that there would be value in these initiatives in the future, as their executive outline: "*My responsibility is to build new services such as mobility services and so on. Target is to get these services to large scale in 10 to 15 years.".* Because they saw that financial sector will change, they wanted to find new growth sources for the future from these new services.

Media Corp's digital business strategy was mainly based on digitalizing their current offering. They actively created new offerings in digital channels and aimed to grow business in those channels. As their industry had shifted radically, they had to face new realities of digital business in many cases. For example, digital channels meant that in many cases they had to enter to a smaller market and face more fierce competition. Their newspaper business unit executive outlined this shift: "*At the moment, there are 270 newspapers in our market, but it won't be like this in the digital market. It has a different structure. In the mobile world, you won't have 270 icons. At least in the same type of use. We know that it will be consolidated to five.".* Because of these new factors, digital business was seen challenging for Media Corp. They had been had been active to develop different apps and to aim to expand their business with possibilities that mobile technologies offer. However, for them, many of the initiatives were proven to be more challenging than initially thought. For example, their executive noted the difficulties in expanding with digital platforms: *"We have tried and tested different platform business ideas and stuff. If there would be models that we could scale [...] For example, we are a leading player in the news technology, but it is not that obvious that we would start selling globally some platform where other publishers could work. The investments and risks are significant.".* These factors were most likely reasons for their more conservative digital business strategy which was focused more on incremental development.

Investing in digital transformation. Companies' investments in digital transformation dictate the scale of the transformation. In the case companies, different approaches to

digital transformation made it complicated to calculate their exact investments in digital transformation. However, it was possible to estimate the investment levels based on the disclosed development budgets and acquisitions.

Industrial Corp did not disclose their digital transformation investments, but it was clear that they had increased their investment levels to speed up their digitalization. By using the R&D budgets and acquisitions, it can be estimated that they invested 5-10 % of their annual revenue in digital transformation. Industrial Corp had been particularly active to make acquisitions to accelerate their transformation. The recent acquisitions Industrial Corp had made were hundreds of millions. Besides this, they had recruited several high-level executives to digital transformation leadership positions. A manager of digital organization noted about their budget: *"it's quite good. It is a substantial amount of money that allows us to do what we have to do at the moment."*. Yet, there was a view that investments could be increased once a real return on the investments could be shown.

Financial Corp publicly announced that they will annually invest hundreds of millions of euros to speed up their digitalization development. This investment was 10-15 % of the annual revenue. Their manager remarked about the investments: *"We have increased our investment level significantly, about doubled. So yes, we have a significant investment in digitalization."*. They had made also few acquisitions, but they were not as active as Industrial Corp to acquire new companies. Acquisitions were the area where they saw new possibilities, and therefore they were aiming to increase the number of them.

In the case of Media Corp, it was not as clear what is the scale of their digital transformation as they had not separated digitalization efforts into a different program. By using the disclosed investments to digital development and IT systems as well as acquisitions, it can be estimated that they invested 3-5 % of their annual revenue in digital transformation. However, as their business was mostly digital, all investments that they made were basically aimed towards digitalization development. Their executive noted: "*It is hard to say what are [the investments to transformation]. In practice, every investment is an investment in transformation. We have minimized efforts to printing presses, and other back-end stuff and everything else is basically investments to end-to-end processes […] I say that we have a significant investment in this digital transformation"*. On the other

hand, there were contrasting views about the investment levels in Media Corp. For example, their manager remarked: "*I wonder every now and then how little resources we have for developing things.*". In recent years, Media Corp's financial performance had been in turmoil why it is probable that they were investing actively in their digital development, but they did not have as large resources to invest as Financial Corp or Industrial Corp.

Summary: Digital transformation brings new strategic decisions for companies. These decisions that companies are making can be categorized to *building a digital vision*, *forming a digital business strategy* and *investing in digital transformation*. Based on the analysis, Financial Corp's decisions resulted in a large strategic shift with the score of 8 / 9. Industrial Corp's decisions resulted in a moderate change with the score of 6 / 9 while Media Corp's decisions resulted in a small change with the score of 3 / 9.

4.4.2 Transition of value creation and capture

The second changing element in digital transformation is how it changes companies' value creation and capture. These changes include digitalizing external and internal business processes, increasing partnerships with stakeholders, and utilizing new working methods. All companies had changed these aspects in their digital transformation but they there were still areas of improvement in all companies. Table 7 presents the evaluation of companies' changes in value creation and capture. These changes will be discussed next in detail.

Digitalizing external and internal business processes. Companies were digitalizing their external and internal business processes actively in their digital transformation. These digitalization activities of business processes were one of the most central pieces of companies' digital transformation as oftentimes they enabled tangible financial gains. Companies' external business processes refer to procedures to deliver value to customers and interact with them. Digitalization of external business processes often happened by providing mobile application or online portals to customers which enabled digital interaction and service delivery between a customer and a company. In turn, internal business processes refer to activities that are required to provide value to customers, e.g. banks' payment processes or manufacturer's supply chain processes.

Table 7: Transition of value creation and capture

	Overall rating[a]	**Digitalizing external and internal business processes**	**Increasing partnerships with stakeholders**	**Utilizing new working methods**
Definition		Company digitalizes its business processes	Company increases partnering in digital development	Company utilizes new ways of working, e.g. Scrum and SAFe
Industrial Corp	*Small change* +	+ Developed a new online portal and digitized internal processes, still many areas to advance *"They are coming from behind"*	++ Partners actively with customers, start-ups, and consultants. *"we have never had so many partnerships as we have now"*	+ Adopting new working methods, currently focused on specific teams *"Adoption is growing. We do it right now"*
Financial Corp	*Moderate change* ++	++ Digitalized traditional customer interfaces, automated actively internal processes	++ Develops start-up partnerships, value co-creation with stakeholders *"They partner widely with FinTechs, IT suppliers, car companies etc."*	+ New working methods utilized, currently focused on specific teams *"They use SAFE and design thinking actively in the development teams"*
Media Corp	*Moderate change* ++	++ Traditional offering digitalized mostly with apps and portals, internal processes under digitalization	+ Uses external partners in development, ecosystem partnering missing	++ New working methods adopted widely in the organization *"They are quite open to new working methods"*

[a] To rate company's actions, each firm was assigned a score of "+" if action a small level of activity was identified. A score of "++" was assigned if a moderate level of activity was identified and a score of "+++" was assigned if a large level of activity was identified

Industrial Corp was digitalizing their external and internal business processes, but it was seen that they could improve in this area. They had created an online portal where customers can manage their installations, access to manuals and file warranty claims. This online portal was an important channel to improve interaction with a customer and create value for customers. As they had been able to improve connectivity and analytics of their equipment, they were also able to offer more sophisticated solutions through an online portal to their customers. By using the online portal, customers could follow and forecast condition of the equipment and take needed actions independently. This, in turn, created new additional value to customers and competitive advantage for Industrial Corp. It was

seen that Industrial Corp could improve their internal business process automation even though they were taking steps to use, for example, artificial intelligence (AI) and robot process automation (RPA) to replace repetitive processes and improve process performance. Importance of this automation was noted by Industrial Corp's executive: *"We need to focus on working smarter. So, for example, the more we utilize the online services, the more free capacity [we get] in order to dedicate our best people to see complex services. If we increase transactional process automation, our sales guy will have more time to offer and structure more complex concepts."*. This automation of internal business processes was an important development area also because many digital external interfaces were dependent on end-to-end automated business processes.

Financial Corp had actively digitalized many of their external business processes. They were one of the leading companies in developing mobile banking and insurance applications, thus enabling new ways to interact with customers. Importance of creating new ways to interact with the customer in digital transformation was illustrated by the manager of Financial Corp: *"We follow the customer. When the customer behavior changes and goes more and more to digital channels, and away from physical channels, we naturally need to offer the best channels and solutions there."*. They had developed many new applications that leveraged features of digital innovations. For example, they had created own mobile wallet app which acted as a multisided platform connecting customers and stores. Building an application that allowed 3rd party stores to join the platform created value to all participants: customers got discounts by using the app in the stores, stores got more sales as discounts attracted new customers, and Financial Corp got more customers on their platform.

Financial Corp was also aiming to digitalize and automate many of their internal business processes. As they had many different legacy systems which were not capable to adapt to the requirements of digital development, they had a large-scale renovation of these systems. By renewing these systems, they were able to improve efficiencies widely and facilitate future growth. They reported that over 90 % of their digital transformation budget went to the development of current businesses. This transition from old legacy systems to new systems was seen challenging because they needed to ensure that the shift from

old systems to new ones is flawless. This was illustrated by their executive: *"You have millions of customers and dozens of millions of transactions that need to run 24/7, so you don't try new technologies just like that. You need to have 'run the bank', i.e. have continuity and quality in place all the time but also 'change the bank' i.e. new technologies that you bring and how you convert yourself to use that new. So yes, there are roadblocks and constraints."*. There were dozens of different systems which were integrated to each other in multiple ways forming a "*spaghetti mesh*" (as their consultant noted). Which caused difficulties to integrate new systems and shut down the old ones. This was seen as one of the main challenges they currently had in internal process digitalization.

Media Corp had digitalized most of their external business processes. Their offering had been traditionally mainly in newspapers, magazines, TV, and radio but in recent years they had developed digital offerings of these services through mobile apps and online portals. It was seen that some of their business units had been proactive in developing these services, but at the same time, many global competitors had developed better services. Media Corp was also digitalizing their internal business processes actively. In order to do that they had large renovations of their old systems, as their executive noted: "*At the moment, we are cleaning up old sins. I would say that we are building up the next version of our technology stack. It will accelerate our transformation and ability to respond that.*". It was seen that many of these renovations of old systems were required in order to enable new business models such as data monetization. Currently, data was too scattered in order to leverage it efficiently in areas such as advertising or customer insight.

Increasing partnerships with stakeholders. As discussed in the Theory chapter, the importance of partnering increases as companies digitalize their products and services. On the one hand, digital innovation enables connectivity of different actors in completely new ways which create new possibilities to co-create value and form an ecosystem together with different stakeholders. On the other hand, there might be a competence gap in digital development which needs to be solved by partnering with other companies.

Industrial Corp was actively looking for ways to increase partnering with external stakeholders. This included both co-creational aspect and competence aspect of partnering. To

co-create value, they were actively partnering with different stakeholders as their executive noted: "*I have been 17 years in the company, and we have never had so many partnerships as we have now. With customers, with competitors, with suppliers. We are trying to align. We are trying to work together.".* They had already proven examples of projects that were conducted with the customers, and they were aiming to prototype more and more ideas with customers. As their equipment became increasingly connected, it enabled new information flows across the value chain. This, in turn, increased importance of partnering with other stakeholders in the value chain and Industrial Corp was aiming to orchestrate this ecosystem. Their executive illustrated: "*The point is that installation, that ship, will reach the harbor where it has to go. [It is] connected to the harbor so when it is entering to the harbor, it has no waiting time. If you need to download some logistics info, you are already organized. And then you are being connected to the factory that is waiting for you. The factory is linked to the warehouse. The warehouse is linked to the customers. The entire ecosystem. We want to build and stay forerunners and main actors in this ecosystem. Orchestrate.".* As discussed above, they had developed a new ecosystem vision where they illustrated how this ecosystem would, for example, decrease overcapacity and other wastes. Industrial Corp was also actively improving its competencies by partnering with stakeholders. Partnering to get more competencies was something new for them as they were traditional engineering company who usually wanted to have needed competencies in-house. This shift was pointed out by their executive: "*We cannot do everything in-house. So, we have to reserve core competencies, which are analytics and interpretation, but then coding or things that are not really essential, we have to interface others.*". This shift in partnering to get competencies meant that Industrial Corp was actively looking for different kinds of partners such as start-ups, consultants, and universities.

Financial Corp was also aiming to increase partnering in digital transformation. For them, the objective of partnering was to co-create solutions and gain competencies. As there was the new PSD2 directive coming to change the banking sector, it forced banks to open their interfaces to 3rd parties. Because of this, Financial Corp was actively looking for the ways to leverage its position by partnering with 3rd party providers. They were, for example, opening their application programming interfaces (APIs) to external developers, thus

creating possibilities for FinTech startups and other stakeholders to create new services on Financial Corp's platform. This was part of the strategic decision to increase partnering, as their executive noted: *"We have stated in the strategy that we need to partner more […] we are living in a time where no one will survive alone".* Financial Corp was also partnering actively to develop new services and gain competencies. They had an approach where they led the projects and had the industry knowledge, but the development work was mostly done by external partners. Besides traditional external partners, Financial Corp had created a start-up accelerator which aimed to provide resources and substance knowledge to start-ups, and in turn, Financial Corp would have a chance to be part of this new development.

Media Corp was partnering actively but their partnering activities were more traditional, and many of the partnering programs that they had had were shut down. They were partnering actively to get certain competencies, but active co-creational partnering was not visible. In the past, they had had start-up collaboration program, innovation lab, and venture program. However, all of these initiatives were shut down. It was not clear why they were shut down, but it can be assumed that poor financial performance had forced them to shut down initiatives that were not seen mandatory. Now, the partnering was more concentrated on certain core aspects as their executive noted: "*The question is what is our core thing? And how we focus on that. And what is ok to acquire from outside. And then, how do we get to deeper cooperation with customers, and possibly some other stakeholders. In some timespan, there must be a willingness to get there. But I think there are lots of opportunities in that area*.". Interestingly, many of Media Corp's traditional outsourcing activities had been insourced in the recent years as the importance of those activities had increased. Their executive noted: "*The biggest change has been that specific roles need to be insourced. Especially software architects are such core assets that we need to ensure that we have smart people.".* It was noted that in the past their outsourcing had been more focused on outsourcing complete project deliveries, but now it had shifted more to outsourcing just certain competencies that company did not have. This shows how Media Corp's core competencies were shifting in digital transformation why they needed to consider which activities need to be in-house and which ones can be outsourced.

Utilizing new working methods. As discussed in the theory section, digital transformation changes companies' working methods to become faster and more experimental. All case companies had adopted new agile working methodologies such as Scrum and SAFe in their development work, but adoption of these methods across the organization was still mostly low.

In Industrial Corp, new working methods were mostly adopted in their digital development. It was seen that most of the organization was still far away from adopting new working methods to their current day-to-day work. However, they were actively aiming to change this and diffuse new methods across the organization. For them, external consultants played an important role to bring the new working methods and to show the value in them. This was illustrated by their consultant: "*I think we are working in different ways. We are using different methodologies. Service design, agile, SAFE delivery and so on. So again, those are for many people at Industrial Corp new ways of working and new methodologies. And that has been understood by many as well.".* It was seen that in order to get people to understand new working methodologies and possible benefits of them, people would need to experience them and see what they really mean. Because of this, they aimed to do cross-functional or even cross-company staffing and fertilize new ways in that way, as their digital innovation manager noted: *"in some cases even cross-company teams. In those teams, there can be people from Industrial Corp, from external companies, from partners, from customers. Whatever is necessary, whatever is possible.".* Even though this was an effective way to teach new working methods, it was seen that the shift in the working methods in the whole organization would be slow and difficult as training and cross-functional staffing was difficult to implement quickly in the large-scale.

Financial Corp had a similar approach to Industrial Corp in the adoption of new working methods. They were more advanced in the use of new working methods, but it was still mostly concentrated on the development teams rather than the whole organization. This was illustrated by their consultant: *"In their development organization, they use widely SAFe delivery model and design thinking and so on. But the allocation of money and management is still very traditional. Like with waterfall model.".* This was further explained by their executive: *"I can see that this robotic SAFe is used widely, and it is very*

systematic, but I think there has not been a major change. Like thoroughly change the way of doing new things.". It was seen that many traditional management models were restricting these faster working methods. For example, as money allocation was mostly done in certain cycles, some of the digital development projects were delayed as the budgeting cycles did not match to the speed of digital development.

In Media Corp, new working methods were adopted most widely among the case companies. They had adopted new working methods more widely to different functions across the organization, as their consultant noted: *"[there is] wide use of new working methods across the organization in different tasks. We do traditional business development with agile methods and sprints. It is not only the IT-organization that does this.".* As they had adopted different new working methods widely, it was seen that common ways of working can disappear. This was noted by their manager: "*the next step we need is a general level framework which tells us how to act. So that these are the different operating models and these kind roles are included in the models. To make it business as usual in a way. Now it is a bit too mixed up. We work with agile methods but from different angles and it depends on who is leading and so on…".* This shows how Media Corp was more advanced in the adoption of new working methods and they were spread across the organization. However, at the same time, it created a difficulty of controlling different methods across the organization.

Summary: Digital transformation renews company's value creation and capture. Elements that are renewing can be synthesized to *digitalizing external and internal business processes*, *increasing partnerships with stakeholders* and *utilizing new working methods*. Based on the analysis, Financial Corp's and Media Corp's actions resulted in a moderate change of value creation and capture with the corresponding score of 5 / 9. In turn, Industrial Corp's actions resulted in a small change of value creation and capture with the score of 4 / 9.

4.4.3 Alignment of governance mechanisms

The third changing element in digital transformation is how it changes companies' governance mechanisms. Companies are aligning their governance mechanisms to ensure

that the development is going in the correct direction with the right speed in digital transformation. Alignment of governance mechanisms includes organizing for digital transformation, governing digital development, and aligning KPIs. All companies had made alignments to their governance mechanisms, but it was clear that Industrial Corp had made the most systematic and largest alignments. Table 8 presents the evaluation of companies' alignment of governance mechanisms. These alignments will be discussed next.

Table 8: Alignment of governance mechanisms

	Overall rating[a]	**Organizing for digital transformation**	**Governing digital development**	**Aligning KPIs**
Definition		Company changes organizational structure to support DT	Company aligns governing mechanisms to requirements of digital development	Company creates KPIs that support digital transformation
Industrial Corp	*Large change* +++	+++ Created a digital unit to develop solutions and support BU's, unit led by CDO *"I think it [organization set-up] is almost as effective as it gets when it comes to digital transformation."*	+++ Systematic governance mechanisms e.g. digital board, digital acceleration centers *"the volumes are so high that we need to put certain order, priority, in this situation."*	++ Developing actively new KPIs for digital transformation *"there is, for parts of digital transformation team, we have KPIs such as engagement index"*
Financial Corp	*Small change* +	++ Created a digital unit that creates new services, unit led by CDO *"They have a digital business unit that focuses on experimenting new services"*	+ No separate governance mechanism for digital development "*we have not yet completely established the model of new development*"	+ KPIs focused on customer behavioral change in channels, no wide use of KPIs *"we follow digitalization and how it changes customer behavior"*
Media Corp	*Moderate change* ++	+ Integrated all development to normal BU's *"We accepted that you don't need to harmonize all solution across the countries and BU's"*	++ Different steering groups that govern digital development *"[BU's] have monthly steering committees where initiatives are followed"*	++ Different digital metrics for channel transition "*They follow many different metrics which are related to channel transformation."*

[a] To rate company's actions, each firm was assigned a score of "+" if action a small level of activity was identified. A score of "++" was assigned if a moderate level of activity was identified and a score of "+++" was assigned if a large level of activity was identified

Organizing for digital transformation. One of the most visible changes in companies' digital transformation was how the organization was structured. There were three main organizational models that companies had for their digital transformation: a shared digital unit (hybrid), a digital unit (centralized), and an integrated model (decentralized). These organization models are evaluated in Table 8 based on the magnitude of the change when the model is implemented. In the hybrid unit, it is required to develop the new unit and synchronize its activities with business units why in this model the change is relatively large. In contrast, the decentralized unit does not require any changes to current structures why the change is relatively small.

Industrial Corp had created a new shared digital unit which supported traditional business units in their digital transformation and also developed new services. This shared digital unit was located on the corporate level, and it was led by Chief Digital Officer who was also part of company's management team. This reflected the importance of this unit, as a consultant of Industrial Corp remarked: *"...they have changed their organization drastically to reflect that [top-level support]. Their CDO is actually somebody that CIO reports to. Which is very unusual. You would not find that in many other companies. So, this clearly sends a signal that digital is super important and really high up on the agenda."* The main goal of this digital unit was to support business units' digital transformation. This happened both by cultivating cultural shift and accelerating new business model generation. A manager of digital organization explained their role: *"You know like a good consultant, if we do a good job, we are not needed anymore. We are a support function. We are there to support divisions. We are there to support the rest of the organization. Their journey of digital transformation."*. In Industrial Corp's model, business units had the responsibility of the digital transformation, but the digital unit was created to accelerate the transformation and to synchronize activities across the business units.

Similar to Industrial Corp, Financial Corp had created a separate digital business unit to drive their digital transformation. This digital unit was led by CDO who was also a member of the executive board which reflected the importance of this unit. However, compared to Industrial Corp's model, it was noted that the main function of this unit was to explore and test new business models while the actual transformation of core business

happened more independently in the business units. Thus, their model was a centralized model rather than a hybrid model. It was seen that the main benefit of this kind of organization structure was that digital business unit was able to develop and launch new business models without disturbing the core business. Also, it did not have to carry the legacy of the core business which made it more agile and independent. As their consultant noted: *"This unit does not disturb their core business. It has its own budget, resources, and own tasks to be done […] So if there is a difficult situation, where do you allocate money? In the area which is 95 % of your business or in the area which 5 % of your business. In these situations, 5 % always suffers if it is a part of mainstream business. This is why this split has been a good decision."*. Even though this digital unit did not bring that much revenue yet, it had created several new business models which received a lot of attention and also raised Financial Corp's brand as a digitally advanced company. It was seen that these new business models could be core businesses for Financial Corp in the future which made this digital business unit important for Financial Corp.

In contrast, Media Corp had decentralized model to drive digital transformation. In other words, they did not have a separate digital unit to drive digital transformation forward. Rather, their digitalization activities were integrated into business units. In their view, it was seen better that all digital activities must be tightly linked to actual businesses as most of their business was already digital. This contrasting view to Industrial Corp's and Financial Corp's digital unit was illustrated by the manager of Media Corp: *"So this happens in other companies that you set up a digital unit around the traditional business because you feel that these old-world people don't get this new thing. So, let's put digital guys there. And what usually happens, and what we have seen happening, is that they start with good momentum and start-up spirit, but then actual business is surprisingly difficult. They don't understand the traditional business, or they don't collaborate enough why everything is too disconnected."*. Therefore, Media Corp had integrated technology people into business units to "*live and breathe*" (as noted by an executive) the brand. Based on the interviews, it was apparent that Media Corp had the perception that they had already passed the phase where digitalization would need to be promoted by a separate digital unit. This is why they had decentralized digital transformation activities to business units.

Governing digital development. Companies' digital transformation creates several new digital initiatives and projects which need to be governed in order to ensure that different initiatives are aligned with digital transformation objectives. The case companies had different ways to govern digital initiatives. Some of the companies had created new ways to govern these initiatives while others used traditional governing mechanisms.

Industrial Corp's governance model for digital initiatives was the most systematic of the case companies. Their main ways to govern these initiatives were digital board and digital acceleration centers. Digital board was a governing mechanism for the investments, and digital acceleration centers were governing mechanisms for development work. Digital board functioned so that the business units invested money to a corporate-wide "digital fund" which was used to drive company-wide benefits of digital transformation, and the use of this fund was governed by the digital board. It was seen that this approach enabled synergies and economies of scale in digital initiatives, as their consultant noted: *"Instead of each business using 10 million to do their own thing, we have now a 50 million fund. And with that fund, we do things that are the smartest for the whole corporation."*. Then, digital board supervised these investments and ensured that there would be a return on investment. This board consisted managers from business units who made sure that their needs are met. By setting up this kind of governance model, Industrial Corp aimed to ensure that digital initiatives are tightly linked to business needs, and they have an actual return on investments.

As Industrial Corp had a lot of digital innovation ideas, they needed to have a certain governance and control in the development work. This was emphasized by their manager: *"Here the point is that the environment is so fertilized that these initiatives are growing like mushrooms. And then here we have to balance between doing things, failing fast and then knowing which will be the cost of those initiatives and the benefits they will bring. And the volumes are so high that we need to put a certain order, priority, in this situation. So that's a crucial point."*. To tackle the controlling challenge of digital innovation development, Industrial Corp had developed digital acceleration centers that facilitated a structured pipeline methodology to control new initiatives. This method consisted a four-stage process where new ideas were qualified in different phases and as they went through

the process the ideas transferred to actual services. Besides controlling digital development, digital acceleration centers aimed to accelerate development of new initiatives by using new agile methodologies and cross-functional teams. Their manager described this methodology of building new solutions*: "So, it's art. It's a structural way of doing things based on creative initiatives that may not be structured."*. Even though digital acceleration centers had not been up for running for a long time, interviewees saw that there was a real value in them and they had truly expedited their development process.

The digital transformation had not changed Financial Corp's governance mechanisms significantly. They had their digital business unit which had its own governance, and normal business units had their own development governance. This governance model was illustrated by their manager: *"We have development committees where we go through initiatives and allocate money to different areas. And then naturally we follow."*. This governance model got criticized by their consultant: *"So the problem is that if you do not get any results, there are no consequences. You just wait until the next budgeting round and more money, just like in government offices. So, you just use all your money, and if you do not get the money, you just wait until the next budget round. For example, we have had situations where we do not get any more money this year, so we just stop working and wait until next January and then we continue. Time-to-market thinking is completely strange for them."*. This shows how governance model can be behind the requirements of digital development which in turn can impact negatively on company's competitive advantage.

Media Corp used mostly steering committees to govern digital development. As discussed above, Media Corp had integrated its digital transformation efforts to business units. To ensure visibility across these units, they had created a digital steering board and a technology steering board. These steering boards followed and prioritized development initiatives and their budgets. Their consultant noted: *"It is a way of coordinating things through B2C and B2B business and through different Media units."*. This set-up got criticized because of lacking transparency and slow responsiveness as their executive noted: *"We do not have transparent visibility. Monthly technology steering board is not enough. Someone collects PowerPoints there. It should be a collective day to day routine."*. This

shows how Media Corp's decentralized development model can cause difficulties to co-ordinate activities across the business units and steering boards can be too slow to react to the needs of business units.

Aligning KPIs. To measure and drive digital transformation, companies were developing new key performance indicators (KPIs). These KPIs were needed because many old KPIs were not aligned with the digital transformation objectives. In general, companies were trying to find new ways to track their digital transformation, but it was seen often difficult as many of the objectives of digital transformation were not tangible and easy to measure.

Industrial Corp had created new KPIs to track organizational change, individual behavior change, and financial performance. For the organizational change, they had implemented KPIs for digital unit employees to track how they were performing in advancing the digital transformation of the organization, as explained by their manager: *"for parts of digital transformation team we have KPIs such as an engagement index. How do we engage the rest of the organization? Is it spread through the organization? How good is the knowledge in other parts of the organization?*". They were also implementing new KPIs for managers to encourage their people to get involved in digital transformation activities as their manager explained: *"on the individual level what we are planning is actually to look into can we set KPIs for people, for managers that their team members have to be engaged in the activities of digital transformation. For example, you could say that there is a team of 7 people. And the manager of the team has KPI 'at least one person of your team has been involved in a workshop' or something like that.*". Besides these new KPIs, they also had more traditional KPIs for digital initiatives such as what is the return on investment, and how many projects they can handle. These examples show how Industrial Corp had expectations on digital transformation advancement and they wanted to track that development is going in right direction.

Financial Corp's activities to develop KPIs for their digital transformation were smaller than other case companies'. Most of their digital transformation KPIs were focused on customer behavior change in traditional business and number of new product launches, as their executive noted: "*We follow digitalization and how it changes customer behavior [...] We have scorecards such as digital use and remote customer service*." However, it

did not emerge from data that they would use larger-scale KPIs for areas such as employee behavioral change or business process transformation. It was seen that the lack of proper data and corporate culture were restricting the wider use of KPIs. Their executive elaborated: "*We can't do the data-driven decision making. And in that case, we can't track if we don't know. There is a lot of talk about indicators, but we are not a strong KPI house*.".

Media Corp had developed KPIs to track their channel transition and internal development. This KPI development was mostly on the business unit level. For example, Media Corp's newspaper business unit had put a lot of emphasis to find relevant KPIs to track their customers' behavior shift to digital channels. They wanted that their KPIs do not contradict traditional newspapers and new digital channels. The KPI they found was digital activity as a number of visits in digital channels per week. The importance of this indicator was emphasized by their manager: *"Digital activity indicator was a breakthrough. The main point is that it does not contradict anything. It really clicked. And by coincidence, it is a really good leading indicator for many other aspects. For example, how loyal customers are. I could argue that, in general, companies do not use enough time to figure out this kind of thing."*. To give priority to this KPI, organization's incentives were linked to this KPI. This shows how important it was for Media Corp's newspaper to have a hybrid offering and not cannibalize intentionally traditional newspaper business. Besides channel transition, they had developed new KPIs to track how impactful the work journalist do is. Their executive noted about newspaper business unit's development: *"After the unit has been able to simplify KPIs enough it has started to work. And now these KPIs are visible every day there [...] They have been able to develop their analytic dashboards significantly in a year, and now journalists follow these KPIs"*. This shows how they had been able to integrate new KPIs into their day-to-day work.

Summary: Digital transformation requires alignment of governance mechanisms to advance and control the development of initiatives. Aligned elements can be categorized to *building new organizational structures*, *governing digital development*, and *aligning KPIs*. Based on the analysis, Industrial Corp had the largest change in alignment with the score of 8 / 9. In turn, Media Corp had a moderate change in alignment with the score of 5 / 9, and Financial Corp had a small change in alignment with the score of 4 / 9.

4.4.4 Renewal of competencies and culture

The final changing element in digital transformation is how it changes companies' competencies and culture. Companies are renewing their competencies and culture to match them to the requirements of digital development. Development of competencies and culture includes acquiring digital competencies, developing digital competencies, and cultivating digital culture. All companies were developing these aspects actively, but they all had areas that they could develop further. Table 9 presents the evaluation of companies' renewal of competencies and culture. These aspects will be discussed next.

Table 9: Renewal of competencies and culture

	Overall rating	Acquiring digital competencies	Developing digital competencies	Cultivating digital culture
Definition		Company recruits new employees and acquires new companies to advance DT	Company trains digital competencies of current employees	Company takes intentional actions to embrace digital culture
Industrial Corp	*Moderate change* ++	++ Large recruitments and strategic acquisitions to develop competencies *"They are taking very serious steps in building their capability."*	++ Created several ways to develop competencies *"it is very carefully thought how digital competencies would be built"*	++ Creates cross-functional projects, recruits change managers, digital champions
Financial Corp	*Moderate* change ++	++ Large recruitments to acquire skills and some acquisitions *"compared to past we have recruited a lot of people from outside"*	++ Programs to develop outdated skills, aiming to proactively renew expertise *"we have started this kind of 'renew your expertise' program"*	+ Cultural change mostly through new hires and executives' advocacy *"There's a lot of talk about this but do they have intentional change management? Quite a little."*
Media Corp	*Small change* +	+ Recruited new developers, no strategic acquisitions *"They recruit heavily new external talents."*	++ Developed an academy to improve people's digital skills *"You need to have some basics in place. We do this systematically"*	+ Individual hires that cultivate digital culture *"They would need that. They don't have that as a separate thing. They assume that everything will happen on its own."*

[a] To rate company's actions, each firm was assigned a score of "+" if action a small level of activity was identified. A score of "++" was assigned if a moderate level of activity was identified and a score of "+++" was assigned if a large level of activity was identified

Acquiring digital competencies. The most obvious and the fastest way to get new competencies for digital transformation is to acquire them from external sources. This includes both recruitment of new people and acquisition of companies with needed competencies. All companies were acquiring new digital competencies, but it was clear that Industrial Corp and Financial Corp were the most active in this sector.

Industrial Corp had made large recruitments and strategic acquisitions to develop competencies that were needed for digital transformation. They had been recruiting many new leaders and developers from external sources. As an example, when they were building their digital unit, they were recruiting eight new high-level executives that would be in charge of digital transformation. They were also recruiting actively new digital developers. However, it was seen difficult to attract the top talent for digital development as the competition of the talent had risen, and Industrial Corp was not seen as the most attractive company for developers. This was illustrated by their manager: *"It's hard of course for some very good digital talent. Because Industrial Corp is not maybe their main address where they would normally go.*". Therefore, they had to rely more on external partners as their consultant noted: *"But to be honest we are needed more and more all the time. So, there is a gap. They can't get top talent. They will never get [that]. Who will go to Industrial Corp?".* To fix the difficulties in recruiting, they were looking for new ways to attract talent for example through university collaboration and technology events. Besides recruiting new talent, Industrial Corp saw acquisitions as a channel to acquire new digital competence. They had been active in acquisitions, and many of their recent acquisitions were targeted to fill the gaps in competencies as their manager noted: "*We are very active on acquisitions to find exactly companies that can fill the gaps. Both in terms of knowledge and products that we currently don't have and that can be tied together with other products that we currently have.".* By acquiring other companies, it was possible to get new competencies and technologies quickly which in turn was seen important for Industrial Corp as they had many areas where they had insufficient competencies.

Financial Corp had also been very active in the recruitment of new external talent. After announcing their new strategy, they had been hiring employees actively with new talents such as software developers, service designers, and UX designers. As Financial Corp's

manager noted: *"What has happened is that compared to the past we have recruited a lot of people from outside."*. With these recruitments, they had been able to strengthen their in-house digital development capabilities. Only last year they had recruited over dozens of digital developers to strengthen their capabilities. Compared to Industrial Corp, they attracted more digital talent, and this was something they cultivated intentionally, as their executive noted: "*Certainly the employer branding has an extremely important role here. So, how does Financial Corp look like as an employer? Is Financial Corp an interesting workplace for good talents? I have to say that our employer branding is very good."*. However, one of the challenges in new digital talent recruitments was that many employees came from outside of Financial Corp's industries. This was a challenge because it required time and effort before new employees learned how the industry works. This was noted by Financial Corp's consultant: "*They have a lot of new people from different industries. Which is a good thing in a way that it brings new vision and experience about the subject. But the problem is that they can't recruit any people with industry expertise. People who go there have expertise from other industries, and they have basically no idea how banks work. They, of course, learn but it is a big challenge here."*. Besides recruiting, Financial Corp also emphasized that acquisitions were an important channel to get competencies. They had made few acquisitions, but it was seen that acquisition activities should be increased, as their executive noted: *"We have made some small acquisitions in new businesses, but we are not satisfied how we have done this in the bigger picture, and especially in our traditional business units."*

Media Corp had recruited new developers and some new leaders to accelerate their digital development, but the scale of these recruitments was smaller than in Industrial Corp or Financial Corp. They had recruited new high-level leaders such as Chief Transformation Officer and Chief Data Officer to coordinate the development activities. Recently they had also increased recruitment of digital developers. This was illustrated by their executive: *"We started about year ago from my vision that we need to acquire developers. Recruit developers into the house. The starting point was that people thought that nobody wants to come here since this is some old dusty media company. Internally we had a huge lack of faith. […] Then we started to recruit, and now we have succeeded."*. As a result, they had been able to recruit around 20 new developers in the company. Media Corp had

acquired few companies recently, but they were not directly related to their digital competence development.

Developing digital competencies. Internal competence development is another way to get new competence for digital transformation. Even if companies rely on recruitments to get new talent externally for specific sectors, it is also important that they increase the general digital maturity of the company by training current employees. It emerged from data that all companies were using multiple ways to develop their digital competencies, but Industrial Corp and Media Corp were the most active in creating new ways to develop their digital competencies.

Industrial Corp's internal digital competence development was focused on different training programs, cross-functional staffing, and new learning applications. Using cross-functional staffing in digital projects was especially seen as an effective way to develop digital competencies. They combined people with different expertise in the company to the same project team, and they also included an external view by involving consultants to the project team. Their manager saw this as an effective way to improve skillset of the employees: *"You nurture people who are inside the company through training and creating instances of putting together a group of people working together on certain topics and then listening different perspective from them. Through that, people fertilize the competencies they have."*. Besides cross-functional staffing, Industrial Corp was developing a new learning mobile app to enable company-wide training. The idea was that everyone in the company would download the app and the app will send them different learning paths with a lot of digital content. They also had an internal idea sharing community where they shared content and learnings from different digital transformation initiatives. By utilizing basic features of digital technology (convergence and generativity), they were able to enable company-wide learning in real-time. In a fast-moving phenomenon such as digital transformation, this is an important factor to consider as it makes it possible to diffuse information quickly in a large organization.

Financial Corp's internal digital development activities were concentrated on different training programs. Their training programs provided training for employees whose job could be under a threat in the future. They wanted to be responsible for this shift to the

future workforce as their manager emphasized: *"Digitalization changes many tasks that are done nowadays. Many of them will disappear. And because of that, we have started this kind of "renew your expertise" program. We want to help people to develop their expertise and increase their value in the job market. So that they could find jobs inside the company but also help them to find new careers outside."*. They aimed to build a model which would help them to proactively renew employees' competencies so that they would not be forced to lay-off employees and recruit new employees with new skills. It was emphasized that employers such as Financial Corp play should be responsible for the development of outdated competencies and provide possibilities for employees to renew the skills.

Media Corp, in turn, had developed training programs to develop overall digital competencies of the company. This meant that all employees were aimed to have certain knowledge of digital innovations and technologies. Their executive explained this program: "*We have developed a bit more systematic, HR-powered, competency management program. Several different tracks. And specifically, in a way that the whole firm would need to know certain fundamentals of technology. Regardless of what are you doing. You can be a cultural journalist or whatever. But certain basic things need to be in place."*. They had made a specific competence strategy where they specified the competence areas that employees need to have across the company and the needed steps to get them. For example, it was specified that data and analytics are the most important areas of development and they had already trained the top management and journalist about this topic.

Cultivating digital culture. As discussed in the Theory chapter, digital transformation changes the way the work gets done which in turn means that companies' culture needs to adapt to this change as well. It emerged from data that companies understand the importance of cultural change, but they are not intentionally cultivating a new type of culture. Based on the analysis, Industrial Corp was taking the most systematic and largest steps to cultivate digital culture. Media Corp and Financial Corp, in turn, had possibly more digitally enabled culture but at the same time, they were not systematically cultivating the digital culture.

In Industrial Corp, adoption of digital culture was seen as a difficult area of development but they were taking intentional steps to develop that. They cultivated digital culture by creating cross-functional projects, recruiting cultural change managers, and appointing digital champions. One of the most important ways to cultivate digital culture was to involve people more in digital development intentionally. They were doing this with cross-functional projects. The value of these projects for cultural transformation was outlined by their consultant: *"'I think the most important thing we are doing in terms of tackling the challenge is actually learning by doing. Whenever we start new projects, new people from Industrial Cord come in. And work together with us. Almost full time. And I think that's where we get the most distinct change. And that's where we generate the most benefit in terms of digital transformation or cultural transformation to the digital."* Besides cross-functional projects, they had recruited many change managers to the organization. For example, they had hired a high-level executive to lead a culture program which would embrace digitally enabled culture across the whole organization. They had also hired other managers with titles such as a head of digital culture and digital culture manager. Their main tasks were to coordinate and build digitally enabled culture, competencies, and ways of working. Industrial Corp had also selected digital champions across the organization to cultivate cultural shift. These digital champions were invited to a special event where company-wide digital transformation was launched. As digital champions, their role was to spread digital transformation across the organization, and that way embrace the digital culture.

Financial Corp did not take similar systematic steps to cultivate digital culture as Industrial Corp did. For them, cultural change happened mostly through hiring new people and by the example of management. It did not emerge from data that there would be similar systematic change management as Industrial Corp had. Their consultant noted: *"I guess you have to separate words and acts. There is a lot of talk about that but do they have intentional change management? Quite a little I would say. We do not see any large change management initiatives."*. However, they had made some systematic changes to cultivate digital culture such as a relocation to a new headquarter, possibility to do more remote work, and removal of working times. These changes and new exciting digital business models had created a virtuous cycle that changed the culture, as their executive

noted: "*I think these new businesses, health, and car businesses, have created a feeling in employees that it is nice to be a part of the changing environment. It has been an interesting virtuous cycle. A positive cycle that has emerged.".*

Media Corp's systematic steps to cultivate digital culture were focused on individual hires. They had hired new leaders, such as Chief Transformation Officer and Chief Data Officer, to drive cultural change in the organization but other than that their systematic efforts to cultivate digital culture were small, as their consultant noted about cultural change management: *"They would need that. They don't have that as a separate thing. They assume that everything will happen on its own. But, in general, there is a big need for change management in that company."*. However, it was seen that their culture had changed in the recent years in some ways. For example, it had enabled more fluent communication across the different functions. This was noted by their executive: "*The process that we've been doing is that we have learned to talk. Now IT architecture is everyone's business. Everyone is interested in our systems. Everyone starts to understand how they function, what is their role and we can have actual conversations. It is not anymore that some IT manager comes and shows pictures.".* This shows that Media Corp had been in digital business longer time and they had started to embrace the digital culture, while there were views that more cultural change was needed.

Summary: Renewal of competencies and culture is one of the most fundamental shifts that companies are facing in digital transformation. The elements of renewal can be synthesized to *acquiring digital competencies, developing digital competencies*, and *cultivating digital culture*. Based on the analysis, Industrial Corp's and Financial Corp's actions resulted in a moderate change in competencies and culture with the corresponding scores of 6 / 9 and 5 / 9. In turn, Industrial Corp's actions resulted in a small change of competencies and culture with the score of 4 / 9.

5 DISCUSSION

This chapter links the results from the empirical part to the academic literature. First, the research questions are addressed by discussing the main findings of the study with relevant literature. Then, concrete recommendations are presented, and practical implications of the study are discussed. In the end, theoretical implications, future research, limitations, and conclusion are provided.

5.1 Answers to the research questions

Companies' digital transformations were conceptualized in the framework at the end of the Theory chapter (Figure 4). This framework facilitated structured approach for the empirical part of the study. The RQ1 examined the left side of the framework: drivers of companies' digital transformation i.e. the "why" component of the study. In turn, the RQ2 and RQ3 analyzed the right side of the framework: executives' and companies' actions in digital transformation i.e. the "how" component. The main findings regarding these research questions are discussed next with the corresponding literature.

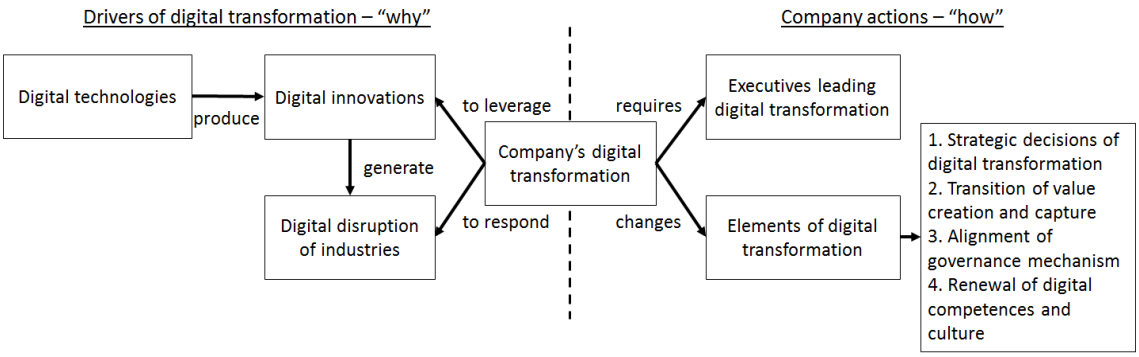

Figure 4: Conceptualization of company's digital transformation

RQ1: What drives companies to digital transformation?

The first research question regards the drivers of digital transformation for companies. Companies are driven to digital transformation by multiple factors which can be aggregated under two main themes: *external pressure and internal pressure*. Most of the factors that were identified were normal competitive forces, such as growing competitive pressure, changing customer needs, and defending long-term competitive position. However,

there were new distinctive new features in these forces that companies needed to take into account, e.g. customers' requirement levels were shifting over the traditional industry boundaries and new digital entrants from completely separate industries were entering to companies' markets.

Customers' needs are shifting across the industries which push companies to digital transformation. As customers experience the possibilities of digital innovations in more digitally advanced industries, their expectations rise and transfer to other industries as well. This, in turn, creates pressure for firms across the industries to develop digital innovations. For example, as customers are using Facebook or Netflix, they start to think why the interfaces and customer experiences in banking or traditional media are not similar. This driver had pushed especially Financial Corp and Media Corp to digital transformation. As Yoo, Henfridsson and Lyytinen (2010) noted, digital innovations blur industry boundaries which is what digitally advanced companies such as Google and Apple often deliberatively pursue. By leveraging features of digital innovations, these digitally advanced companies are redefining the speed, convenience, and accuracy of customer experience (Bharadwaj et al., 2013) which elevates general customer expectations. These results give strong evidence how customer expectations increase over the traditional industry boundaries which in turn push companies to digital transformation.

Companies are also facing new types of competitive pressure due to new entrants from completely different industries. These new entrants are often digital giants, such as Apple, Facebook, and Google, which have large resources and unparalleled competencies in digital innovations. This causes the entirely new type of threat for companies. Media Corp had particularly faced this rise of new entrants as companies such as Facebook and Netflix had changed largely the way how customers consume media. In turn, for Financial Corp the threat was rising as changes in regulation were opening the competition and technological development opened new possibilities in banking. These observations are tightly linked to findings of Nunes and Downes (2013): new competitors do not start anymore from unserved customers with different needs but they target all customer segments because of their better performance at a lower price and greater customization. This is possible because of distinctive features of digital innovations. As a result, these new entrants

and threat of them pose a great pressure to companies to drive their digital transformation forward.

RQ2: How do executives lead digital transformation?

The second research question concerns the practices that executives utilize to lead the digital transformation. Executives' practices to lead digital transformation can be synthesized under two main themes: *establishing digital transformation* and *driving digital transformation*. It emerged from data that there are many practices executives utilize under these themes. However, the most interesting and contrasting practices were how executives used publicity to drive digital transformation forward as well as how they established digital transformation by building a digital vision.

One of the most interesting findings related to executives' practices to lead digital transformation was how they use publicity to drive the change in the own organization and in the wider business community. By actively advocating company's digital transformation in different communication channels, executives can message that the digital transformation is a high priority phenomenon and that way create a sense of urgency across the organization. In particular, Financial Corp's executives were active in newspapers, internal communications, and social media. They utilized social media efficiently to communicate about the ongoing changes and future vision. As Bonnet, McAfee and Westerman (2014) suggest, by using social media executives can engage employees and other stakeholders in real-time on a global scale. This, in turn, can encourage employees to co-create digital transformation and thus create more impactful change (ibid). In addition, using social media enables an efficient way to follow the environment which is important for leaders in order to improve their digital fluency (Kane *et al.*, 2015). Compared to previous findings, these findings especially highlight that the use of media and social media is an efficient way to highlight the importance of digital transformation to different stakeholders as well as engage them in the large scale.

Another interesting finding was how executives establish digital transformation by building a digital vision of the future. This vision acts as a foundation and guide for company's digital transformation efforts. In Financial Corp, this vision was seen particularly important, and executives emphasized how valuable it was to go through the process of

building the vision. Now, their digital development work was strongly steered by this vision. Industrial Corp's executives had also developed similar type of visions, but their impact on their digital transformation was still an open question. As Bonnet, McAfee and Westerman (2014) suggest, crafting a transformative vision helps organizations to work towards a common direction. Also, digital transformation breaks many traditional organizational boundaries why a common vision can help a company to drive the change across the silos (ibid). These results suggest that by building a common digital vision in the top management team, executives get an aligned view of the future, they learn about digital innovations, and they get a common foundation for all digital development work.

RQ3: How does digital transformation change companies' strategy and operations?
The third research question concerns the changes that companies are implementing in the digital transformation. These changes were categorized into four themes: *strategic decisions of digital transformation*, *digitalization of value creation and capture*, *alignment of governance mechanisms*, and *renewal of competencies and culture*. Under these themes, there were multiple practices that companies were implementing as discussed in Section 4.4. Companies had the most interesting and fundamental differences in the way they had organized themselves for digital transformation, how radical shifts they had made in digital vision and strategy, and how digital transformation changed companies partnering. Essentially, these differences arise from shifting pressure to change as well as differing ambition levels of digital transformation.

Interestingly, companies have very different organizational designs to drive digital transformation forward. They can have a decentralized model (Media Corp) where development activities are integrated into business units, a centralized model (Financial Corp) where there is a separate digital unit developing digital solutions or a hybrid model (Industrial Corp) where a separate digital unit is supporting and coordinating business units' development. As Brown and Magill (1998) suggest, the optimal design option for IT function depends on strategic IT role, IT knowledge, and opportunities for IT-related cross-unit synergies. By applying this model to companies' digital transformations, it can be argued why companies had different approaches. For example, Industrial Corp had a

strategic role of digital innovations, low knowledge of digital innovations, and high opportunities for cross-unit synergies, why they chose the hybrid model. In addition, as Hess *et al.*, (2016) argue, the distance between digital transformation efforts and a firm's current core activities dictates if centralized or decentralized approach should be preferred. For Industrial Corp, this distance was not great why the centralized but shared unit was preferred. These results suggest that company should analyze its situation in terms of current capabilities, the strategic role of digital innovations, and cross-unit synergies, and based on these factors, it should decide whether to have centralized, decentralized or hybrid organizational design.

Companies have noteworthy differences in their digital strategies. Industrial Corp and Financial Corp had developed transformative digital strategies and they were actively developing new digital business models that leveraged possibilities of digital innovations. In contrast, Media Corp did not have similar digital strategy and their new business models were mostly incremental development on top of the previous business models. Possible reasons for these differences may arise from competing concerns and ambidextrous resolutions that balancing between new opportunities and established businesses cause as suggested by Svahn, Mathiassen and Lindgren, (2017) and Kaltenecker, Hess and Huesig (2015). As noted by the interviewees, Media Corp wanted to keep their traditional businesses as long as there was demand which is why they were unwilling to cannibalize them with the new solutions. Also, executives' ambition levels probably impact how transformative strategies companies have in digital transformation. These results imply that companies' willingness to develop transformative digital strategies is impacted by the pressure to change, resolution of ambidextrous situations, and executives' ambition.

Companies' partnering activities are increasing in digital transformation. Digital transformation enables, and also requires, more active partnering with customers, competitors, suppliers, and other stakeholders. Industrial Corp was actively aiming to create and orchestrate in their ecosystem, why they were looking for new partners. As Markus and Loebbecke (2013) note, digital business platforms enable the emergence of ecosystems where different actors change information efficiently. This, in turn, requires active partnering between participants of the ecosystem. Case companies were also actively looking

new ways to co-create value with stakeholders. For example, Financial Corp was looking partnerships with start-ups to co-create new services. As, Svahn, Mathiassen and Lindgren (2017) suggest, digital innovations enable new ways to co-create value which in turn increases the importance of equal partnerships rather than transactional partnerships. Compared to existing literature on partnering in digital transformation, these findings highlight that organizations are increasingly recognizing the importance of partnering in digital transformation which is why they are not only partnering to get new competencies but also to create larger ecosystems and to co-create value with different partners.

5.2 How should companies approach the digital transformation based on the findings?

As established companies are in different phases in their digital transformation and impact of digital disruption varies across the industries, there is no general approach to digital transformation. However, some general instructions can be drawn from the study.

Based on the literature review and empirical part of the study, different options for companies' digital transformation are synthesized in Table 10. The table presents identified characteristics of companies' digital transformation dimensions in different levels of digital transformation. These identified characteristics give an understanding of how companies digital transformation approaches can differ and how companies can find the areas of improvement.

Established companies can approach digital transformation with following steps:

1. **Analyzing the external and internal pressure to change:** Company analyzes how drivers of digital transformation (presented in Section 4.2) impact to it. Understanding how these drivers impact to the company now, and in the future, builds the foundation for digital transformation.
2. **Understanding the current state of digital transformation in the company:** Company understands the current state of digital transformation by analyzing its actions by using digital transformation compass (presented in Section 4.4). By drawing the profile on the compass, the company evaluates the current situation and then the company can compare own situation to other companies' situations.
3. **Evaluating the areas of improvement:** Company makes a gap analysis between the current state of digital transformation and pressure to change. By making this gap analysis, the company understands if the current actions are sufficient in relation to pressure to change.
4. **Finding the ambition level:** After finding the areas of improvement, the company decides the level of ambition in change. This depends on the analyzed pressure to change, the current state of DT and management's willingness to change in digital transformation. Table 10 presents actions that company can take in digital transformation.
5. **Implementation of changes:** Company implements the changes and ensures that the digital transformation actions are proceeding to correct direction. In addition, executives ensure that their actions to drive the change are sufficient.

Table 10: Options for digital transformation

Level of digital transformation →

Dimension	+	++	+++
Executives' leadership practices	- No digital vision built - No appointed digital leaders - Minimal commitment to digital development - Not using publicity to drive DT	- Business unit level digital visions - CDO hired to drive change - Executives support and commit to change - Use of public and internal channels to drive DT	- Company-wide digital vision built - CDO and other digital leaders hired - Visionary executives driving the change - Advocating DT actively in media and social media
Strategic decisions of digital transformation	- Incremental strategic shift in DT, "easy-wins" - Small utilization of digital business strategy - No additional investments in DT	- Partly transformative strategic shift in DT - New business models, ecosystem thinking, new market entries - Increased investments (5-10% of revenue) in DT	- Transformative strategic shift in DT - Ecosystem orchestration - expanding scale, scope and speed of a firm - Significant investments (10%+ of revenue) in DT
Transition of value creation and capture	- Digitalizing mostly internal business processes - Mostly transactional partnerships - Utilization of new working methods in certain functions	- Digitalizing selected internal and external business processes - Co-creational partnerships with stakeholders - Adopting new working methods across the organization	- Maximal digitalization of internal and external business processes - Orchestrating the ecosystem, co-creational partners - New working methods used fluently across the organization
Alignment of governance mechanisms	- Digital development in normal BU's - Traditional governance mechanisms - No KPIs for digital transformation	- Separate unit to develop digital innovations - Digital governance e.g. digital steering committee - KPIs for digital initiatives and people behavior	- Hybrid unit to develop and support DT - Systematic governance e.g. digital board and digital acceleration centers - Systematic KPIs to track company-wide DT
Renewal of competencies and culture	- Individual digital developer recruitments - No strategic acquisitions to drive DT - Minimal digital competence development - No intentional digital culture cultivation	- Large digital developer recruitments - Few targeted acquisitions - Some internal digital competence training - Cultural change mostly through new hires	- Complete renewal of competence pool - Frequently targeted digital acquisition - Cross-functional staffing, training, online learning - Intentional cultivation of digital culture

5.3 Implications to managers and other practitioners

The practical objective of this thesis was to provide knowledge and holistic understanding regarding digital transformations in Nordic established companies. The goal was to understand how these companies approach and lead digital transformation: what are the

drivers, executives' leadership practices, and changes companies are making in digital transformation. The practical contribution of this thesis is a better understanding of these aspects. Digital transformation is synthesized in the conceptual framework, case companies are analyzed and evaluated according to this framework, and recommendations are provided based on the theory and the findings.

Companies' digital transformations are driven by multiple different factors. Most of these factors are rather normal competitive forces such as internal pressure to find new growth sources, changing customer need and responding to competitive pressure. However, there are features in these drivers, such as customers' liquid expectations and the threat of new digital entrants, that should be analyzed carefully in order to understand the impact on the company. These drivers impact across the traditional industry borders which makes them more difficult to predict. By actively monitoring these new drivers, managers can better react to these threats.

For executives, there are several practices to establish and drive digital transformation. Many of the identified practices are rather traditional leading practices but executives should also emphasize the less traditional leading practices, such as using social media and building of a company-wide digital vision to establish and drive the change. By having an active approach to lead company's digital transformation, executives can show to their own organization the high importance of the phenomenon. At the same time, they demonstrate to customers, investors, and other stakeholders that the company is active in their efforts to digitalize their operations.

Digital transformation is a holistic phenomenon, and it changes companies' strategy and operations thoroughly. Digital transformation brings new strategic decisions for managers, digitalizes value creation and capture, changes governance mechanisms, and renews company's competencies and culture. For companies, it is important to understand the current state of digital transformation and areas of improvement. By understanding this, companies can choose the most suitable actions to advance their digital transformation. It is not recommended to invest in new initiatives without having a holistic understanding of the situation and possible areas for improvement. The previous section provides a practical approach to companies' digital transformation. By using this approach, companies'

managers can take systematic steps in digital transformation and thus ensure that all possible actions are taken into consideration.

5.4 Theoretical implications and future research

The theoretical objective of this thesis was to provide knowledge on the nascent topic of digital transformation. The academic literature of digital transformation is emergent but still scarce, and it is mostly focused on practice-oriented publications (Gerster, 2017). Many practice-oriented studies discuss how companies change in digital transformation, but they do not discuss thoroughly the basic features of digital innovations and how they drive companies to digital transformation. Thus, the conceptual framework of companies' digital transformation (Figure 4) contributes to current IS literature on companies' digital transformations by acting as a bridge between the drivers of digital transformation and companies' actions in digital transformation.

Further, this thesis provides knowledge on the strategical leading of digital transformation. By having the conceptual framework of digital transformation as a basis, this thesis contributes to the academic research by providing new empirical results regarding drivers, executives' practices, and companies changing strategy and operations' in digital transformation. In addition, concrete steps and recommendation to approach digital transformation are provided.

For future research, this thesis provides many new branches that would need to be studied more in detail. Firstly, this thesis provided several drivers of companies' digital transformation, but it would be interesting to understand how managers perceive these drivers. Some managers feel a great sense of urgency to change because of the external drivers while others have a more calm approach. It was noted that the sense of urgency in one or few executives can initiate company-wide digital transformation. For example, in Financial Corporation, the awakening of CEO acted as a catalyst for the whole company to respond to the upcoming threat of digital disruption. Thus, it would be interesting to understand what are the underlying factors that cause this different perception among managers and how this perception impacts to company's digital transformation.

Secondly, executives' actions in digital transformation could be examined closer. This study recognized different practices that executives are employing, but it would be interesting to understand what are the outcomes of these practices. For example, it was identified that executives use publicity to advance digital transformation and it was suggested that this use of publicity sends a message to own employees and other stakeholders that digital transformation is a high priority phenomenon for the company. It would be interesting to study how effective this kind of communication is. Does it create a greater sense of urgency in the organization? How does it impact to competition? Does it improve company branding and recruiting? Answering these questions would shed more light on executives' role in digital transformation.

Finally, the actions that companies are taking in digital transformation have many areas that would need further research. For example, it was apparent that companies are investing significant resources in digital transformation, but it would be interesting to study what is the optimal investment strategy. If a company invests in digital transformation without no real need in the market, there is a risk of over-investing. On the other hand, if a company invests too little, there is a risk that company will fall behind in the development. Further, companies' actions in partnering, organizing, governing, and competence and culture development provide many areas of future research. There would be a need to understand these elements more thoroughly, and thus create a better understanding of optimal strategies for companies in digital transformation.

5.5 Limitations

This study naturally has some limitations that need to be considered when assessing validity, reliability, and generalizability of the results. Multiple case study method as presented by Yin (2003) was used to collect and analyze the qualitative data. Gibbert, Winfried and Wicki (2008) suggest that to assess the rigor of field research, such as case studies, four criteria are commonly used: internal validity, construct validity, external validity, and reliability.

Construct validity refers to the quality of conceptualization of the relevant concept (Gibbert, Winfried and Wicki, 2008). Thus, it concerns the extent to which a research

procedure leads to an accurate observation of reality (ibid). To enhance construct validity, it was aimed to establish a clear chain of evidence how the author went from initial research question to the final conclusion. Yet, there is always author's bias and subjective view that can impact how this chain actually was constructed. For example, different initial knowledge of the case companies can impact what kind of data was gathered in the interviews. Further, it was aimed to adopt different angles from which to look at the digital transformation in the companies by interviewing companies' consultants. At the same time, there was a high reliance on these external interviews, which in turn can lead to inaccurate observations of reality. External interviewees may have less knowledge of the reality, or they may be biased to answer the interview questions inaccurately.

Internal validity concerns the causal relationships between variables and results (Gibbert, Winfried and Wicki, 2008). In other words, it refers to a data analysis phase of the research: is there a high level of fit between observations and concepts (Smallbone and Quinton, 2003)? As the built concepts and themes are author's subjective interpretations of interviews, there is always a risk that some observations are conceptualized incorrectly. Additionally, during the analysis, pattern matching was used to match the empirical findings to those found in previous studies. The literature used to do this pattern matching was partly practice-oriented literature which, in turn, lowered the internal validity.

External validity or generalizability refers how the theories presented in the study can be shown to account not only in the setting in which they are studied but also in other settings (Gibbert, Winfried and Wicki, 2008). Construct validity and internal validity act as a prerequisite for external validity (ibid). The biggest limitation regarding the generalizability of this study is the small sample of companies. Eisenhardt (1989) argues that cross-case analysis involving four to 10 case studies provide a good basis for generalization. However, only three companies were chosen for the study in order to keep the depth of the examination on sufficient level. This, in turn, makes the findings less generalizable which needs to be taken into account when assessing the findings. The rationale for the case study selection and case study context was provided in the methods sections to allow the reader to understand the sampling choices. However, to keep companies' anonymity, examination had to be kept in rather a general level.

Reliability concerns the absence of random error i.e. if the subsequent researcher can arrive at the same insights if they do the study along the same steps again (Gibbert, Winfried and Wicki, 2008). Transparency of the study was improved by specifying how the case study was conducted (Chapter 3). Replication of the study was increased by collecting all the case study notes in one collective database where used documents and interview narratives were collected. However, as a case study is an iterative process where the focus of the study sharpens as more knowledge is acquired, it is difficult to replicate all the steps that were taken during the research. Also, as semi-structured interviews were used, the emphasis of the interviews differed depending on the knowledge and interests of the interviewees. These aspects naturally lower reliability of the thesis.

5.6 Concluding remarks

This thesis studied exploratorily strategic leading of digital transformations in large established firms. The objective was to provide a holistic understanding of the phenomenon in Nordic companies: what drives companies to digital transformation, how executives lead it, and how does it change companies' strategy and operations. A large body of literature regarding digital innovations, digital disruption of industries and companies' digital transformations was synthesized, and based on that, a conceptual framework of companies' digital transformations was formed. In the empirical part, case companies' digital transformations were examined and evaluated with the multiple case method. Finally, the findings of the study were discussed with relevant literature, and concrete recommendations were given for companies who aim to advance their digital transformation efforts.

Many incumbent companies are facing large challenges but also significant opportunities due to digital innovations. Recent examples from different industries show how digital innovations can change competition and customer behavior. However, by giving the needed priority to this phenomenon, established companies can be prepared for these shifts and leverage all the possibilities of digital transformation. With the findings of this study, companies are better equipped to become leaders of this change.

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APPENDIX A

Intro

- Introduction and the background of the topic
- Main themes of the interview

Digital disruption of industries and company's digital transformation

- How do you see your industry's digital development?
- Do you feel that there is an ongoing digital disruption in the industry? If you feel so, how this has unfolded?
- Is there an ongoing digital transformation in your company? How can it be seen?
- What are the main drivers of the digital transformation from your perspective?

Executives' role in company's digital transformation

- How would you describe your top management team's role in digital transformation? How about lower-level managers?
- What are executives' main practices to drive digital transformation forward?

Changing elements of digital transformation

- Has digital transformation changed company's strategy? If it has, how?
- What is company's investment level in digital transformation?
- How would you describe company's digital competence management? How does company develop and acquire new competencies?
- How would you describe company's cultural change management in digital transformation?
- How has the company been organized to advance digital transformation? Have there been any changes?
- How company governs investments in digital development? Are there new methods of governance?
- How company measures digital transformation? Are there new KPIs?
- Has company's partnering with stakeholders changed in digital transformation?
- How has digital transformation impacted external and internal business processes?
- How company's ways of working have changed in digital transformation?