Towards a Maturity Model for Digital Strategizing

A qualitative study of how an organization can analyze and assess their digital business strategy

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Abstract

Many companies are struggling to navigate in the rapidly changing environment and uncertain time of the digital era. Previous research has been exploring the ongoing trend of digital transformation, as well as digital business strategies, but still there is little guidance for practitioners in terms of concrete frameworks and concepts for digital business strategizing. This thesis investigates critical factors of digital business strategizing and contributes by developing a maturity model for digital business strategizing. The contribution of this study is two folded, on the one hand it provides practitioners a conceptual artefact in order to analyze their challenges in the new landscape of digital transformation and on the other it gives valuable insights for researchers on the new rising phenomena of digital business strategies.

Keywords: digital business strategy, maturity model, digitalization

1. Introduction

Across many industries, digital transformation is re-shaping the competitive landscape and affecting every aspect of various businesses. In this environment, firms are able to create new forms of value through IT but are also threatened by new rising competitors. Accordingly, there are various strategic concerns of managers on digitalization and its effects on firms, industries and the society as a whole (World Economic Forum, 2016). Companies have to adapt in this environment and have already begun to face the challenges of digital transformation by using appropriate strategies. Some companies have managed to transform their firm by developing strategies suited to this uncertain environment. However, many firms still struggle to develop clear and coherent digital strategies (Kane et al., 2015).

In the early stages of the IS strategy field, information technology was managed through a planned top down approach in which information technologies were aligned with business goals (Ciborra, 1994). Later on, researchers began to see information technology as a key management issue when companies started to seek opportunities for competitive advantage from IT (Peppard, 2014; Earl, 1989). Currently there is a new perspective evolving in which all employees take part of IS strategizing and this movement is described as a co-evolution of business and IT strategies (Peppard, 2014; Bharadwaj et al., 2013; Benbya & McKelvey, 2006). This fusion of business and IT strategies acknowledges digital technologies as key drivers of business processes and appreciate that information technology is embedded in those processes and can form business models (Peppard, 2014). According to Bharadwaj et al. (2013, p.244), the so-called digital business strategy (DBS) is an “organizational strategy formulated and executed by leveraging digital resources to create differential value”. A key driver of this ongoing fusion of digital strategy is the very nature of digital technologies and its unique properties that allow companies to innovate in new and different ways (Yoo et al., 2012). We argue that in this new environment, companies need guidance on how digital business strategies can be formulated and implemented. Such guidance can be provided
through tools such as maturity models, which assist in assessing the current situation of an organization and suggest improvement measures (Becker et al., 2009).

Previous research has suggested a large number of maturity models for IT management, which can be used as guidance for practitioners to face several distinct issues. One example is Luftman’s (2004) maturity model, which is an assessment tool to identify detailed recommendations for improving alignment of IT and business. While the view on alignment has been established for many years, researchers claim that it needs to be challenged and adapted to current developments (Kahre et al., 2017). Therefore, our goal of this thesis is to develop a maturity model that goes beyond business/IT alignment by including new perspectives from DBS literature and developments in IT strategy literature. Consequently the formulated research question set out to guide this study is:

How can maturity models assist an organization to analyze and assess its digital business strategy?

To answer our research question, we developed a maturity model that can guide companies in their work with analyzing and evaluating their digital business strategy process. In order to develop the maturity model, we conducted a literature review in combination of a multiple case study that included interviews with several managers in different organizations. In the upcoming sections, we present related research regarding digital strategies and maturity models. Then we introduce the deductively generated maturity model and present our methodology more specifically. Finally the results are presented and discussed in relation to our maturity model and we conclude with limitations and questions for further research.

2. Related Research

2.1 Digital Strategy

In order to understand the terminology of digital strategy in the IS field, we need to look at the roots of this phenomena and how it evolved over time. The field of IS strategy has been heavily influenced by strategic management literature where the term strategy was understood in different ways. Mintzberg (1987) tried to clarify the ongoing discourse by introducing five competing terminologies of strategy which can be defined as a plan, a ploy, a pattern, a position and a perspective - commonly known as the five P’s for strategy. Whereas the strategy literature in business studies had a huge debate on what the very nature of strategy is, the IS field had an ambiguity through a missing and clearly defined typology of what IS strategy in its core is (Chen et al., 2010). Regarding how strategy is conceptualized, it has several implications on what IS strategy in its nature is and how it can be studied. One of the fundamental issues is whether or not ‘strategy’ is seen as an ongoing social process or as an outcome of the ‘strategy’ process (Peppard, 2014). Another issue is that past researchers used inconsistent terms for IS strategy such as IT strategy, IS planning, etc., which lead to confusion and lack of clarity (Chen et al., 2010; Peppard et al., 2014). Recently Chen et al. (2010) addressed the problem of a missing IS strategy typology by identifying three different conceptions of IS strategy in literature: IS strategy as the use of IS to support business
strategy, as the master plan of the IS function, and as the shared view of the IS role within the organization.

The first conception considers IS to support business strategy, also recognized as alignment of information systems with business strategy. A definition of alignment is that the business and IT are working together towards a corporate goal (Chan and Reich, 2007). Henderson & Venkatraman (1993) argues that firms with the inability to capture value from IT investments are lacking the ability to align the business and IT strategies of the organization. The second conception considers IS strategy as the master plan of the IS function and is more focused on the actual strategy towards running the IS function efficiently (Chen et al., 2010). In this perspective, the first task for IS strategists is to identify the required IS assets, and second to allocate the existing IS assets in the most effective way (Chen et al., 2010) and is therefore seen as a business management issue (Peppard et al., 2014; Earl, 1989; Earl, 1993). The third and last conception presented by Chen et al. (2010) describes IS strategy as a shared view regarding the role that IS plays within the organization. This conception is organization-centric and grounded in an understanding of IS strategy as guiding IS-related business decisions instead of seeing it as a plan (Chen et al., 2010). Galliers (1995) states that through a shared view on the role of IS, new technologies could potentially shape the business strategy of the organization.

Although previous research has addressed IS strategy and different conceptions of it in the literature (Chen et al., 2010), little attention have been paid to IS strategy or strategizing as a social process. The research focused on the tools, frameworks, techniques, and methodologies, but not on the people engaged in the real work of IS strategy (Peppard et al., 2014). Arvidsson et al. (2014) are also detecting this in their study as they adopt a strategy-as-practice perspective, focusing on how actors and interrelated organizational practices formed the implementation of a new production management system. Jarzabkowski & Spee (2009) are also pointing out that strategy should be considered as something organizations do as opposed to have, and highlight that there is an absence of human actors and their actions in most strategy theories. According to Jarzabkowski & Spee (2009) strategy-as-practice is concerned with the actors engaging in strategy and what implications this has for the formation of strategy.

Lately the new concept of ‘digital business strategy’ has been established in the field of IS where the IS/IT strategy is not subordinated to business strategy anymore but fused with each other and becomes one (Bharadwaj et al., 2013). Similar to the strategy-as-practice perspective, "digital business strategy" considers the everyday work of employees (Peppard, 2014). According to Bharadwaj et al. (2013), their concept of digital business strategy acknowledges the impact of newly emerging digital technologies on other functional areas within companies and also accepts that IT strategy has not only implications on performance but also provides competitive advantage and strategic differentiation. In line with past research on the resource-based view of IT, Bharadwaj et al. (2013) do not focus on the technology itself but recognize them as digital resources, which drive competitive advantage. This phenomenon occurs mainly because of the fact that “firms become more digital and rely on information, communication, and connectivity functionality” (Bharadwaj et al., 2013, p. 473). Researchers such as Yoo, et al. (2010) support this view by claiming that in this new
digital environment, digital technologies play an essential role in strategy formulations. In the future the distinctive capabilities of digital technologies rooted in products need to be considered in strategic formulations to increase competitive advantage (Yoo et al., 2010). However Bharadwaj et al. (2013) have not focused their work on specific management practices or capabilities to drive digital business strategy, but instead recognized a connection between “IT capabilities, organizational performance, and competitive advantage (McLaughlin, A. 2017, p.63). According to a number of researchers (McLaughlin, A., 2017; Kane et al., 2015) technology do not play an important role in the digital transformation process, instead it is important how an organization as a whole reframe the way they practice technology to create new products and services to drive competitive advantage (Bharadwaj et al., 2013; McLaughlin, A., 2017; Yoo et al., 2010).

However, there is a lack of research of operationalized concepts and models that guide organizations in thinking about strategy formation for driving competitive advantage in the digital age. We claim that a maturity model of digital strategizing can support firms in their digital transformation process.

2.2 Maturity models

To stay competitive as an organization, there is a need for having a continual process of improvement that scrutinizes the company's positioning in terms of its IT capabilities and the quality of its properties and services. Maturity models are according to de Bruin et al. (2005), helpful tools that aim for assisting those specific issues. One description of the term maturity is described as the levels of development that characterize a specific entity or dimension (Andersen & Henriksen, 2005). The nature of a maturity model therefore consists of chronological stages that assess the level of maturity regarding a company. In relation to the stages a maturity model also includes selected dimensions. As for the use in practice, maturity models are anticipated to reveal current and desirable maturity levels. Respective improvement measures should be included in the levels. According to Poeppelbuss & Röglinger (2011) there are three specific purposes for the application of maturity models. The first one is descriptive application-specific, which means that a maturity model serves as a diagnostic tool, which assesses the current capabilities of the entity under investigation with respect to given criteria. Another application of maturity models can have a prescriptive purpose to identify desirable maturity levels and then provide guidelines for improvements. The third and last purpose of use for a maturity model is comparative. When a maturity model allows for either internal or external benchmarking, it serves such a purpose (Poeppelbuss & Röglinger, 2011). The main purpose of our maturity model is descriptive application-specific.

Poeppelbuss et al. (2011) identified 76 maturity models published during a fifteen-year period in leading IS journals which they categorized into four different research areas; IS development, IT and individuals, IT and markets, and IT and organizations. Furthermore, they confirm a continuous growth of published maturity models in IS research and identified that some developments of maturity models in research areas such as IS development became less popular, whereas IT and organizations become a dominant issue. A larger set of maturity models within different management domains have been developed over the years
in order to assess the maturity of for example IT Service Capability, Alignment, Innovation Management and Knowledge Management Maturity (de Bruin et al., 2005). One of the first maturity models within the field of IS was the Capability Maturity Model (CMM) by Paulk et al. (1993) which lead to a steady growth of maturity models in IS research (Poeppelbuss & Röglinger 2011). One of the reasons for that was the success of the CMM and its impact on the software community (Paulk, 2009). In this five-level model, Paulk et al. (1993) describe how software organizations change their capability for software development by concentrating on software process enhancement (Paulk, 2009).

Other maturity models such as the Strategic Alignment Maturity Assessment by Luftman, J. (2004) focused on a more strategic issue of aligning business and IT. Luftman’s (2004) maturity model provides firms a tool to assess their actions of strategic alignment and shows how they can improve their alignment practices. Recently some researchers and consultancy companies developed guides to cope with the ongoing challenge of digital transformation. Kane et al. (2015) for example, examines in a quantitative analysis characteristics of how digital maturing organizations differ from not so mature digital ones. Other researchers like Westerman & McAfee (2012) developed a digital maturity model which presents how different companies are reacting to technological opportunity. However, scientifically rigorous maturity models, which focus on organizational issues of change, leadership and strategy within the digital business strategy domain, are missing.

The scientific underpinnings of a maturity model are grounded in design science. Design science is one of the overarching paradigms of the IS discipline and it tries to extend the boundaries of human and organizational capabilities by creating new and innovative artefacts (Hevner et al., 2004). According to Hevner et al. (2004) design involves a problem-solving process and an artefact as an outcome. The artefact generally solves a particular problem in an organizational or practical setting and can be designed as models, methods, instantiations, and constructs (March & Smith, 1995). Even though past researchers recognized the importance of design in the IS field (Hevner et al., 2004; Glass, 1999; Winograd, 1998), the design of useful artefacts is complicated and needs creative progress where existing theories are not fully satisfying (Hevner et al., 2004). In line with Becker et al. (2009), we understand a maturity model as a design that can help in specifying a firm’s current position of capabilities and develop actions for change and improvement. The IS field needs such tools that can support and help in assessing the actions of a company and their progress in implementation or improvement measures (Becker et al. 2009). Researchers have investigated how the development of a maturity model relies on scientific rigor (Hevner et al., 2004; de Bruin et al., 2005; Becker et al., 2009). For instance, Becker et al. (2009) presents a scientific procedure and a model for developing maturity models specific for IT management based on Hevner et al.’s (2004) guidelines for understanding, executing, and assessing design-science research.

Becker et al.’s (2009) scientific approach of developing maturity models consists of eight different requirements. These requirements are adopted from design science and the seven guidelines defined by Hevner et al. (2004). The first requirements emphasize exploring if there is a need for developing a new maturity model or improve an existing one. Therefore a comparison with existing maturity models has to be done. Requirement two is that maturity
models must be developed iteratively and step by step in order to refine, evaluate and enhance if necessary. The third requirement when developing a maturity model is to evaluate. Premises, principles, usefulness, quality and effectiveness of the model need to be evaluated iteratively. A Multi-methodological procedure is the fourth requirement, which means that the development of a maturity model involves a variation of research methods, and that the usefulness of the research methods needs to be reliable and finely adapted. The fifth requirement states that the developed model must not only be innovative, but also try to answer a relevant problem for either researchers or practitioners; hence it’s named identification of problem relevance. Problem definition is the sixth requirement, closely connected to the requirement of problem relevance. In order to establish relevance, a precise definition of the problem is needed. The purpose of the seventh requirement – implementation of the transfer media – is to present the maturity model and make it accessible in a planned way for the earlier defined user groups. Scientific documentation is the eighth and last requirement, which says that every step of the development process has to be documented (Becker et al., 2009).

As presented above, numerous maturity models are presented in the previous literature, but past research is also lacking of maturity models regarding digital strategies (Poeppelbuss et al., 2011). Since few studies have been dedicated to the emerging topic of digital business strategies, it is an area of large interest in our field that needs more understanding. To examine how organizations assess their digital strategies in their digital transformation process is of large interest. Academic and practical interest on maturity models has often centered on adoption, development, and the technical aspects of IT (Poeppelbuss et al., 2011), but the current digital environment calls for maturity models on digital transformation and appropriate digital strategies.

2.3. Development of the Maturity Model of Digital Strategizing (MMDS)

Through the literature review on IS strategy, the recent developments of alignment literature and the new phenomena of digital business strategies, we have identified three levels of maturity in which an organization can position itself: ‘IT strategizing’, ‘Aligned strategizing’, and ‘Digital strategizing’. These three levels make up our chronological stages of maturity. In addition to the levels, each of the three levels focuses on dimensions that potentially can help an organization to assess their maturity. Those dimensions are derived from Luftman’s (2004) model of business/IT alignment and are stated as the following:

**Communications Maturity**: This dimension describes the mutual understanding between IT and business functions as well as the methods to support that (Sledgianowski & Luftman 2005).

**Value Measurement Maturity**: The ‘Value Measurement’ dimension defines practices and strategic IT choices of an organization in order to show the business side the value of IT.

**Leadership Maturity**: This dimension was originally named ‘Governance’ by Luftman (2004) but we suggest that ‘Leadership’ reflects the emergent nature of DBS better. It involves how decisions on major IT projects are allocated (Sledgianowski & Luftman, 2005),
but additionally focuses on leadership issues, which became an important success factor for digital business strategizing (McKeown & Philip, 2003).

**Ecosystem Maturity:** Luftman’s (2004) partnership dimension describes how the IT and business function perceive each other and if they see each other as valuable partners. However, in this thesis it is changed into ‘Ecosystem Maturity’ since the ecosystem plays an important role in DBS (Bharadwaj et al., 2013).

**Technology Maturity:** This dimension refers to the effective adoption of emerging technologies and to which extent IT is enabling or driving business processes (Luftman, 2004).

**Skills Maturity:** Skills can be described as the degree of how IT human resource considerations such as culture are managed.

The levels of the MMDS are presented below in short. For the full model and its propositions see Appendix A.

### 2.3.1. Level One - IT Strategizing

This level reflects the lowest state of maturity in which an organization sees IT primarily as a tool to support their business (El Sawy et al., 2010). The understanding between business and IT lacks in every aspect and the IT unit takes a stance in which it reacts to the business, but do not take IT initiatives proactively (Luftman, 2004). Furthermore, the IT unit is not involved in major strategic decisions and solely has a functional role. Here, business/IT alignment is not achieved or aimed for, but instead the organization tries to reduce the costs as much as possible and sees the IT unit as a cost center and service provider for business requirements (Henderson & Venkatraman, 1993). This level can be summarized as a conception where alignment is not achieved and therefore reflects the first level of Luftman’s (2004) model of strategic alignment (see appendix A).

### 2.3.2. Level Two – Aligned Strategizing

Organizations in the second stage see IT as interdependent with the business and acknowledge that business processes have to be revised to take advantages of IT (El Sawy et al., 2010). However, in this maturity level, organizations still see the IT strategy as subordinated to the business strategy and it therefore takes a functional role (Bharadwaj et al., 2013). Organizations in this maturity level achieve alignment between IT and business (Henderson & Venkatraman, 1993) to target efficiency and effectivity (Luftman, 2004) and to increase firm performance (Chan & Reich, 2007). Thus, alignment is characterized through an informal and pervasive relation between IT and business with an IT unit that is able to show leadership, well-prioritized IT projects, and engagement in the strategy development process (Luftman & Brier, 1999; Luftman et al., 1999). In this level alignment is achieved according to Luftman’s (2004) last stage of maturity (see appendix A).

### 2.3.3. Level Three - Digital Strategizing

The third level reflects the described condition in which the IT and business becomes one (Bharadwaj et al., 2013; Mithas et. al., 2012). Thus, organizations in this phase go beyond business-IT alignment and formulate and execute an organizational strategy “by leveraging digital resources to create differential value” (Bharadwaj et al., 2013). Whereas in the second
stage of maturity organizations aim to support the business strategy with IT, organizations in this stage try additionally to develop and exercise digital options (Sambamurthy et al., 2003) to create competitive advantage and strategic differentiation (Bharadwaj et al., 2013). Organizations who exercise digital strategizing acknowledge that business processes and capabilities become tools with which IT creates value (Kahre et al., 2017; Coltman, 2015; El Sawy et al., 2010). In line with Hiekkaneen (2015, p.8), we argue that business–IT alignment as a mechanistic view is limiting an organization, since it does not emphasize current developments in which organizations constantly face “new realities, nonlinear discontinuities and incessant technological development”. Thus, level three involves considerations of dynamic capabilities (Teece, 2007), which help organizations to adapt quickly to the fast-changing digital environment (Kahre et al., 2017; El Sawy et al., 2010).

To be able to communicate well between the IT and business unit, organizations should develop capabilities to respond quickly to ecosystem changes by integrating the ecosystem into their digital strategy and unite organizational- and IT-strategies (Bharadwaj et al., 2013). Thus, organizations that practice digital strategizing have a coherent digital business strategy which is well communicated throughout the organization and should be treated as a business strategy in the digital landscape (Bharadwaj et al., 2013; Kane et al., 2015). Traditional knowledge sharing processes between IT and business will be extended by an integration of ecosystem actors such as customers, partnerships, alliances and competitors to co-create value (Bharadwaj et al., 2013; Lusch & Nambisan, 2015) and leverage IT innovation (Sandberg, 2014).

In order to recognize the value which IT provides for the organization, level three organizations also try to digitize their business and develop digital options to create valuable positions for future opportunities (Coltman, 2015) and consider “future investment choices without an obligation for full investment” (Sambamurthy et al., 2003, pp.247). This means that organizations in level three adapt digital options thinking which is developed through a learning process of integrating information technologies with business processes and knowledge (Sambamurthy et al., 2003). Digitally mature organizations also establish routines to effectively exploit and cope with the increasing amount of data generated from different digital technologies such as cloud computing, mobile data, and mobile phones (Bharadwaj et al., 2013).

Leaders therefore need the competencies to understand the importance of using digital technologies to sense the environment around them in a better way (Warren, 2013). Organizations, who realize digital strategizing, also identify organizational risk taking as a key issue to adapt to the digital environment (Kane et al., 2015). Furthermore, leaders need to develop appropriate adaptive capacity and embrace transparency (Bennis, 2013) as well as develop digital skills (McLaughlin, 2017).

To be able to digitally mature, organizations need to understand themselves as a part of an ecosystem, in which digital partnerships have to be created, and changes in the ecosystems have to be responded rapidly (Bharadwaj et al., 2013; Mithas et al., 2013). Sensing the environment and responding to new IT initiatives (Teece, 2007) should play an important role for mature organizations.
When it comes to the technology maturity, organizations need to build dynamic technology capabilities to use technologies for building competitive advantage or improving its performance (McLaughlin, 2017). By scaling-up and down their IT infrastructure (Bharadwaj et al., 2013), organizations also make their infrastructure more flexible towards the environment. Technologies that are adopted should have the main purpose to generate competitive advantage and strategic differentiation (Bharadwaj et al., 2013).

A level three organization builds up skills through external alliances and partners (Bharadwaj et al., 2013; Bennis, 2013; Kane et al., 2015), as well as through the development of trust and commitment in order to change (McKeown & Phillip, 2003). A mature company therefore uses training and job rotation as a capability for change and develops the necessary digital skills among all employees. Furthermore, mature organizations try to develop awareness of change among their employees (Kenny, 2006).

For an overview of all dimensions and its operationalization, see Table 1.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Operationalization</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Well communicated and coherent Digital Strategy</td>
<td>Kane et al. (2015)</td>
</tr>
<tr>
<td></td>
<td>IT/Business strategy is united into a Digital Strategy</td>
<td>Bharadwaj et al. (2013)</td>
</tr>
<tr>
<td></td>
<td>Establish business and technical skills among IT and business people</td>
<td>McLaughlin (2017)</td>
</tr>
<tr>
<td></td>
<td>Boundary-spanning knowledge sharing</td>
<td>Lusch &amp; Nambisan (2015)</td>
</tr>
<tr>
<td>Value</td>
<td>Exploitation of data for decision-making generated through digital technologies</td>
<td>Bharadwaj et al. (2013)</td>
</tr>
<tr>
<td>Measurement</td>
<td>Leverage digital options by investing in digital opportunities for the future</td>
<td>Coltman (2013); Sambamurthy et al. (2003); Woodard (2013)</td>
</tr>
<tr>
<td>Leadership</td>
<td>Embrace information-driven transparency through digital technologies</td>
<td>Bennis (2013)</td>
</tr>
<tr>
<td></td>
<td>Build trust and commitment to workforce for change</td>
<td>McKeown &amp; Phillip (2003)</td>
</tr>
<tr>
<td></td>
<td>Establish risk as a cultural norm in the whole organization</td>
<td>Kane et al. (2015)</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>Establish digital partnerships with external actors &amp; manage relations</td>
<td>Bharadwaj et al. (2013)</td>
</tr>
<tr>
<td></td>
<td>React fast to ecosystem changes and sensing environmental changes and responding new IT initiatives</td>
<td>Bharadwaj et al. (2013); Mithas et al. (2013); Sambamurthy et al. (2003); Teece (2007)</td>
</tr>
<tr>
<td>Technology</td>
<td>Technology is flexible towards the business, environment and the market</td>
<td>McLaughlin (2017), Bharadwaj et al. (2013)</td>
</tr>
<tr>
<td></td>
<td>Adopt technologies to generate competitive advantage and strategic differentiation</td>
<td>Bharadwaj et al. (2013)</td>
</tr>
<tr>
<td>Skills</td>
<td>Learning arranged with external alliances to actively learn and to upgrade digital skills</td>
<td>Bharadwaj et al. (2013); Bennis (2013); Kane et al. (2015)</td>
</tr>
<tr>
<td></td>
<td>Employees find creative solutions, engage and participate in change and develop awareness of change</td>
<td>Kenny, J. (2006)</td>
</tr>
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Table 1. - Operationalized findings derived from the literature review
3. Method

In this section, the details of the research design of the thesis are presented. The purpose of this thesis was to develop a maturity model for assessing an organization's digital strategy efforts and to construct a useful model for practitioners to assess the maturity of their digital business strategy. The theoretical foundation of the model is based on the problem-solving paradigm and seeks to design an artefact, which supports the analysis, management and use of information systems efficiently and effectively (Hevner et al., 2004). March & Smith (1995, p.256) considers a model as a type of artefact and defines it as a “set of propositions or statements expressing relationships among constructs”. According to Hevner et al. (2004, p. 77), design science “creates and evaluates IT artefacts intended to solve organizational problems” and may involve qualitative approaches to understand the rich phenomena inherent within the interaction of people, organizations and technology. As described in section 2.2, Becker et al.’s (2009) criteria are heavily influenced by the design science approach, but more focused on the development of maturity models. Therefore the requirements of Becker et al. (2009) were adopted and applied for the development of the MMDS (see Table 2).

<table>
<thead>
<tr>
<th>Description</th>
<th>Application</th>
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<tbody>
<tr>
<td>R1 Comparison with existing maturity models</td>
<td>Review of various maturity models in IS literature. Improvement of already existing maturity model of Luftman’s (2004) ‘Strategic Alignment Model’.</td>
</tr>
<tr>
<td>R2 Iterative procedure</td>
<td>Generation of the model initially through a literature review. Adjustments of the model during the process of validation through interviews.</td>
</tr>
<tr>
<td>R3 Evaluation</td>
<td>Evaluation was carried out through assessing the organizations state of maturity. A qualitative method was used by applying the model in four different organizations</td>
</tr>
<tr>
<td>R4 Multi-methodological procedure</td>
<td>Literature review was carried in combination with a multiple case study</td>
</tr>
<tr>
<td>R5 Identification of problem relevance</td>
<td>The problem relevance was shown by reviewing the literature and empirically exploring the relevance. The research question is articulated in section 1. (Introduction)</td>
</tr>
<tr>
<td>R6 Problem definition</td>
<td>Development of a tool which assess an organizations digital business strategy</td>
</tr>
<tr>
<td>R7 Targeted publication of results</td>
<td>The design process of the model is well presented and scientifically documented</td>
</tr>
</tbody>
</table>

Table 2. – Design process of the MMDS based on the requirements of Becker et al. (2009)

A preliminary maturity model was developed, based on a literature review on digital business strategies and existing maturity models. The literature was selected from scientific databases such as Google Scholar, WebOfScience, Umeå University library search with search
combinations of “IT strategy”, “digital strategy”, “IS strategy”, “digitalization”, “maturity models”, and “IT alignment”. In doing so, a broad number of articles were gathered and filtered by their relevance and publication source. After going through abstracts and titles, 46 publications were considered as relevant for our thesis and potential maturity indicators for the formulation of digital business strategies were grouped. Since the development of a new maturity model usually involves a comparison with existing maturity models and sometimes may be an improvement of an already existing one (Becker et al., 2009), the dimensions of Luftman’s (2004) ‘Strategic Alignment Model’ (SAM) was used and further extended by DBS literature. In addition to the dimensions, we also adopted the first and last levels of Luftman’s (2004) ‘SAM’. This lead to a preliminary model presented in ‘section 2.3’. After the design and population of the preliminary maturity model, the goal was to evaluate the relevance and rigor of our model (de Bruin, 2005) by applying it in four different organizations. Therefore, the second step involved a multiple case study to investigate causal relationships and to test the preliminary theory (Yin, 1994). According to Yin (1994), inconsistencies between a preliminary theory and the evidence of a case study can lead to a revision of the preliminary theory.

3.1 Data Collection & Sampling

According to Poeppelbuss et al. (2011) the utilization of qualitative approaches is a dominant strategy for the development of maturity models in IS. Qualitative methods are a preferred strategy for the development of maturity models since qualitative research is mainly concerned with the generation of theories while quantitative research focuses on testing theories (Bryman, 2012). Since the aim of our thesis is to build a new artefact, eight semi-structured interviews were conducted with representatives from four organizations (see table 2.3.) to ensure ‘analytic generalization’ (Yin, 1994) and to evaluate the preliminary model (Becker et al., 2009). To build a model applicable across different organizations, we decided to conduct a multiple-case study for theoretical replication (Eisenhardt, 1989). The cases were chosen to extend emerging theory and provide examples (Eisenhardt, 1989). We selected a diverse set of organizations in order to observe contrasting patterns in the data (Eisenhardt, 1989) and to examine if that the maturity model is applicable in organizations with different characterizations. Interviews has been used as a primary source of data since it allows us to understand peoples’ personal perspectives in a detailed manner and are suited to phenomena that are rooted in complex systems, processes or experiences (Ritchie & Lewis, 2013). We assumed a detail understanding as a necessity since the main emphasis of this thesis is concerned with the development of a maturity model. Since a face-to-face interview involves a physical encounter and is generally more intense, flexible and interactive, compared to a telephone interview, we decided to meet the participants physically. Due the lack of resources we were limited to collect data from the organizations around the Swedish city Umeå where our research project was initiated. Primarily we looked for organizations within various industries and different competitive landscapes. Therefore we looked for potential organizations which represent a private and public organization as well as service and manufacturing organization within the area of Umeå (see Table 3). The potential firms were then contacted through e-mail.
<table>
<thead>
<tr>
<th>Case</th>
<th>Respondent</th>
<th>Role</th>
<th>Duration (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Service Organization (P)</td>
<td>P1</td>
<td>IT Manager</td>
<td>60:00</td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td>IT Consultant</td>
<td>42:00</td>
</tr>
<tr>
<td>Electric utility Organization (E)</td>
<td>E1</td>
<td>IT Manager</td>
<td>65:00</td>
</tr>
<tr>
<td>Dairy Organization (D)</td>
<td>D1</td>
<td>IT Manager</td>
<td>65:00</td>
</tr>
<tr>
<td>Media Organization (M)</td>
<td>M1</td>
<td>Digital Marketing Manager</td>
<td>60:00</td>
</tr>
<tr>
<td></td>
<td>M2</td>
<td>Business Developer</td>
<td>65:00</td>
</tr>
<tr>
<td></td>
<td>M3</td>
<td>Digital Consultant</td>
<td>60:00</td>
</tr>
<tr>
<td></td>
<td>M4</td>
<td>CTO</td>
<td>42:00</td>
</tr>
</tbody>
</table>

Table 3. - Overview of respondents and duration of the interviews

The in-depth interviews were conducted with digital/IT strategists, business developers, IT/business managers, and IT consultants. Our aim was to collect data in form of two interviews per company, including participants with a business- as well as an IT-background. Case D and E involved only one respondent each and may have provided us with less information. However we were restricted by willingness of participation within those two cases.

All interviews started with general questions regarding the role of the participant, information about the company, and questions about digital strategy in general. A semi-structured approach was followed since it allowed us to take advantages of emergent themes in a given situation (Eisenhardt, 1989). While a structured approach would have involved predefined questions with response categories, the semi-structured interview allowed us to ask follow-up questions to provide us with understanding of the interviewee’s perspective (Daymon & Holloway, 2002). The foundation of the interview guide was developed by propositions of our preliminary developed maturity model and its six dimensions adopted by Luftman’s (2004) ‘SAM’.

In order to carry out the research project in an ethical way, we ensured anonymity for the participants and that the audio recording will be deleted and not archived (Ritchie & Lewis, 2013). Anonymity was a key issue since participants were required to answer truthfully and not answer in favor of their organization (Bryman, 2008). Furthermore we ensured that the research participants were clear about the purpose of the study and in which way the data of the interviews will be used. Additionally, the interviewees’ participation were voluntary and we were not in any professional relationship with the sample members (Ritchie & Lewis 2013). Every interview was conducted in person and involved three participants: the interviewee and two researchers. While one of us was recording, taking notes and observing important details, the other one handled the interview questions. We did that to increase the chances to see case evidence in different ways (Eisenhardt, 1989).
3.2 Data Analysis

A thematic analysis method was adopted because of its relatively straightforward and flexible approach. Generally, thematic analysis is used to identify and analyze patterns within collected data by describing it in detail (Braun & Clarke, 2006). A ‘theoretical’ approach of the thematic analysis was used since it provided us with an analysis of specific aspects of the data whereas an ‘inductive’ approach would have focused on a rich description of the overall data (Braun & Clarke, 2006). This was necessary since the main purpose of the empirical part of the study was to evaluate the maturity model and its defined propositions in a real-life context in different organizations. The style of the thematic analysis was therefore deductive since identified codes were analyzed according to the dimensions and levels of the MMDS. The empirical data was transcribed by both of us. We conducted in total eight interviews. Most interviews were held in English; however some participants desired to conduct the interview in Swedish due to language barriers. Initial codes were gathered across the cases and linked to the models propositions of levels and dimensions. We gathered the initial codes by first familiarizing ourselves with the data through reading it carefully, and then creating initial codes by identifying a feature of the data that seemed interesting to the investigated phenomena (Braun & Clarke, 2006). We looked especially for interesting features or practices, which reflected the elements of our proposed model. Later we sorted the initial codes into the themes, which reflect the dimensions of our model. The dimensions included ‘Communication’, ‘Value Measurement’, ‘Leadership’, ‘Ecosystem’, ‘Technology’ and ‘Skills’. The last step involved the evaluation of the organizations by analyzing the practices and sorting them into different levels of the model. To make sure that the organizations fit to the levels, we each sorted them separately, then compared the results, and finally discussed in case there were disagreements.

4. Results

The research results will be presented in this section of the thesis and organized under the four different cases that have been shown in the method section. The findings from the interviews will work as a base for both describing the six different dimensions as well as assessing each company in relation to the specific dimensions and their maturity of digital business strategy.

4.1 Case D - Dairy Organization

The dimension of communication was described by the respondent as important in order to get everybody in the organization to work more together. One challenge presented was for the IT unit to get closer to the overall business and to develop new services and functions together. The respondent believed that their organization does not see IT strategies and business strategies as separated but as a unity where they sit together. Regarding the communication of strategies, the participant described that one focus area for 2017 is to communicate their new strategy. The communications manager will be involved in this, material for presentations will be developed for all the managers in order to inform their coworkers and the respondent described that their communication will be done on several
different channels. In Case D it is important that their strategy is not something that the management group should have in their drawer but rather that everybody must know about it. The understanding between IT and business is quite good on a daily basis in Case D, but what is lacking is the more strategic level of it. The business management does not have the insights of what possibilities that are out there and the respondent highlighted that the IT unit have to build more business competence and vice versa. Regarding knowledge sharing in Case D they have created an Academy where representatives from IT, HR, and some more units are working with internal competence development. Knowledge sharing is further described both internally and externally:

    Yes, we are doing that in differing degrees and contexts. Everything from that we are trying to exchange information with other organizations in the same branch of industry to management development programs where we for each year create a new program to build leadership of our organization’s culture. [...] So the closest we have come is that we have started to work internally, invited educators, and are involved in different networks and research projects. But I think that you can do be even better in this, or I think that it is important to develop cooperation. (D1)

Assessing the maturity of Case D in the dimension of communication in relation to the MMDS shows that the organization is aware of the importance of communication. The coherent belief of a unity between IT strategies and business strategies along with that they are communicating the strategy on different channels are signs of a mature company. Regarding knowledge sharing they are involved in different networks and are working internally with a cross-functional academy where the aim is on developing competence. Although they are doing fairly good, there is a noticeable gap in the understanding between IT and business which leads to assessing the organization in Case D to level two in the model.

In the value measurement dimension the respondent described that they are measuring thousands of values only in the area of production in real time, they are measuring their trucks transportation routes and register how environmentally friendly they are driving. In Case D they are very transaction intensive on the order side and they have a complete digital integration with one of their biggest customer, which helps their organization to make decisions:

    All of these transactions are saved and used for analysis in different contexts. It could be everything from laboratory data to how the sales are going, now we are having this campaign, what is happening with the sales in different categories and markets and so on. (D1)

Regarding estimates of the value of IT investments the respondent described that they have been trying use Net present value analysis. One proposal is how they can work digitally with packaging and stock articles, and in order to carry out a project the organization needs a positive Net present value according to the respondent.
It is made clear that the organization in Case D are measuring a lot of things and are using the data analyzed in order to make better decisions through the utilization of digital technologies. The participant also described that they have been trying to use Net present value analysis in order to evaluate the value of IT investments and to invest in projects that would benefit them financially. In Case D the organization is obviously moving in the right direction but because not enough emphasis were put on evaluating IT in terms of potential values in the future they are being assessed at level two.

Regarding the dimension of leadership in Case D they have a digital tool for managers where they have coworker meetings and also profession profiles involving general demands that every coworker should meet. Through this tool they then create individual competence plans in order to reach a preferred status. The use of technologies to sense what is happening both inside and outside the firm boundaries is described as important:

*I think it is incredibly important to see and listen, and directly rumors are starting to go around or faulty information you have to be very fast to meet that. A long time ago there was a person who said that we were going to shut down one of our production sites and that spread like a wildfire and it was taken just out of thin air. So you have to see when it starts, or monitor Facebook in order to give feedback. And that is a challenge for us that this is going on 24 hours a day, seven days a week.* (D1)

The respondent continued and described change, and that a lot of time, money and resources are spent in order to create a culture where every employee have two jobs where one is to do it and the other is to improve it. One of the biggest points regarding this is to create participation and to get everyone involved in contributing and improving in the organization of Case D. Further the participant described that in reality the people from IT have more improvement focus because that is what their work is concerned about.

The participant described that sharing the risk is dependent on the size of the project. A big project involves IT, the board, business management and a lot of other internally involved people, which share the risk together.

By using digital tools that the participant presented shows that they have a process of developing digital strategy plans with emphasis on digital technologies. The company in Case D are also aware of the importance of sensing what is happening in the digital environment but described that this is a challenge and not really how to meet this. Regarding change they are educating and putting a lot of resources towards creating a culture that cultivates change. Overall the company in Case D is assessed in level two.

In the ecosystem dimension, the respondent described that the IT unit has a very good overview when it comes to changes in the digital environment and that the business management have knowledge on a more general level. The respondent (D1) answered the question of how fast they are in sensing and responding to changes like this:

*We on IT have a very good understanding when it comes to digital changes. At the latest, I think it was one year ago when we updated our profession profiles, I implemented a parameter called Trend surveillance where I have put emphasis
on that we must take a certain amount of time to track which waves and trends
that is out there. Then on a more general level the business management knows
that there is digitalization and robots, but if you go down to details, what is a
API, small data, big data, Internet of Things, they don’t have the same
understanding. (D1)

Regarding internal and external collaboration the respondent expressed that if they need
special knowledge they search all over the world for that competence in order to build what
they want in a good way. In Case D there are also more traditional networks with Umeå
University for example, but some networks that the market and production unit are involved
with are not visible to other units.

There is a high level of responding to changes in the digital environment from the IT unit
where the business side are more on a general level regarding this in Case D. Because there is
no process of responding to changes along with that the partnership between IT and business
did not involve external networks or digital partnerships, it lead to assessing the organization
somewhere in between level two and level three. It was made clear that the collaboration
criteria were met in a pleasant way and that there was some kind of relationship management
including both external businesses and networks as well as between internal units.

In the technology dimension the respondent described the process of implementing IT
initiatives as that there are different areas of responsibility where the one responsible
suggests new proposals each year, which then the IT unit work with. A business plan is
created and is determined by the business management. Besides this forth going
improvements are being made all the time in Case D. The respondent described that their IT
infrastructure is flexible towards the organization but not really the competitive
environment. Further the participant expressed that the most important things is leadership
and a focus on competence, automation and self-service. One example of automation in Case
D is that when a new employee starts, the whole process is automated and the manager can
choose self-service. The respondent also added that there is no right way in order to succeed,
but rather it is dependent on many individual levels that create an ambition of taking the
development further. In Case D the IT infrastructure is flexible which makes them fast in
responding to requests from the business:

Since we have come a long way regarding our [IT] infrastructure we have
become more flexible and can more quickly face the times when the business
comes with requests that for example to access documents from their smart
phones. If we would have had bad security solutions or was lacking behind
in the [IT] infrastructure, it could lead to a long journey instead of that we
now can be kind of fast in finding good solutions to meet the requests. (D1)

The maturity of technology depends highly on the flexibility of technology and in Case D the
IT infrastructure is flexible towards the business but there is no evident focus on the
marketplace or the competitive environment, which puts the organization, overall in level
two. There is though emphasis on digital technologies, which can automate different areas in
the organization but not in order to respond to a changing environment. The organization
also has a strong focus on improvement work and a process that the employees follow to approach this.

In the **skills** dimension the respondent talked about that it is important to have a culture throughout the whole company that trigger creativity in order to make improvement work and make employees aware and ready for change. When asking if the organization in Case D had any process of attracting and retaining top talent this was the answer:

> *No, there is probably nothing like that. One key factor in our new strategy is putting the people with energy and right skills within our organization. So it is identified there, and one focus for the competence academy that we have is to attract and retain personnel. We are also going to start to try and work with employer branding a bit more.* (D1)

In Case D the respondent also described that they have realized that this is important in order to reach success and they have started to measure competencies. One way of retaining people in the organization rely on the values that the company stands for according to the respondent, as well as that employees are allowed to grow and push the development further and feel that they make a difference. Concerning career crossover there was little support in doing this and no effective program for promoting leaders with digital skills.

The awareness of change along with creativity is strongly built into the culture in Case D, which is one area of a mature company in the skills, dimension. Because of little support on career crossover and not promoting leaders with digital skills the company in Case D is assessed in level two. Even though the organization is involved in arrangements with external alliances to build relevant skills, it is not enough for putting them in level three.

### 4.2 Case E - Energy Utility Organization

The **communication** maturity of Case E can be described in a way that the organization has a business strategy, which is supported through a short- and long-term IT strategy. The main role of the IT department in this organization is to support the business unit and achieve the goals they are defining. These goals are communicated through formal meetings where the IT department takes a place in. The IT manager sees a good communication between different departments such as HR, Marketing, etc. but sees a lack in communication between the division of their organization in terms of different product lines; Grid, Electricity, and so on. Thus, similar IT initiatives are established across different product line divisions of the organization and therefore lead to inefficiencies. Furthermore, the research participant believed that the different product divisions make it hard to support the business goals of the overall company. However, there seems to be no well communication of the overall strategies throughout the employee's especially when it comes to new IT initiatives:

> *Of course there is always a challenge to get out what type of projects are ongoing to all the people that are in the organization [...] But people need to go to the intranet to see: oh that's is going on. So they need the interest of what is going on otherwise they don't get fed that type of information so to speak.* (E1)
When it comes to the communication maturity between IT and business and the networks and actors around the organization, Case E showed that the business and IT strategy are clearly separated and the data does not show any hints of an effective communication of that strategies. Furthermore the data indicates that the organization shows little knowledge sharing activities throughout external partners and networks, but focusing on sharing knowledge between IT and business units. Therefore the organization’s communication maturity can be assessed as level two.

The organization in Case E demonstrates in the value measurement dimension that generated data from the IS systems are not strategically used, but instead the data is mostly technical and used for their daily operations. Furthermore, new IT investments are primarily assessed through productivity measures and routines have been established to measure those. Before an IT initiative gets the necessary budgets, the organization’s board prioritization of projects depends on the expected costs and value:

*So before you get a prioritization in the board, you need to do some research to see what is the cost of creating this business opportunity? And it's the overall cost. Its research. Its development. Its hardware. Its people, time. And that goes into a project budget. And it’s also an analysis of the market of course. So you check what is the expected value to get back from this. (E1)*

The organization can be assessed in the value measurement as level one since the data that is generated mostly measure technical data and provides little foundation for better decision-making. Furthermore, no options thinking seem to be identified during the interviews and evaluation of IT investments is based mainly on efficiency and productivity measures.

Regarding leadership in Case E, new IT initiatives are generally introduced and leaded by the business units, while the IT department mostly drive initiatives when it is based on infrastructure topics such as IT security. Projects that get initiated by the IT department occur rather rare:

*So in general I would say that the business side drives 90% or 80% of our projects. They have a problem which they need to solve and what happens then is, that the IT departments gets involved and we [IT unit] take our part in that and see what type of technology we can utilize in an efficient way to achieve their goals. (E1)*

Leaders in the organization are according to the research participant well aware of the role of change and see a continuously rising importance of it within the next years. Thus, leading to more responsibilities and more authority to workers and an openness of change. According to the IT manager, this kind of adaptability has to be “nourished” into the culture of the company.

The organization (Case E) sees failings as well as successes on introduced IT initiatives as an opportunity for learning and established routines to document those. Furthermore, the IT department and the business department share the risks when it comes to IT project failures. The organization’s leadership maturity can be positioned as level two since the organization’s
leaders encourage change and recognize it as an important issue, however do not drive it in a structured and broad program and only through isolated efforts. Additionally, IT and business share the risks and rewards when IT projects fail.

In the **ecosystem** dimension the partnership between IT and business and other actors around the ecosystem can be described in the organization (Case E) in a way that there are a few initiatives of collaborations with different public and private local organizations. According to the research participant, those collaborations involve different information technologies and smart home initiatives. To the question of how fast the organization of the research participant reacts and respond to ecosystem changes like the digital environment or new actors and partners, the research participant answered:

> We are not the fastest and I don’t think we should be there but we have the capabilities to be within the area. We have the capabilities to open up and open up business opportunities for others utilized the infrastructure that we have. And of course we are interested to get to know our customers better. (E1)

The organization can be assessed within level two since there is no process of responding to changing ecosystems condition and to sense the external environment of the organization. Furthermore, collaborations between external partners exist and could therefore be assessed as a level three maturity. However, there is no emphasis on digital partnerships.

**Technology** - The flexibility of the IT infrastructure in the organization is characterized by the respondent as not too flexible. Many different systems and applications and a few old systems have to be changed to be more flexible towards the changing environment. One way the organization is planning to achieve technological flexibility is through cloud computing:

> We are looking right now on how we can achieve the flexibility towards the environment and changes in the market. One solution could be more cloud-based services. Both on infrastructure and platforms or software and services. We are looking at those initiatives. To be able to spin up and spin down more resources as much we need them and things like that. We are not there yet but in couple of years, we are in a much better position. (E1)

The technological maturity of the organization can be assessed within level two even though the research participant was well aware of the potentials of digital technologies such as cloud computing to scale up & down recourses and therefore react to environmental changes. It is expected that the organization evolve to level three in a couple of years, since initiatives are already planned.

When it comes to the **skills** and the adaptability of the employees, the organization sees rising demand in knowledge and a mindset of adaptation in a constantly changing environment:

> I think that the adaptability of the changes that is coming is needed. Of course it demands knowledge that you can gain over time but it is also a mindset of being able to work and construct things in a changing environment all the time. I
would say that is the digital transformation overall of having a mindset that you can always change. Those things always can change. (E1)

Organizational learning is primarily supported through cross-functional projects in which different specialists from different areas come together and work on a day-by-day basis for a specific amount of time. Furthermore, the organization offers opportunities for education both outside and inside the company. Additionally, the research participant believed that a diverse background of employees with different types of mindsets would help the organization by looking to problems. Thus, the organization can be rated in level three.

4.3 Case P - Public Service Organization

Communication - Both respondents described that the IT strategy and business strategy are traditionally seen as separated in their organization. Regarding the communication of strategy one respondent (P1) explained that they have a new e-service strategy which is very well communicated where people from different units can come with opinions but further described that it is the roadmap of how to achieve all of this that is important, and in that work they have a communication plan. Participant (P2) described that it has been a lack of communication between the IT side and the ones out in the field, and that the strategy has not been well communicated. In Case P there is development potential in bridging IT between the rest of the organization in order to create greater knowledge of what other units are working with:

Traditionally there has been like that operations order services from IT. Then you are located separately and you rarely meet. But if you work with administration of our systems in a more modern way you can work more closely, and that is one way of bridging and creating understanding. (P1)

In Case P attempts are being made regarding knowledge sharing. Both participants said that they have one group that meets on a regular basis where they can see if there are any things that can be shared in the projects the different units are involved with, and if they can corporate. Externally one respondent expressed that knowledge sharing occurs to a certain level but because the different units are similar to big organizations, you are often busy within your own silo.

Since IT strategy and business strategy are seen as separated in Case P, along with that the overall communication of strategy as well as the understanding between the IT unit and the rest of the organization is low, the organization is assessed in level one regarding the communication dimension.

In the value measurement dimension in Case P both respondents described that the data generated from technologies do have low quality and participant (P1) highlighted that data is many times used in one context and is never used again. The organization is aware of this challenge and their ambition is to take care of the data in order to use it for evidence based decisions in the future. Participant (P2) described that this is one area, which they are trying to improve in order to use the data later on.

In Case P the organization must get better at assessing the value of their IT investments:
We have to be better at that because we are not supposed to carry out projects that don’t create values for us. So, that is a homework we have, to become better regarding that. It happens that you value projects. For example there is a system that we are implementing now in order to have an electronic archive [...] and there we created a business case where we calculated that this would benefit our organization in the end. (P1)

The organization in Case P is moving to be better at doing improvements and investments that would have beneficial effects in the future. When assessing the maturity regarding value measurement the organization is moving to level two but do not have a process of taking care of the data which in return make the quality of it low. In addition to this they are mostly evaluating their IT investments to be more effective but one participant highlighted that they still need to be better at it. This altogether puts the organization in level one.

About the leadership dimension one respondent (P1) described that there is no collected strategy for sensing the environment. There are though some entrances where the organization can retrieve complaints or input from customers. Another crucial part of the leadership dimension is about change and one thing that is quite well established in many different units within the organization in Case P are continuous improvement work through lean. Participant (P1) described change and that the view on change differs between the IT unit and other units in this way:

> Our organization is really big and I think it [change] varies greatly between different units. The IT unit has to adapt to the business because we are a service organization and are supposed to serve the rest of the organization. So we [the IT unit] have to be good at improvement work. If the organization has a problem with a process we [the IT unit] can automate that even though the other unit does not automate their parts in the same routine. (P1)

Regarding risk taking one respondent (P1) explained that the risk is mutually shared between IT and the different units when implementing a new system or working with an IT-project. The other respondent (P2) described that it is mainly the different units who takes the risk together with the IT unit since they are always involved.

The organization in Case P does not have a strategy or process for sensing the environment but can get insights from their users and customers through online forms. Since the leaders encourage change and are aware of the importance regarding it, the organization is assessed in low level one because the mindset of change differ between units.

In the ecosystem dimension the organization (Case P) is slow in sensing and responding to changes in the digital environment according to both respondents. One participant described that an underlying reason of being slow relates to buying systems from other companies, which is often a heavy, and time-consuming process. The different units can though be faster in one situation when the in-house systems development unit makes the changes, which can be done in three weeks according to one respondent.

The relationship between the IT unit and other units in the organization (Case P) can be seen from two different perspectives. The first is that workers think that they get a good
service from IT. The second is that there can be struggles of cooperation between the IT unit and other business units. According to one respondent this occurs when a unit has decided for a solution that in the future can create security holes or expensive systems where the IT unit express that this solution is impossible to realize. The IT unit also feels that it can be hard to deliver the right quality or solution because the business units are unclear in describing what they want which can lead to confusion. There is a desire in Case P to be involved earlier in the process from the IT unit:

*I try to illustrate that we [the IT unit] want to come in very early in their process, because then we can also be involved and have an impact on the solution they will have and choose. You have been touching on the subject of bridging between business and IT, and that is what we need to do, to cooperate much more.* (P1)

Regarding external collaborations and partnerships within the ecosystem the organization has implemented a process where they invite other organizations to collaborate. One respondent expressed that this is done in order to support their digital transformation process because the organization is aware of that they cannot do it alone.

Because of the tensions that can occur between the IT unit and the different units and no process of rapidly sensing and responding to changing ecosystem conditions the organization in Case P is assessed in level one. The ecosystem partnership is however fostered in a good way where the purpose of collaborations with other organizations is to support their digital transformation process.

Regarding the dimension of technology one respondent described that their IT infrastructure is partly flexible. The data center of the organization contains all of their own 400 systems as well as other organizations systems. This can be seen as a big cloud where the work is done in a virtual environment and according to one respondent they are very adaptable to new needs in that area. A reason for why the IT infrastructure is only partly flexible is described below:

*But we are quite far behind when it comes to building e-services for our customers. We have kind of an old fashioned way of thinking about how to develop e-services. And this is something that we are trying to look after now. So, I would like to say that it [the IT infrastructure] is both actually.* (P1)

The process when implementing a new system or technology is clearly defined and follows six different phases. The organization (Case P) calls this the procurement model and every procurement project regarding IT must follow this model according to both respondents. Beyond this one respondent described that every unit owns the process of adopting new technology but that the IT unit are very much involved with this.

By having their data center as a cloud and administrating other organizations systems as well as their own shows maturity in the technology dimension and an ability to adapt to changing circumstances. Because of an old fashioned way of thinking regarding the development of e-services leads to assessing the company in level two overall. Because of co-
work when implementing a new system between the IT unit and other units also supports the decision of assessing the organization in level two.

Regarding the skills dimension the organization is working a little bit with career crossover and uppermost among the technicians but otherwise most employees are quite entrenched and have been doing the same thing year after year. A reason could be that one way of retaining and attracting top talent is focused on that a worker has the possibility to specialize in a specific area. Furthermore one respondent described that they are trying to describe what is happening in the society in order to not become an organization that does not take part of new technology and trends. The organization works around three keywords in relation to this that highlight what the organization see as important:

*We have three keywords that we work a lot with which are digital competence, digital culture and digital transformation. These are three key points and when we are out discussing this in different groups we highlight that you must be prepared to change and have a digital mindset. (P1)*

Learning is also monitored by the organization and organized both internally and externally. Altogether the organization (Case P) is assessed at level two in the skills dimension. Acknowledging and informing about the importance of change and adaptability together with monitoring organizational learning is two fundamental concepts for being assessed in level two. The keywords surrounding the organization do show awareness and a will of becoming more mature.

**4.4 Case M - Media Organization**

**Communication** - The media organization sees IT strategy as a big part of the business strategy, which indicates that business and digital strategies are combined. This is mainly done because the organization needs to survive in the digital business environment and IT plays an important strategic role in that environment. According to the business developer (M2), the communication of the strategy is well carried out through a waterfall principle in which the board communicates the digital strategy down to the managers and next to the working force (M2). However, research participant (M1) sees a challenge in communicating it effectively since people are already drown by information and sometimes the management team does not want to overload them with more. Furthermore, the organization sees problems between the understanding of IT and business people:

*My work is to get those two people categories to understand each other. I know both technology and business but generally it is important and also difficult to look to both sides and see their needs and understand their difficulties in each side. Generally speaking it is a big problem. (M3)*

The media organization can be assessed according to the MMDS as a level three organization since it acknowledges the importance of communicating the digital strategy towards their employees and furthermore united their IT strategy with the business strategy. Additionally,
the business and IT side have a good understanding and an open environment where an IT team involves business people and vice versa.

**Value measurement** - The organization (Case M) uses dashboards to communicate information from their information technologies and spread it throughout their company to show the value IT provides for the business:

> Yeah, we have a lot of dashboards, with which we are measuring how many page views we get, how many of those are we selling out, how many we have left, etc.. The publishers are measuring what kinds of news are attracting readers and how many articles we have published each day and we are measuring pretty much everything today.

When it comes to the implementation of new IT solutions, decisions are primarily made with a group of developers and people from various departments. The decisions on which IT projects to prioritize are heavily influenced by the data generated from their big data technology called 'Burt'.

The media organization can be assessed within level three when it comes to analytics since major decisions are based on the utilization of digital technologies such as big data software to optimize the overall business. Furthermore, the company shows a clear process of assessing IT investments, and focuses heavily on investing in new digital technologies and search for potential opportunities within those.

In the **leadership** maturity, the organization shows a high degree of information driven transparency and one respondent (M2) states that tracking behavior of customers, or workers is something they are appreciating and do not see with skepticism.

Furthermore, research participant (M1) sees change a necessity to survive in their current competitive environment:

> But it’s also, if you don’t see any problems and you don’t think you have to change anything, it will be useless. We have to first realize that we have to change, maybe we don’t know how or in what way, but we have to do something different in the future to stay on the market. [...] But if you think you have everything in place and you don’t have to change anything like Kodak or some other companies have thought, you will wake up too soon and your business will be over. (M1)

The organization can be rated as level two since leaders embrace transparency as a major benefit for their business, but do not embrace it when it comes to the inner boundaries of organization. Also there is lack of effort when it comes to risk management and establishing risk as a cultural norm.

**Ecosystem** - According to the CTO (M4), for the organization it is really important to sense and respond to changes in the ecosystem, since they depend on being the first and forefront of new technologies.

The digital strategist forecasts a general trend by stating that the IT department as such will not be sufficient anymore:
I think the old IT department is not going to survive. Everyone is using clouds and users are more of an expert. They can handle their computer and phone themselves. The new IT department is more of a business development department, which knows both technology development and the business. (M3)

The ecosystem maturity of Case M can be assessed as level two since no major digital partnerships and collaborations between other firms are taken in place. Furthermore, there is no process for responding to ecosystem changes, however the organization responds quickly to new rising digital technology changes.

**Technology** - The research participant (M2) sees the primary purpose of their IT to become cost effective as well as drive competitive advantage with it. Furthermore, cloud services were used instead of their own servers to be more cost efficient and flexible. Furthermore the digital strategist (M3) mentions that the customer experience plays an important role when it comes to decisions regarding the adoption of new technologies.

Through the utilization of cloud computing and the recognition of digital resources for competitive advantage and differentiation, the company can be assessed in terms of technology at level three.

**Skills** - Research participant (M3) sees a digital mindset as a key factor to survive in the environment of media and argues that the organization reframed their identity to a more IT type of organization:

*We take inspiration from IT companies. For me Netflix and Spotify, and so on are IT companies. And we are an IT company as well. You can have all types of projects but you are an IT company. That mindset is really important for me.* (M3)

Furthermore, the business developer (M2) sees big challenges in attracting and retaining top talents with digital skills such as web developing or user experience design. Through the lack of skilled digital people, the organization is forced to buy the expertise costly from consultancy firms. Change plays an important role according to all research participants.

However, providing training and job rotation to cope with the change is a big challenge for the organization since some employees are not interested in engaging and participating in it. The organization therefore can be assessed as level three since the importance of change is acknowledged by leaders, but not well developed yet, since many employees still are resistant to change. Furthermore, formal processes do not support learning and talents cannot be attracted and retained in the right way.

5. **Discussion**

Our model has potential for guiding analysis and understanding of how companies evolve from a business/IT alignment view to one in which IT and business strategies come together. This thesis was an attempt to develop a maturity model, which helps practitioners to assess their as-is situation and prioritize improvement measures (Becker et al., 2009; de Bruin et
al., 2005). Through the application of the model on different types of organizations, several insights have been gained and therefore need further discussion.

5.1 The maturity model of digital business strategy (MMDS)

The proposed MMDS is based on the foundation of the three levels; IT strategizing, aligned strategizing and Digital strategizing. Each of these levels represent a view in current IS strategy literature. While level one and two focuses on foundations of alignment literature (Luftman, 2004), level three is grounded in the notion of digital business strategizing (Bharadwaj et al., 2013; Mithas et al., 2012) where business and IS strategies become one. The concept of DBS might have several implications on the alignment perspective, since ‘alignment’ generally assumes that IT and business strategies are separated (Bharadwaj et al., 2013). The MMDS tried to describe how an organization achieve ‘digital strategizing’ which goes beyond the notion of IT and business alignment (Kahre et al., 2017). While classic alignment models are not sufficient for the “agile, networked and complex business environment” (Hiekkanen, 2015, pp. 8), the suggested model was an attempt to include the notion of strategic advantage to the business and IT alignment concept by deriving insights from the DBS literature. Past research suggest that the alignment perspective needs to include dynamic capabilities (Campbell & Peppard, 2007; Teece, 2007) and urged future researchers to define ‘digital capabilities’ (Kahre et al., 2007) to leverage assets and create value (Sandberg, 2014). Luftman's (2004) maturity model for Strategic Alignment (SAM) is one of the most cited instruments for alignment measures (Belfo & Sousa, 2012) and we argue that the six proposed dimensions are still important to consider when it comes to the assessment of either alignment or the fusion view. While Luftman’s (2004) model concentrated on the relationship of the IT and business unit, we developed it further by adding a new level including the competitive environment, external actors and additionally a revision of certain dimensions.

5.2 Application of the model

In the results section, we demonstrated how the maturity model of digital strategies can be used to assess an organization. Through applying the model in four organizations from different industries with distinguishable competitive landscapes, we were able to assess the organization regarding the six dimensions and their level of maturity (see Table 4). While the dairy organization (Case D) and the energy utilization organization (Case E) were assessed in level two, the public service organization was assessed into level one. Furthermore, the media organization (Case M) showed indications of a digital mature organization by an assessment of level three. The interviewed organizations reached level three within the dimensions in different ways. A description of how the different organizations reached level three and the mature state of ‘digital strategizing’ can be found in Appendix B.

Some organizations were assessed as more mature than others. One explanation could be that the nature of the organizations differs. Organizations with a slowly changing competitive landscape and relatively stable environment such as the public organization (Case P) have by its nature no major competitors. The purposes of using IT in the public organization are mostly for the reason of making processes more efficient and give value to the citizens of the
commune. Whereas an organization such as the media organization (Case M) is in a position in which the environment is uncertain and the competitive landscape is rapidly changing.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Case D</th>
<th>Case E</th>
<th>Case P</th>
<th>Case M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Value Measurement</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Leadership</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>2/3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Technology</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Skills</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Table 4. – Evaluation of the four organizations according to the MMDS

Some organizations were assessed as more mature than others. One explanation could be that the nature of the organizations differs. Organizations with a slowly changing competitive landscape and relatively stable environment such as the public organization (Case P) have by its nature no major competitors. The purposes of using IT in the public organization are mostly for the reason of making processes more efficient and give value to the citizens of the commune. Whereas an organization such as the media organization (Case M) is in a position in which the environment is uncertain and the competitive landscape is rapidly changing.

The importance of the competitive landscape when it comes to the digital strategy was discussed in DBS literature by Mithas et al. (2013), who examined that the competitive industry environment has a significant impact on the formulation of digital business strategies (Mithas et al., 2013). Other researchers such as El Sawy et al. (2010) suggested that firms and their competitors create IT capabilities in forms of IT investments, which then have an effect on the strategies of other firms. Thus, the notion of DBS might be more useful for organizations in which a diverse competitive landscape exists and less important for organizations who have a monopolistic position in the market. This is supported by Bharadwaj’s (2013, pp. 472) notion of DBS in which performance implications of IT strategy goes “beyond efficiency and productivity metrics to those that drive competitive advantage and strategic differentiation”. This indicates that the MMDS might be a more useful tool for organizations with a highly competitive landscape and not necessarily a useful tool for firms in less competitive environments such as public organizations.

Another insight that was gained from the empirical data and the application of the proposed model is that cultural dimensions play an increasing role in accordance to the research participants from all organizations. Especially when it comes to deal with change, the investigated organizations have troubles finding the right solutions to adapt to the fast-changing environment and have difficulties to establish a more adaptive mindset among the employees. A few participants talked about the challenge to set a ‘digital’ mindset among
employees which raises questions of what the investigated organizations actually mean with being ‘digital’ and having a ‘digital mindset’. Some researchers described that ‘digital’ is not only a technology-centric, but instead refers to a changing view on how organizations and their employees “re-think how the usage of technology to build innovative products and services” (McLaughlin, 2017, pp.64) for competitive advantage (Bharadwaj et al., 2013). The investigated organizations indicated that they adopt the more social-centric view of digital and clearly emphasized on the cultural and social challenges which enable a “re-thinking”. This re-thinking could be enabled by dynamic capabilities, which can be described as the organizational capacity to sense and shape opportunities and threats, to seize opportunities and to maintain competitiveness through the shaping of intangible and tangible assets (Teece, 2007). Our proposed model can help to guide practitioners in establishing that kind of digital mindset they desire since it is heavily influenced by dynamic capabilities literature (Teece, 2007; McLaughlin, 2017) and DBS literature, which seeks for competitive advantage (Bharadwaj et al., 2013; Mithas et al., 2010).

Furthermore, the empirical data gave us the insight that there is a gap between the understanding of the IT side and the business side. The investigated organizations had a lack of understanding between both units, which generated tensions between them. It is an issue that the organizations are aware of but are not putting enough effort towards it. One solution could be establishing, as suggested in our model, business and technical skills among all employees and especially among leaders. McLaughlin (2017) highlighted that there is a need for IT professionals to possess dual-skills, which involves both the business and technical aspect since capabilities cannot reside in the IT function solely. In accordance to the literature employees also want to work for digital leaders and organizations that are in the front rank when it comes to digitalization (Kane et al., 2015). Organizations without those established skills might have troubles finding and attracting talented people as we have noticed when interviewing the different organizations. Our empirical insights regarding digital skills showed that there is a need for establishing technology and business awareness through effective business and technology leadership (McLaughlin, 2017). Organizations might need to work more with training and career crossovers to build up dual-skills in order to decrease the gap between the IT unit and the rest of the organization. However none of the investigated firms offered effective programs for the development of those skills.

5.3 Implications and Limitations
This section focuses on the limitations of the research project in terms of the method and the usefulness of the proposed maturity model. Since the notion of digital business strategies is still an under-researched area, this thesis aimed to understand the impact of digital business strategies on business/IT alignment and developed a tool to support digital business strategies formulations. The presented model of the thesis contributes to the understanding of digital business strategies for future research. Furthermore, the model provides practitioners with a sensitizing tool that visualize the current state of maturity regarding digital business strategy in six different dimensions which can support their journey of digital transformation.
However, the model has some limitations that might be helpful to further discuss. A widely-discussed limitation related to maturity models is the oversimplified view of the world and context that the model focus on, in this case digital business strategies, according to Poeppelbuss et al. (2011). The proposed MMDS can be a helpful tool for sensitizing an organization with the concept of DBS; however the MMDS is still a simplification of the real-world. We tried to ensure its applicability in practice by conducting a multiple case study. To gather empirical data and apply it in the real world during the development was an attempt to bridge the gap between theory and practice.

Furthermore, the MMDS is lacking in detailed recommendations for how to reach a desired maturity level but rather illustrate where organizations can do better. This is a limitation since the application of the model does not guarantee that an organization will perform better, rather it can help identifying the weak areas and let leaders prioritize their actions. As presented earlier digital business strategy is a new field of research, which most likely means that new concepts and theories will be developed and added to the new stream of research. Together with continuously changing environments and the fast paced development of new technologies this could mean that the relevance of the model in its current state does not stay for long. The model therefore has to be updated with potentially new criteria and maturity indicators.

Related to the methodology of the research project no quantitative data has been gathered throughout the process of work because of restricted resources. Collecting quantitative data could have been used for measuring the usability of the MMDS and if the organizations can identify themselves easily in one of the three levels of maturity.

Furthermore, our model mostly focused heavily on Luftman’s (2004) strategic alignment model and its dimensions. There is a chance that we haven’t been open enough and that there could be other dimensions of greater value related to digital business strategies that have not yet been discovered. The total number of respondents is also a limitation of our study and we suggest that it in order to develop the model further more empirical data would be needed both from more respondents but also from other organizations with different characteristics.

Future research could aim for developing diagnostic tools for reaching specific and desired maturity levels related to the model, which would make the MMDS more ready-to-use for practitioners and more accessible. Together with that there are possibilities for both acquiring more rich empirical data and quantitative analysis in order to validate the model further. Moreover the model can serve future researchers with a solid foundation considering digital business strategies overall.

6. Conclusion

The aim of this thesis was to investigate how an organization can analyze and assess their digital business strategy. We developed the MMDS since maturity models can be a helpful tool in order to analyze a firm’s current situation. We found that the six dimensions of Luftman (2004), in combination with new insights from the DBS literature, are useful elements to understand and analyze the digital strategies of firms. Through the application of the model we found out that every attempt to analyze a digital strategy should start with an
emphasis on sensing and responding to the competitive environment, enabled by the ability to change and the development of necessary skills. A mature digital strategy should guarantee an efficient use of digital technologies to develop those capabilities. The suggested model can be a tool for sensitizing to support this process and managers who work with digital strategies to focus on the right issues. However, to make the tool more rigorous, it needs further research to test it in a larger sample of organizations. Also, researchers could aim for developing the MMDS into a diagnostic tool by creating guidelines in order to reach a specific maturity level and therefore make the model more accessible for practitioners. Together with that, there are possibilities for both acquiring more rich empirical data and a quantitative approach in order to test and validate the model further. Moreover the model contributes to DBS literature by summarizing and formulating more practitioners-oriented operationalizations of the DBS concept.

7. Acknowledgements

We would like to thank our supervisor Johan Sandberg for his guidance and the valuable time he spent with us in order to solve the challenges we encountered during our thesis. You were a great and super mature supervisor. We thank you for that.

Also we are very thankful for the organizations that participated in our study and provided us with valuable information and insights of the challenges they face.

Furthermore, we would like to thank our friends from the IT management program for the hyper theoretical and highly intellectual discussions during the many hours we spent in the computer labs.
References


World Economic Forum (2016). Digital Transformation of Industries: In collaboration with Accenture
## Appendix A: The Maturity Model of Digital Strategizing (MMDS)

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Level 1 - IT Strategizing (Derived from Strategic Alignment Model – Luftman 2004)</th>
<th>Level 2 - Aligned Strategizing (Derived from Strategic Alignment Model – Luftman 2004)</th>
<th>Level 3 - Digital Strategizing (Derived from DBS literature)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communications</strong></td>
<td>No effective communication of business and IT strategies</td>
<td>Communication is focused on the IT strategy</td>
<td>Well communicated and coherent digital strategy</td>
</tr>
<tr>
<td></td>
<td>IT strategy is separated from the business strategy</td>
<td>IT strategy supports business strategy: IT is a functional strategy</td>
<td>IT/business strategy is united to a digital strategy</td>
</tr>
<tr>
<td></td>
<td>IT and business are specialized within their area of competency</td>
<td>IT and business units are required to understand each other</td>
<td>Business and technical skills are established among the employees</td>
</tr>
<tr>
<td></td>
<td>Knowledge is kept within functional units</td>
<td>Knowledge is floating between IT and business units</td>
<td>Boundary-spanning knowledge sharing (includes external actors)</td>
</tr>
<tr>
<td><strong>Value Measurement</strong></td>
<td>Mostly technical measures</td>
<td>Measures also return-on-investments, effectiveness and customer value of IT</td>
<td>Data is exploited and generated through digital technologies and utilized for decision making</td>
</tr>
<tr>
<td></td>
<td>No assessment of IT investments</td>
<td>Evaluation through efficiency and productivity measures, established routines to assess and measure results</td>
<td>Digital options thinking is established by investing in digital technologies for future opportunities</td>
</tr>
<tr>
<td><strong>Leadership</strong></td>
<td>Leaders of business are resilient to listen to data from information technologies</td>
<td>Leaders are skeptical about the revealed transparency through digital technologies</td>
<td>Information driven transparency through digital technologies is embraced</td>
</tr>
<tr>
<td></td>
<td>No change management</td>
<td>Leaders see the importance of change management</td>
<td>Leaders actively manage change and build adaptive capacity</td>
</tr>
<tr>
<td></td>
<td>IT unit takes all the risk for IT projects and gets little reward</td>
<td>Business and the IT unit share the risk and rewards</td>
<td>Risk as a cultural norm is established in the whole organization</td>
</tr>
<tr>
<td><strong>Ecosystem</strong></td>
<td>Minimal acceptance of IT and business as partners</td>
<td>Valued partnership between internal IT and business</td>
<td>Digital partnerships with external actors and relationship management established</td>
</tr>
<tr>
<td></td>
<td>No sensing of IT-based environmental changes and no response to IT initiatives</td>
<td>Process of sensing IT-based environmental changes but not responding to IT initiatives</td>
<td>React fast to ecosystem changes and sensing environmental changes and responding to new IT initiatives</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>Technology is inflexible, focus on stability</td>
<td>Technology is flexible towards the business, not the marketplace or competitive environment</td>
<td>Technology is flexible towards the business, environment and the market</td>
</tr>
<tr>
<td></td>
<td>Use of individual IT applications to support operations</td>
<td>Emphasis on the exploitation of technologies to increase productivity and efficiency</td>
<td>Adopt technologies to generate competitive advantage and strategic differentiation</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td>Learning is not supported by formal processes</td>
<td>Learning is monitored for effectiveness within company</td>
<td>Learning arranged with external alliances to actively learn and to upgrade digital skills</td>
</tr>
<tr>
<td></td>
<td>Employees resist to change</td>
<td>Employees are open for change</td>
<td>Employees find creative solutions, engage and participate in change and develop awareness of change</td>
</tr>
</tbody>
</table>
## Appendix B: Enablers for Digital Strategizing

<table>
<thead>
<tr>
<th>Category</th>
<th>Digital Strategizing – Level 3</th>
<th>Enablers of Digital Strategizing</th>
</tr>
</thead>
</table>
| **Communication** | Well communicated and coherent digital strategy | - Use of different channels to communicate the strategy (M, E)  
- Making sure that senior managers communicate it to their staff (M)  
- Different units can come up with opinions and suggestions to improve digital strategy (P) |
| | IT/business strategy is united to a digital strategy | - Highly competitive environment (M)  
- Digital products are the core of the business (M) |
| | Business and technical skills are established among the employees | No organization reached level three for this criteria |
| | Boundary-spanning knowledge sharing (includes external actors) | - Established an academy where workers from different units and external actors share knowledge and develop new competencies (D) |
| **Value Measurement** | Data is exploited and generated through digital technologies and utilized for decision making | - Use of big data technologies to make decisions (M)  
- Use of dashboards to have an overview on customer behavior (M)  
- Digital integration of data with the customer to improve decision-making (P) |
| | Digital options thinking is established by investing in digital technologies for future opportunities | - Investing heavily in new digital technologies in order to compete (M) |
| **Leadership** | Information driven transparency through digital technologies is embraced | - Monitor social networks to react fast for faulty information (D)  
- Using tracking technologies to analyze customer behavior (M) |
| | Leaders actively manage change and build adaptive capacity | - Build trust and commitment to workforce for change (E) |
| | Risk as a cultural norm is established in the whole organization | - Give the individual in the organization more responsibilities and authorities (E) |
| **Ecosystem** | Digital partnerships with external actors and relationship management established. | - Digital integration of data with the customer to improve data based decision-making (P) |
| | React fast to ecosystem changes and sensing environmental changes and responding to new IT initiatives | - Allows employees to take time for the tracking of trends in the area of their work (D) |
| **Technology** | Technology is flexible towards the business, environment and the market | - Using cloud computing to scale/up and down and adapt to market (M, E) |
| | Adopt technologies to generate competitive advantage and strategic differentiation | - Customer orientated adoption of technologies by tracking customer behavior (M) |
| **Skills** | Learning arranged with external alliances to actively learn and to upgrade digital skills | No organization reached level three for this criteria |
| | Employees find creative solutions, engage and participate in change and develop awareness of change | - Let people work in cross-functional projects in order to adapt and be more open for change (E) |