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TITLE:

How does the Board of Directors govern IT in a medium-sized enterprise?

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Preface

This master's thesis is the final work of our Master of Science in Business Administration, with a major in Strategy and Management. This thesis was written during our last semester at the University of Stavanger Business School in the spring of 2020.

First, we must express our gratitude to our supervisor, Associate Professor Bjarte Ravndal, for your expertise and guidance along the way. We have learned a lot and developed academically through this process, and your contribution has given us an even greater understanding and professional interest. You have been supportive throughout this process, with constructive feedback that has resulted in a better master's thesis.

We would also like to thank our informants in the case study. We are grateful for your availability and contribution to the data collection. Even in a particularly demanding situation with Covid-19, you have been adaptable and helped us with the accurate and necessary information for this study.

Finally, we would like to thank our informants in the consulting company who have contributed to valuable discussions and office space during this semester. We are grateful for your knowledge-sharing environment and reflections related to IT governance at the board level.

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Abstract

The purpose of this case study research has been to identify and provide more descriptive research on how the board of directors governs IT. Research on IT governance has confirmed that the involvement of board of directors in IT decisions increases organizational performance, regardless of IT needs in the enterprise. The board of directors is ultimately responsible for the performance of the enterprise. This means that they have to ensure the right governance model for the enterprise, which should include IT governance.

In this descriptive case study research, we have used a triangulation of data collection. Conducting semi-structured interviews with the Chair of the Board, the CEO, and the Strategy and Development Manager in the enterprise, analyzing their board protocols for the last five years, observation of two board meetings, and lastly, conducted an unstructured interview with expert informants at a consultancy company. The data collection has given us the fundament to describe how IT is governed concerning structures, processes, and relational mechanisms at the board-level.

This study reveals that the chosen enterprise has developed into a strategic mode. They score high in the need for reliable technology as well as the need for new information technology. Where the latter has become more important in the last years due to the demand and expectations from their customers. The enterprise has several market-leading projects where information technology plays a crucial role. They are perceived as successful in technological development from the service and products they supply. However, we raise some uncertainty whether the Board has fully adapted to the strategic mode.

To further adopt IT governance at the board level, the Board is recommended to evaluate an IT oversight or similar committee, which also will strengthen its strategic mode. We further argue that the Board should have a structured approach when elaborating on IT-related matters, and lastly, effective communication to and from the Board by having the S&D Manager attend the board meetings more often. Together these recommendations will contribute to better alignment of business and IT, which will further enable increased business value.

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Abbreviations

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CEO	Chief Executive Officer
CFO	Chief Financial Officer
CIO	Chief Information Officer
CCO	Chief Communications Officer
COBIT	Control Objectives for Information and Related Technology
IT	Information Technology
S&D Manager	Strategy and Development Manager

Word clarification

In order to distinguish between a board in general, and the Board in the case study, we will use capital letter when referring to our case.

1 Introduction

Technology is evolving more rapidly than before, and IT has the potential to support both existing strategies and shape new business strategies. It can enable an enterprise to achieve its business goals and competitive advantage in the industry. IT is, therefore, a critical business resource with high strategic impact but demands to be governed effectively through sound IT governance efforts (Posthumus, 2009, p. 23). Research calls for board-level engagement in IT governance and empirical evidence supports that board-level IT governance enables organizational performance regardless of IT needs in the enterprise (Turel & Bart, 2014, p. 224).

Research from Valentine and Stewart (2015, p. 2) shows the superior financial performance of enterprises with a digitally mature board that provides comprehensive digital leadership, in terms of profitability (+26 %) and financially outperform their peers (+ 9%) and in terms of a higher market valuation (+ 12%). However, less than 20% of boards take on responsibility for governing their IT assets (Andriole, 2009; Bart & Turel, 2010; Valentine & Stewart, 2015). Given the centrality of IT in enterprises, boards should devote the same level of attention to IT, as they do to general corporate governance and financial matters (ITGI, 2003, p. 13; Posthumus, 2009, p. 23). A specific focus on IT governance has emerged in the last two decades (De Haes & Van Grembergen, 2009; Wilkin & Chenhall, 2010).

De Haes and Van Grembergen's (2015, p. 11) perspective on how to approach IT governance is widely accepted. They claim that IT governance at the board level can be used through a mixture of various structures, processes, and relational mechanisms. IT governance is further defined to be an integral part of corporate governance, to support business and IT alignment and the creation of business value from IT-enabled business investments (De Haes & Van Grembergen, 2015, p. 2). To deploy the right measures, the board has to understand the role of IT in the enterprise and define the involvements accordingly (Nolan & McFarlan, 2005).

1.2 Research Aim and Relevance

Based on the background and further literature, we have defined the following research question to be:

"How does the Board of Directors govern IT in a medium-sized enterprise?"

There is a significant gap between prescriptive and descriptive research on board-level IT governance. Prescriptive research stresses the importance of board involvement in IT governance and specifies how boards should govern IT. Descriptive research shows that many boards are not as engaged in IT governance as they should be and provides insight on how boards currently govern IT. Thereby, a literature review by Caluwe and De Haes, have requested further research on board-level IT governance with case study research to understand IT governance further at the board level in its context (2019, p. 277-278).

To address the research question, we will pursue the definition of IT governance provided by De Haes and Van Grembergen (2015) and emphasize the use of structure, processes, and relational mechanisms. We will use a case study research approach, as it provides an in-depth understanding of IT governance in a chosen enterprise. The empirical data is collected through three semi-structured interviews, one unstructured interview, document analysis of five years of board protocols, and two observations at board meetings. Key informants at the chosen enterprise is the Chair of the Board of Directors, CEO, and Strategy and Development (S&D) Manager. We will also use three expert informants, from a local consulting company, to provide further reflections on the literature and main findings.

The case study research is relevant for several parties, both academics, the board of directors, and senior management. In an academic context, the descriptive study contributes to a further understanding of how boards govern IT in a medium-sized enterprise in Norway. For the boards and senior management, it will give practical value where they get insight into relevant measures within structures, processes, and relational mechanisms to further improve IT governance at the board-level.

1.3 Empirical Scope

The case study is anonymous, but we will provide some information to understand in which context the enterprise finds itself. The enterprise is in the service sector and has successful

technology that is market-leading, some nationally and other internationally as well. The recent history has been influenced by technological developments, where they have adapted to this situation by hiring people with necessary competencies, more frequent use of partnerships, and external advisors.

The chosen enterprise is medium-sized, located in Rogaland, Norway. In Norwegian accounting, medium enterprises are defined with annual sales revenue of more than NOK 70 million, a balance below NOK 35 million, and the number of employees exceeds 50 full-time equivalents (Lovdata, 2004). Consequently, the findings will possible be more representative of enterprises of similar size and professional board. However, the findings can be relevant for other enterprises but have to evaluate to which context they find themselves in.

1.4 Thesis Structure

Figure 1 outlines and visualizes the structure of the master thesis with chapter and related focus areas.

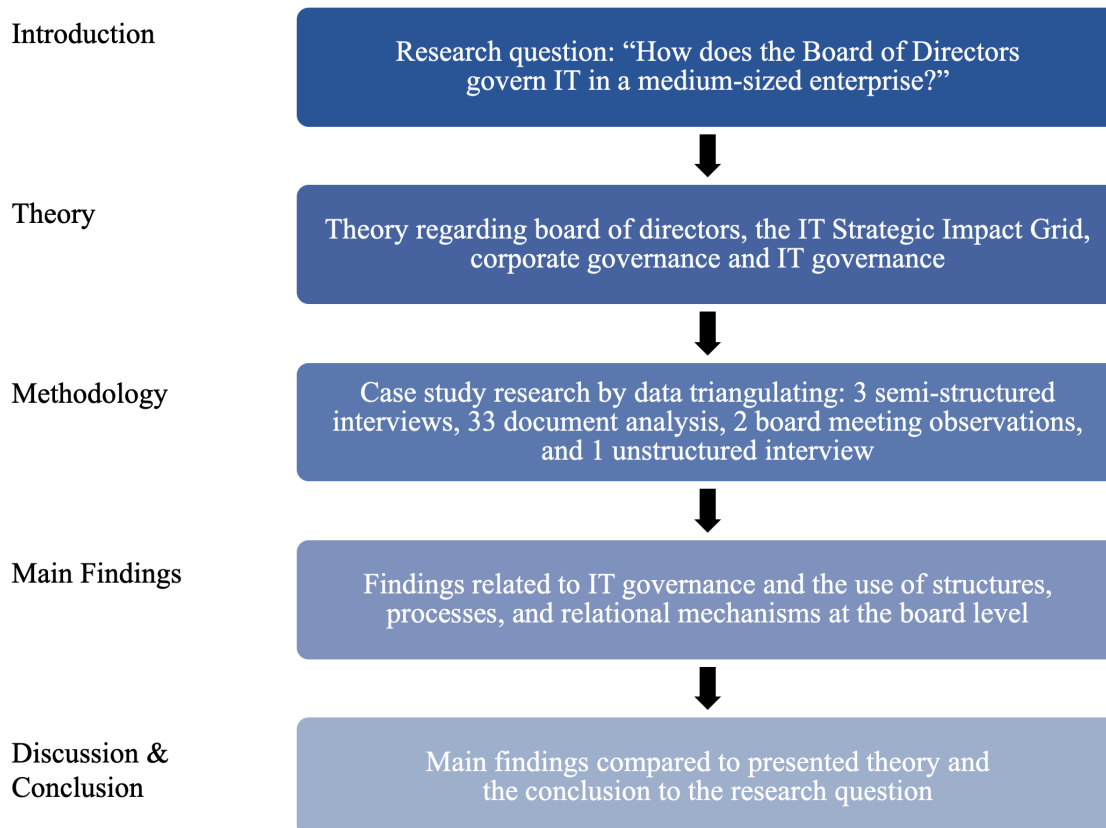|	
Introduction	Research question: "How does the Board of Directors govern IT in a medium-sized enterprise?"
Theory	Theory regarding board of directors, the IT Strategic Impact Grid, corporate governance and IT governance
Methodology	Case study research by data triangulating: 3 semi-structured interviews, 33 document analysis, 2 board meeting observations, and 1 unstructured interview
Main Findings	Findings related to IT governance and the use of structures, processes, and relational mechanisms at the board level
Discussion & Conclusion	Main findings compared to presented theory and the conclusion to the research question

Figure 1: Illustration of the thesis structure

2 Theory

The theory will enlighten relevant research to help answer the research question: How does the Board of Directors govern IT in a medium-sized enterprise. Firstly, we will introduce the role of the board of directors, thereby, the IT Strategic Impact Grid, to better understand the role of IT in the enterprise. We will also present corporate governance, of which IT governance should be an integral part of. Followed by research on IT governance at board level and measures that have been proven significantly positive, illustrated in a literature review by Caluwe and De Haes (2019, p. 268).

2.1 The Board of Directors

The board of directors, commonly referred to as the board, is an elected group of individuals that represent the interests of shareholders and stakeholders. Their most important role is to ensure satisfactory operations now and in the future. The responsibility includes overseeing all activities in an organization, such as; strategic planning, financial reporting, risk management, executive compensation, and regulatory compliance (Bart & Turel, 2010; Chen, 2019). Furthermore, the board should control for conflicts of interests they represent and the senior management, as there are different levels of risk acceptance. This conflict derives from agency theory, where the board control for the self-interest of senior management (agent) to protect the shareholders and stakeholders' interests (principal) (Hillman & Dalziel, 2003, p. 384).

The composition of board structures varies from a one-tier structure (also called the 'Anglo-Saxon model') and a two-tier structure. The latter typically has a 'supervisory board' consisting of non-executive directors and a 'management board' composed of only executive directors. The supervisory board performs its responsibilities as an independent body, overseeing the management. No board members of the supervisory board can be a part of the management board or vice versa. In contrast, the one-tier structure consists of both executive and non-executive board members while performing management and supervisory functions unified (OECD, 2015, p. 45).

In Norway, the requirements for Private Limited Liability Companies Act (aksjeloven) is that the board should at least have one board member. Additionally, when an enterprise exceeds 50 employees, the employees may require that up to one-third and at least two of the board members be elected by the employees (Lovdata, 1999, § 6-4). The board is ultimately responsible for the success or failure of an enterprise, with legal obligations (Lovdata, 1999, §1-5). The increased importance of IT in enterprises demands more involvement of the board. The challenges, however, relate to how the board should be involved in IT strategy.

2.2 The IT Strategic Impact Grid

For the board to understand the IT activity in the enterprise, they should first and foremost evaluate the role of IT in the organization. The evaluation can be carried out by the use of the often-cited IT Strategic Impact Grid by Nolan and McFarlan (2005), represented in figure 2 below. The matrix will help enterprises to determine their strategic stance in IT governance and aid the level of understanding of details it necessitates (Nolan & McFarlan, 2005, p. 4).
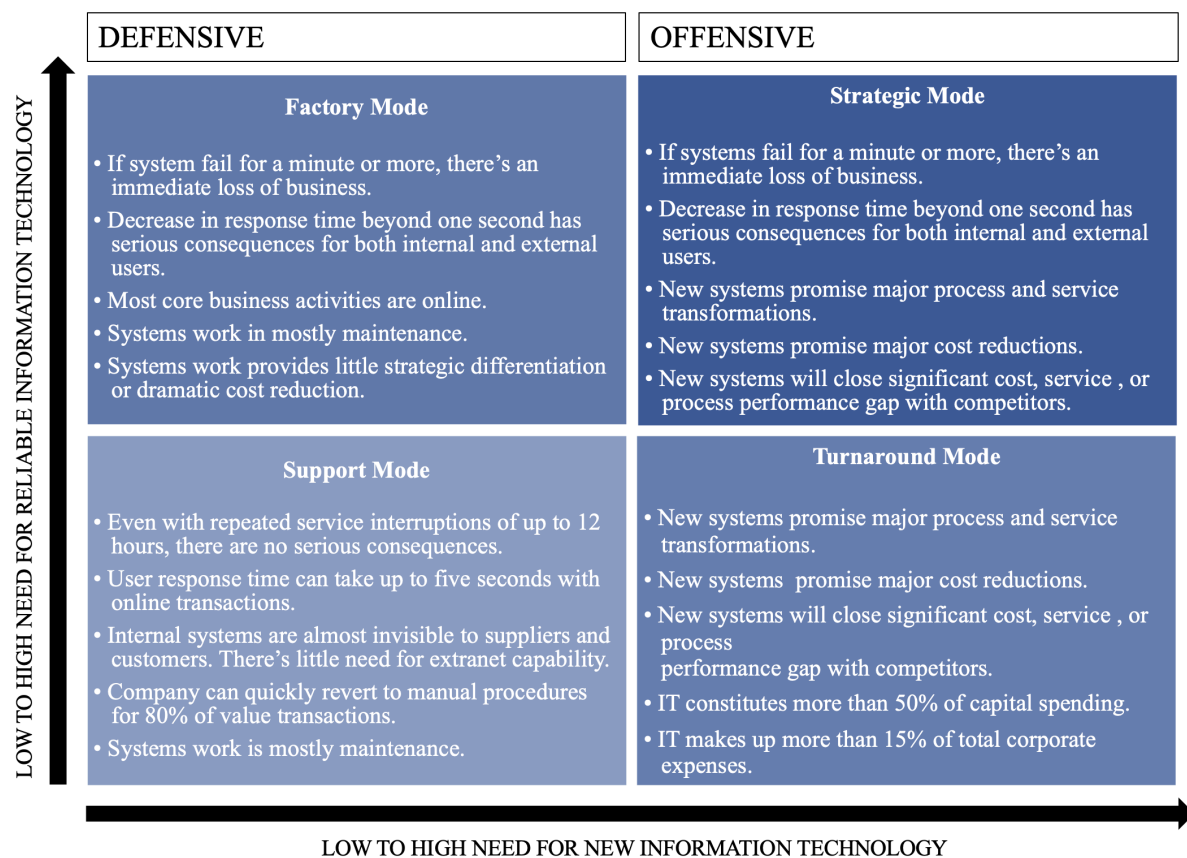

Figure 2: The IT Strategic Impact Grid. From "Information Technology and the Board of Directors" by R. Nolan & F. W. McFarlan, 2005, Harvard business Review, p. 3. Copyright 2005, Harvard Business School Publishing Corporation.

The matrix has four modes, divided into two strategic parts. Defensive refers to how much the company relies on cost-effective, constant, secure, and fluently operating IT systems. While offensive refers to how much the company relies on IT for its competitive advantage through strategies that provide new value-added services, products, or high customer response (Nolan & McFarlan, 2005, p. 2). The purpose of the model is to visualize how board members can recognize the enterprise position and decide whether to take a more aggressive approach. By identifying the conditions, the boards can determine the level of involvement in IT decisions. However, identifying the right IT approach is not necessarily easy because it depends on several factors. It should, therefore, adapt to the enterprise's history and future goals, their industry, and competitive situation, as well as their financial situation and quality of IT management (Nolan & McFarlan, 2005, p. 2).

Enterprise in support mode has both a relatively low need for both reliability and strategic IT. In factory mode, the enterprise needs very reliable systems but not necessarily advanced data processing. Turnaround mode expects that new systems will change their business, regarding cost reductions, service improvements, and competitive advantage. However, they have a low need for reliability regarding existing systems. Enterprise's in a strategic mode need as much reliability as factory mode enterprise do, but they also aggressively pursue process and service options, cost reductions, and competitive advantages. Similar to turning operations, IT expenses are substantial, requiring both reliable systems and new technologies to maintain or advance their competitive position (Nolan & McFarlan, 2005, p. 2-5).

2.3 Corporate Governance

Corporate governance relates to structures and systems of control in the organization and the issue of governing the strategic decisions of senior management. It is indented to ensure that senior management pursues strategies that align with the corporate mission. In a rapidly changing market, governance has been recognized as a decisive strategic issue of the survival of enterprises (Johnson et al., 2014, p. 113; OECD, 2015, p. 9).

Figure 3: Governance versus management. Reprinted from "Enterprise Governance of Information Technology", by S. De Haes & W. Van Grembergen, 2015, p. 32. Copyright 2012, COBIT 5, ISACA.

Figure 3 illustrates the differences in processes between governance and management. The enterprise management has a more internal business orientation, and their role is to be able to make sound business decisions quickly. Under the guidelines set by the governing body to achieve the enterprise goals, management activities related to planning, building, running, and monitoring (De Haes & Van Grembergen, 2015, p. 33). Due to the complexity and the rapidly moving and changing markets, shareholders are not able to be responsible for managing corporate activities. These responsibilities are, therefore, most often in the hands of the board and the selected management team (OECD, 2015, p. 18). Governance, in turn, has a broader focus and is more external business oriented. Governance processes ensure that the enterprise objectives are achieved by evaluating the enterprises stakeholders needs. They also direct and delegate decision-making roles and responsibilities in the enterprise. The governance must monitor performance and progress in line with the enterprise's overall goals (De Haes & Van Grembergen, 2015, p. 32; Peterson, 2004, p. 44). It is argued that IT governance should be an integral part of corporate governance due to the growing importance of IT in enterprises (De Haes & Van Grembergen, 2015, p. 3).

2.4 IT Governance

Today most organizations depend on IT to support and enable the growth of the enterprise. Due to the critical nature of IT in many organizations, the board should extend its responsibilities to include IT governance. It will further increase organizational performance and ensure that IT supports the corporate vision and mission (Posthumus et al., 2010; Price & Lankton, 2018, p. 109; Turel & Bart, 2014; Valentine & Stewart, 2015). They should, therefore, devote the same attention to IT as they do to financial matters and general corporate governance (De Haes & Van Grembergen, 2015, p. 1; Institute, 2003; Posthumus, von Solms, & King, 2010, p. 236).

Researchers identify that IT governance at the board level can affect organizational performance, where strategic alignment is an essential factor for succeeding in translating board-level governance of IT into improved performance (Jewer & McKay, 2012, p. 599; Wu, Staub, & Liang, 2015; Turel, Liu & Bart, 2014, p. 231; Turel et al., 2017, p. 118). Figure 5 illustrates the overall goal of performing IT governance is to increase business value from IT investments (De Haes & Van Grembergen, 2015, p. 2-3).

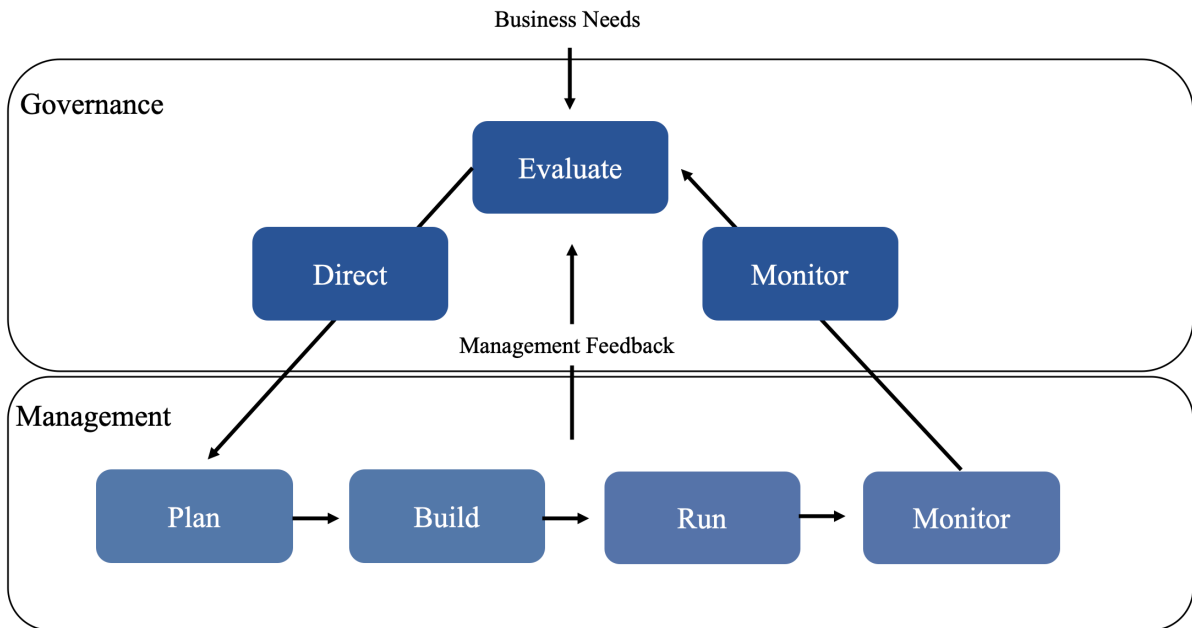*Figure 4: Definition of enterprise governance of IT*. Reprinted from "Enterprise Governance of Information Technology", by S. De Haes & W. Van Grembergen, 2015, p. 2. Copyright 2015 by Springer International Publishing Switzerland.

There have been several attempts to develop IT governance frameworks, such as COBIT (Control Objectives for Information and related Technology), that provide practices for the board, management, and operational business and IT managers (ISO, 2015). COSO

(Committee of Sponsoring Organizations) provides thorough management through the development of guidance and frameworks on enterprise risk management, internal control, and fraud deterrence (COSO, 2020). ISO/IEC 38500 is a standard for corporate governance of IT (ISO, 2015). However, there has yet not been developed as a single widely accepted IT governance framework (Turel & Bart, 2014, p. 225; Wilkin & Chenhall, 2010). Moreover, De Haes and Van Grembergen (2009, 2015) comprehensive research on IT governance, shows the use of structures, processes, and relational mechanisms to succeed with IT governance in an organization, which is widely accepted. Their definition of enterprise governance of IT is:

"Enterprise governance of IT (EGIT) is an integral part of corporate governance, exercised by the Board, overseeing the definition and implementation of processes, structures, and relational mechanisms in the organization that enable both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT-enabled business investments" (De Haes & Van Grembergen, 2015, p. 1).

The challenge regarding how the board should be involved in IT governance remains unanswered. Neither is there a universal model of T governance at the board level that fits every organization. However, no IT governance at the board level is never optimal, which could have severe consequences for enterprises. The well-known example of Kodak shows how an innovative technology company can be put out of business when not keeping up with technological changes. This could perhaps have been prevented if IT was more often discussed at the board-level in a strategic perspective (Valentine & Stewart, 2013a, p. 2). Moreover, it will further be presented measures within structures, processes, and relational mechanisms to succeed with IT governance.
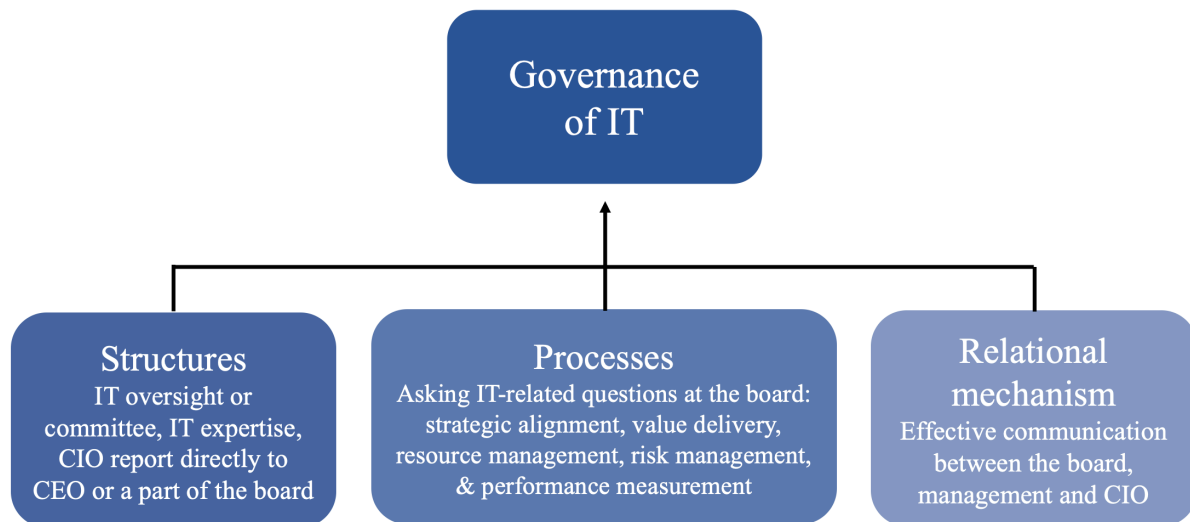
Figure 5: Structures, processes, and relational mechanisms for IT Governance. Reprinted from "Enterprise Governance of Information Technology", by S. De Haes & W. Van Grembergen, 2015, p. 12. Copyright 2015 by Springer International Publishing Switzerland.

Structures

Structures refer to "organizational units and roles responsible for making IT decisions and for enabling contacts between business and IT management decision making-function*"* (De Haes & Van Grembergen, 2015, p. 11). The most mentioned measures to enable structures are through IT oversight or similar committee at the board-level (Coertze & von Solms, 2014; Nolan & McFarlan, 2005; Oliver & Walker, 2006; Posthumus et al., 2010; Turel & Bart, 2014), IT expertise at the board (Mohamad, Hendrick, O'Leary, & Best, 2014; Nolan & McFarlan, 2005; Valentine & Stewart, 2013a, 2015), the CIO reporting to the CEO (Valentine & Stewart, 2013b; Andriole, 2009), and the CIO being a part of the board (Coertze & von Solms, 2014; Posthumus et al., 2010).

IT oversight or similar committees

Researchers have identified significant positive results from IT oversight or similar committees at the board-level (Premuroso & Bhattacharya, 2007). An IT committee intends to assist the board to understand IT better issues and exploit it further and thereby, make the

best decision on IT matters. The board should then get more debriefs from the management to better align IT with business goals, better understand the technology, and be more prepared to foresee future IT needs and possibilities (Turel & Bart, 2014, p. 235); Nolan & McFarlan, 2005, p. 14-15; Posthumus et al., 2010, p. 27).

More often, the auditor or risk management committees are responsible for considering IT matters, which only provides limited IT oversight (Posthumus et al., 2010). The absence of an IT committee is dangerous, "as it puts the enterprise at risk, in the same way, that failing to audit its books would" (Nolan & McFarlan, 2005, p. 2). IT committees can be a more efficient approach to handle risk, mitigating costs associated with security breaches, and make costly projects remain better under control (Higgs, Pinsker, Smith, & Young, 2016, p. 31; Nolan & McFarlan, 2005, p. 3; Oliver & Walker, 2006). The board may, in this way, be driving technology decisions, which can carve out a competitive advantage for the enterprise (Nolan & McFarlan, 2005, p. 3).

The committee should have at least one IT expert and should have a close relationship with the auditor (Nolan & McFarlan, 2005, p. 21). If the board only has limited IT expertise, researchers argue that a dedicated IT committee is beneficial to offer essential IT oversight and make sure it is on the board's agenda, through a structured approach (Coertze & von Solms, 2014; Higgs, Pinsker, Smith, & Young, 2016; Nolan & McFarlan, 2005).

The introduction of an IT committee may not necessarily mean an efficient committee. Committees have weaknesses related to the shortcomings of specification of roles and responsibilities (Price & Lankton, 2018, p. 126). Researchers also point out that time constraints or the lack of appropriate expertise also prevents IT committees to be established (Andriole, 2009; Jewer & McKay, 2012). Higgs et al. (2016, p. 11) claims that a board-level committee will also be costly as it requires time, more compensation, and reports. It can also be risky in terms of reputation and capital if the committee fails to make the best IT decisions. The board is still legally liable for every negative outcome of a board-level committee (Coertze & von Solms, 2013).

A separate IT committee may be considered negligible if IT is only a support mechanism in the enterprise. Nolan and McFarlan (2005, p. 2) suggest that the use of committees might depend on the strategic nature of the enterprise. If the IT strategy is offensive IT (turnaround and strategic mode), the enterprise should establish an IT committee and report to the board every three months (Coertze & von Solms, 2014; Nolan & McFarlan, 2005; Posthumus et al., 2010). If the IT strategy is defensive, the audit committee or risk management committee can be responsible for IT governance at the board level and report to the board every 6 to 12 months (Nolan & McFarlan, 2005; Posthumus et al., 2010). In support mode, they should report to the board every 12 months (with exceptions) (Posthumus et al., 2010). Board-level committees may not always be the best practice for all companies, regardless of modes. For consulting firms, book publishers, or small retailers, this could be considered a waste of time (Nolan & McFarlan, 2005, p. 4).

There is empirical evidence of few enterprises using committees at the board-level (Caluwe & De Haes, 2019, p. 271; Nolan & McFarlan, 2005; Price & Lankton, 2018, p. 109). The establishment of IT oversight committee may, therefore, provide a competitive advantage and signal the enterprise's superior IT governance (Caluwe & De Haes, 2019, p. 271).

IT expertise

Until recently, boards could ignore governing IT at the board-level, and IT expertise was instead an exception. However, researchers express the need for IT expertise at the board-level, when governing IT to better ensure, monitor, and control IT decisions (Mohamad et al., 2014; Valentine & Stewart, 2013a, 2015). IT expertise at the board-level ensures adequately monitoring of the management, where it is the board's responsibility to determine if the management has adequate IT governance procedures. This includes success plans for key IT personnel and policies to ensure IT security, and if these procedures are suitable (Trites, 2004). To successfully execute this, the board needs to possess the right competencies (Benaroch & Chernobai, 2017; Trites, 2004; Valentine & Stewart, 2015). Further, IT expertise enables the board to advise the management better, attract qualified IT management, and make better decisions relating to IT matters. Valentine and Stewart (2015, p. 6-8) emphasize that the board does not need to understand how the management handles

technology or be aware of the technicality of technology. They suggest three primary competencies:

1. "Direct and govern technology – enabled strategy and planning to maximize the advantages of technology and enhance performance at all levels of the organization" (Valentine & Stewart, 2015, p. 6).
2. "Lead and govern business technology investment and risk" (Valentine & Stewart, 2015, p. 7).
3. "Direct and govern technology – enable innovation and value creation" (Valentine & Stewart, 2015, p. 8).

Researchers demonstrate that the lack of IT expertise is an inhibitor of governing IT at the board-level (Andriole, 2009; Bart & Turel, 2010; Coertze & von Solms, 2013; Coertze & von Solms, 2014; Nolan & McFarlan, 2005; Valentine & Stewart, 2013a, 2013b, 2015; Yayla & Hu, 2014). If there is limited IT expertise, the board can also benefit from having IT oversight or committee. They might benefit more by introducing an IT committee than boards with significant IT expertise. However, the lack of IT expertise might also make the board hesitant to establish an IT committee if there is limited expertise (Coertze & von Solms, 2014, p. 272).

There is an increasing amount of organizations that pursue IT expertise in board members, yet, there is still little IT expertise in the boardroom. This indicates a gap between the stated importance of business technology within organizations and the appropriate knowledge to govern IT at the board-level effectively (Valentine & Stewart, 2013a, p. 6). Valentine and Stewart (2013a, p. 6) research shows that 36.47% of the organizations had one or more board members with IT governance knowledge, skill, and experience. Héroux and Fortin (2018), shows an average of 5.5% of board members with IT expertise. Nevertheless, the increasing dependency on IT, it is argued that at least one board member should have significant business and IT expertise, especially in organizations where IT plays a critical role (Coertze & von Solms, 2014, p. 7; Mohamad et al., 2014, p. 72; Nolan & McFarlan, 2005, p. 23).

CIO reporting to the CEO

It is argued that the CIO should report directly to the CEO (Valentine & Stweart, 2013b). The practice is 49%, according to Andriole (2009, p. 379). However, it is a frequent practice that many CIOs still report to CFO or COO, respectively 23.5% and 13.7% (Andriole, 2009, p. 379). Valentine and Stewart (2013b, p. 13) emphasize that when the CIO is not reporting directly to the CEO, it might influence the information reaching the board, where CFO and COO might not be as strategic and forward-looking, and therefore, create structural barriers. The agent passing through the information can filter the information, intentionally or unintentionally. It might be sufficient for the CIO to report to the COO or CFO to meet compliance requirements, but not recommended (Valentine, 2013b, p. 13-14). Also, a survey showed that 92% of CFOs believe that this does not provide strategic differentiation or transformation (Gartner, 2012).

CIO a part of the board

Having the CIO as a member of the board is a solution to provide IT expertise at the board and direct communication (Coertze & von Solms, 2013, p. 3365). The interplay between the CIO and the board contributes to addressing the IT alignment challenge, where the CIO is a link between business and IT functions (Coertze & von Solms, 2014, p. 9). However, the presence of the CIO in the board is rather an exception, and the interplay remains vague (Coertze & von Solms, 2014, p. 7; Posthumus et al., 2010, p. 27). Andriole's (2009, p. 384) research also shows that CIOs are reluctant to involve the board in governing IT. They believe that they do not need additional help in IT investment from inexperienced board members related to IT and that it will not improve technology optimization. CIO´s are also afraid that it may add additional bureaucracy (Andriole, 2009, p. 384). However, it is still the board who are ultimately responsible for the enterprise's well-being, which includes the performance of IT (Posthumus et al., 2010, p. 27).

Processes

"Processes refers to the formalization and institutionalization of strategic IT decision-making and IT monitoring procedures, to ensure that daily behaviors are consistent with policies and provide input back to decisions (e.g., portfolio management)" (De Haes & Van Grembergen,

2015, p. 11). It focuses on the level of involvement of business and IT planning. However, there is little research on processes the board can implement (Caluwe & De Haes, 2019, p. 279). The most mentioned process that enables board engagement is asking IT-related questions (Bart & Turel, 2010; Nolan & McFarlan, 2005; Wilkin & Chenhall, 2010). To ensure that IT investment has been carefully elaborated, question sets have been created to provide some guidance to the boards. Nolan and McFarlan (2005) created three sets of questions that the board should ask, based on the position of the enterprise in The IT Strategic Impact Grid. Further on, the Canadian Institute for Chartered Accountants (CICA) created 20 Questions Directors Should Ask About IT (Baker, 2012). Both question sets cover similar themes as *strategic alignment, value delivery, resource management, risk management, and performance measurement*.

Strategic alignment

Strategic alignment emphasizes the alignment of business and collaborative IT solutions. It includes whether an investment in IT harmonizes with the strategic objective (current strategy, intent, and enterprise goals) of an enterprise and can provide business value. It should drive the enterprise in the right direction and be better aligned than competitors (ITGI, 2003, p. 22).

Value delivery

Value delivery concentrate on the creation of business value related to an IT investment. This includes that the value is on-time, within budget, appropriate quality, and the realization of expected value. It is often translated into time for order/service fulfillment, customer wait time, customer satisfaction, employee productivity, profitability, and competitive advantage. Actual cost and the return on investment must be managed and controlled to achieve optimal value delivery (ITGI, 2003, p. 24-26).

Resource management

Resource management optimizes IT-related knowledge and resources. To succeed with IT investments, the allocation of resources must serve the need of the enterprise. IT resources

relate to people, technology, applications, data, and facilities. "Most enterprises fail to maximize the efficiency of their IT assets and optimize the costs relating to these assets" (ITGI, 2003, p. 28). The board should address this by ensuring appropriate resources related to the needs of the enterprise (ITGI, 2003, p. 28-29).

Risk management

Risk management addresses the IT-related business risks, which concerns not only financial risk but operational and systemic risk. Within IT risk, information security and General Data Protection Regulation (GDPR) are prominent. The final responsibility for risk management relies on the board. They should, therefore, ensure that the significant risks are identified and addressed with measures to meet any risk. Risk management will make them transparent and more able to respond quickly. Proactive risk management can generate a competitive advantage. At least, the enterprise should be aware of and understand potential risks, to make better decisions (ITGI, 2003, p. 27).

Performance measurement

Performance measurement monitors IT investment and service delivery. The value creation includes both tangible and intangible assets, where intangible assets are generally not measurable through traditional measurements. Performance measurements have to go beyond financial analyses to compete in the digital age. It should provide process efficiency, customer focus, and the ability to learn and grow. The most efficient way to aid the board and management is through IT business scorecards, to achieve business and IT alignment (ITGI, 2003, p. 29-30).

To cover these themes, the board must have the competence to ask the right questions and to challenge the responses of the management (Valentine & Stewart, 2015, p. 5). The question sets are intended to encourage boards to take on the responsibilities of IT governance (Caluwe & De Haes, 2019, p. 274). Nolan and McFarlan (2005, p. 2) highlight the importance of these questions as board members often have little fundamental knowledge of IT, which leads the CIOs to pretty much manage IT on their own. Bart and Turel (2010)

further investigated the use of IT-related questions in the boardroom. They found that on average, only 12 out of 20 questions are raised in the boardroom. The most posed question is concerning IT risks, which is considered the most crucial theme, based on the responses (Turel & Bart, 2014, p. 232). The information the board will obtain by asking IT-related questions will make them more equipped to evaluate, direct, and monitor IT investments. It will also reduce information asymmetry between the management (agents) and shareholders and stakeholders (principals), which will prevent opportunistic behaviors of the management. The board can, in this way, ensure that the management invests in appropriate IT security measures, rather than giving themselves a higher bonus (Turel & Bart, 2014, p. 227).

Relational mechanisms

"Relational mechanisms are about the active participation of, and collaborative relationship among, corporate executives, IT management, and business management" (De Haes & Van Grembergen, 2015, p. 11-12). The same as processes, there is little academic research on relation mechanisms in IT governance at the board-level (Caluwe & De Haes, 2019, p. 274). However, to facilitate effective communication about IT from and to the board is the most frequently mentioned mechanism (Andriole, 2009; Coertze & von Solms, 2014; Kuruzovich, Bassellier, & Sambamurthy, 2012; Oliver & Walker, 2006; Yayla & Hu, 2014). Additionally, researchers suggest that the board should regularly invite the CIO to the board meetings if the CIO is not a part of the board (Andriole, 2009; Butler & Butler, 2010; Kuruzovich et al., 2012).

Effective communication and a clear understanding of how to achieve a successful strategy is a high contributing factor to ensure business and IT alignment (Andriole, 2009, p. 386; Yayla & Hu, 2014, p. 410). Thereby, relational mechanisms are a crucial part of IT governance (Caluwe & De Haes, 2019, p. 278). Ongoing knowledge sharing is paramount in organizations. Boards should, therefore, become a part of the communication process, where research indicates that the board does not receive routine communication about IT initiatives. Hence, the suggestion of proactive communication between the board and the CIO to increase IT awareness (Andriole, 2009, p. 386). Yayla and Hu (2014, p. 425) show that boards with high IT awareness have a significantly positive effect on organizational performance. However, this effect is most significant in IT-intensity industries. Several researchers suggest

that communication has to adapt to the strategic importance of IT. Hence, The IT Strategic Impact Grid by Nolan and McFarlan (2005) can be applied (Coertze & von Solms, 2014; Yayla & Hu, 2014). They suggest that boards in defensive mode with limited IT expertise should depend on the CIO to translate the business strategy into IT objectives. Boards in offensive mode, should have considerable IT expertise and turn the business strategy into IT terms themselves.

Kuruzovich et al. (2012) found a positive effect between the strategic importance of IT and the communication capabilities of the CIO. Additionally, the result showed that communication between the board and CIO is positively associated with IT alignment. Butler and Butler (2010, p. 42) supports this by suggesting that the CIO should regularly interact with the board to provide a link between business and IT.

2.5 Criticism of Chosen Literature

The IT governance definition by De Haes and Van Grembergen (2015) is generally accepted in IT governance literature. However, some researchers criticize this perspective. Hoogervorst (2009) argues that this traditional IT governance perspective ignores complexity, uncertainty, and dynamics, as well as strategic implementation barriers. He claims that this perspective is top-down processes that are management-oriented (Hoogervorst, 2009, p. 210, 213). Instead, IT governance should be view as an organizational competence, resting on the employee's competencies (Hoogervorst, 2009, p. 25). Ciborra (2001, p. 30) supports this and claims that the power of achieving alignment does not arrive from 'strategic planning' but from an organizational governance competence (methodology, skills, knowledge, etc.) with competent employees in a flexible infrastructure that can seize the unplanned future's business. Hoogervorst (2009) presents that the IT governance perspective with structures, committees, and top-down decision making, as a mechanistic approach, favoured in the west, where the eastern emphasizes a collective and organic IT governance approach (Hoogervorst, 2009, p. 37).

Smits and van Hillegersberg (2015, p. 4541) present a different perspective in terms of dividing governance in soft and hard. In contrast, structure and processes are viewed as hard

governance and relational mechanisms as soft governance. In their discussion, they argue that the human and social aspects of governance deserve more considerable attention. Moreover, the academic literature is inadequate on relation mechanisms on board-level IT governance (Caluwe & De Haes, 2019, p. 274).

Today, there is more research on the perspective provided by De Haes and Van Grembergen (2015). We, therefore, see it most fitting to pursue this in the master thesis. However, we recognize the different perspectives, but understand that De Haes and Van Grembergen (2015) intend to handle the complexity of each organization. They do not provide a set guideline that can be implemented for each enterprise but emphasizes that each enterprise has to adapt the measures to their needs (De Haes & Van Grembergen, 2015, p. 42).

3 Methodology

The chapter presents the research design of the thesis, including which data collection pursued to answer the research question. Through the chapter, we aim to provide careful considerations of the methodical choices. In addition, methodological and ethical requirements have been met through the data collection. After discussing research quality, we will include methodical reflections over the case study research.

3.1 Research Design and Method

The research design is the general plan of how to answer the research question (Saunders, Lewis, & Thornhill, 2016, p. 163). Case study research is a beneficial strategy when trying to answer "how" or "why" questions. The case study research has been shown useful in contexts where the researcher has little or none control over events, and when the focus is on a contemporary phenomenon within a real-life setting. This method further enables the researcher to understand the reasons and behaviors in the enterprise (Yin, 2018, p. 33, 85). The thesis provides an in-depth understanding of how the Board of Directors govern IT in a medium-sized enterprise, where we have chosen a qualitative approach with both primary and secondary data and with a case study strategy suitable for this descriptive research.

Before defining the research question, we began a theoretical search to get an overview of the topic of IT governance at the board-level (Yin, 2018, p. 33, 65). In the following weeks, we reached out to a suitable enterprise for the case study, where we could get sufficient access to the enterprise and the Board. We also got access to a local consulting company that specializes in business development and digital transformation. They will assist as expert informants, which is argued to be an additional resource that provides a further triangulation and increase the construct validity of the case study research (Yin, 2018, p. 80, 300). The design is based on what data collection would provide the most comprehensive and relevant data. We collected qualitative data through three semi-structured interviews, one unstructured interview with three expert informants, and two observations of board meetings. Quantitative data was collected through document analysis of 33 board protocols. Lastly, we conducted an unstructured interview with the expert informants. The data collection resulted in mixed-method research (Saunders et al., 2016, p. 170).
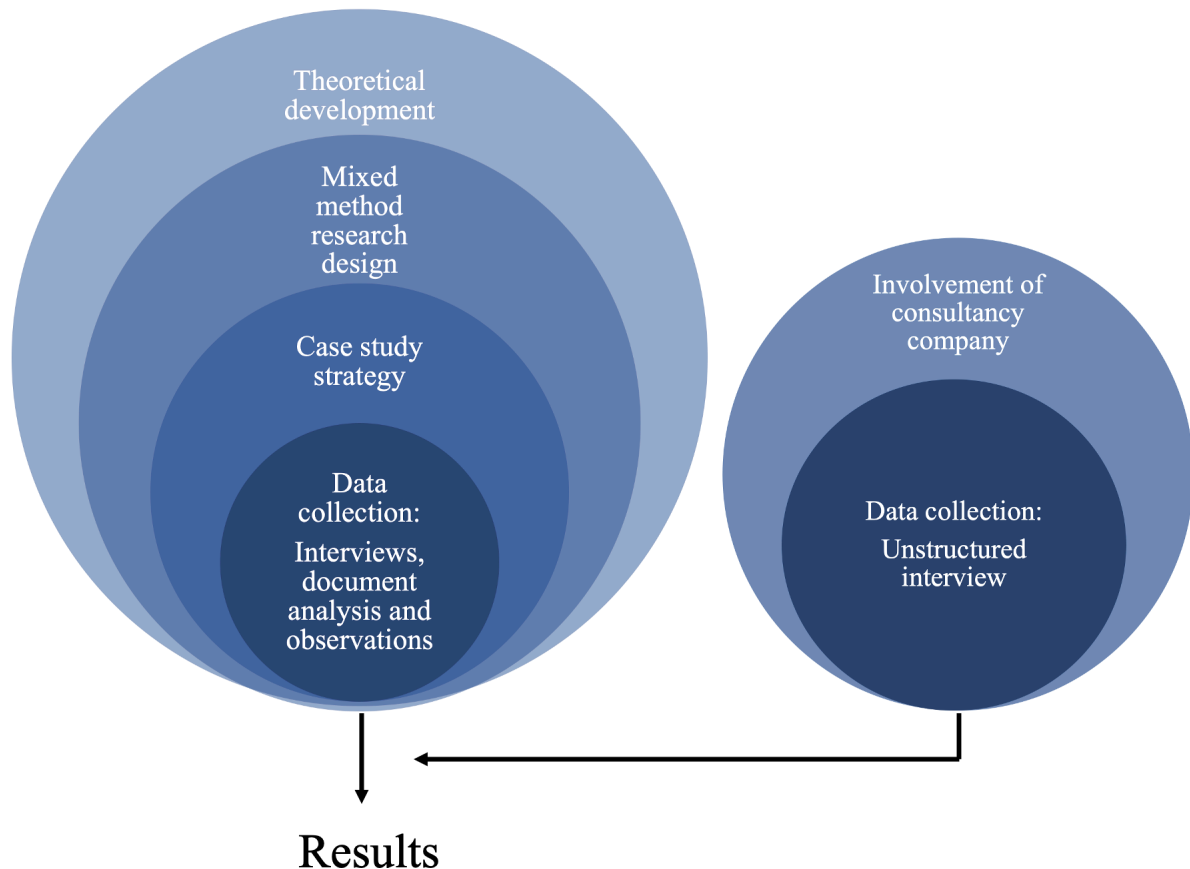
Figure 6: The research onion. Inspired from "Research methods for business students", by M. Saunders, P. Lewis & A. Thornhill, 2016, Pearson Education Limited, p. 164. Copyright 2015 by Licensing Agency Ltd.

3.1.1 Informants

Key informants are often critical to the success of the case study research (Yin, 2018, p. 162). The key informants from the case study research are the Chair of the Board of Directors, CEO, and the Strategy and Development Manager, whom we will further refer to as S&D Manager in the enterprise. These three roles are considered most important relating to IT governance and will provide in-depth information on how they govern IT at the board level.

The three expert informants are from a consulting company and have the titles, Chair of the Board of Directors, CEO, and advisor. The expert informants have key expertise within the

chosen topic. The expert informants will increase the research quality and help us to reduce potential biases when discussing theory in light of the main findings in the case study (Yin, 2018, p. 298). Further, in the study, they will be referred to as expert informants 1, 2, and 3.

3.1.2 Anonymity

The chosen enterprise and the informants will remain anonymous in this thesis. It is not a desirable choice to keep the case study anonymous (Yin, 2018, p. 298), but we would not have access to this sensitive information at the board-level if not. When the case study was decided, we obtained approval from the Norwegian Center for Research Data (NSD), before the data collection started (see appendix C).

3.2 Data Collection

The data is collected through semi-structured and unstructured interviews, document analysis, and observations. Multiple sources of evidence are often referred to as a triangulation approach (Yin, 2018, p. 171). There are two types of data collection; primary data and secondary data. Primary data has the benefit that it is collected by the researcher for the current study and the problem statement. It further allows for more specific and in-depth information (Saunders et al., 2016, p. 316-318). However, it can be time-consuming, costly, and challenging to get sufficient access to. Secondary data already exists and is, therefore, perceived as less resource-demanding compared to primary data (Saunders et al., 2016, p. 319, 330-334).

We have used a combination of primary data and secondary data. Primary data was collected through semi-structured and unstructured interviews and observations at two board meetings. In this way, we were able to evaluate and compare the answers from the interview in real-life context at the board meeting. Document analysis of the board protocols is secondary data and represents the year 2016 to 2020. It enables us to analyze the board's agenda relating to IT and how it was emphasized. Collectively it provided a comprehensive data collection, which gave us an in-depth understanding of the chosen topic. Table 1 illustrates the data collection throughout this case study research.

Table 1: Summarize of data collection

Dates	6th of March	17th of April	22nd of April	23rd of April	29th of April	30th of April	1st of May	4th of May	5th of May	27th of May	5th of June
Number of interviews			2		1						
Number of observations	1	Cancelled Covid-19									1
Number of Board protocol studies				5		8	7	10	3		
Discussion with consulting company										1	

3.2.1 Interviews

Interviews are considered the most important sources in case study evidence because of its ability to explain, i.e., describe the how's and why's (Yin, 2018, p. 161). For successful interviews, the researcher must have the ability to ask good questions and reasonably interpret the answers. It is also essential to provide a friendly and non-threatening environment (Yin, 2018, p. 121-124).

In agreement with all our informants, the interviews were audio or video recorded. Recorded notes provide a more accurate transcription process and the ability to go back and ensure that no information was left out (Yin, 2018, p. 161). The transcribed notes where anonymous. Every informant consented to be recorded before the interviews. All sensitive information is according to the NSD recommendations and stored on an encrypted USB-pen, which will be deleted after submitting the thesis (Appendix D).

Semi-structured

Semi-structured interviews often have a list of themes and critical questions to be covered (Saunders et al., 2016, p. 391). We will, therefore, asked open questions and follow-up

questions, if necessary, to obtain detailed and specific information, and possibly uncover other relevant information.

The interview guide (Appendix A and B) were made based on the theoretical elements we considered most relevant to answer the research question. The questions were mostly addressed in how-questions instead of why-question, to avoid the interviewee becoming defensive (Yin, 2018, p. 161). It was intentionally going to be pre-tested to ensure the quality of the questions. Unfortunately, due to the Covid-19 situation, our resource person was not able before the scheduled time of the interviews. Since there was little time to ask somebody else, we used the guide from Braun and Clarke (2013, p. 185) to reflect and secure the relevance of the questions being asked. We will comment further on this in the section of methodical reflections.

The face-to-face interviews with the three informants at the enterprise was also delayed due to the Covid-19. The informants were invited to a one-hour long semi-structured interview in Microsoft Teams. Two days before each interview, we sent the interview guide (Appendix A or B) together with an information letter (Appendix D). The information letter is in line with NSD's guidelines of research ethics on how we will comply with the privacy policy, in which the informants had to sign a declaration of consent. The informants could then be confident that we would operate as professionals and handle sensitive information with care. By sending the interview guide in advance, the informants could read through the questions and prepare the answers. There are different opinions on whether this is beneficial or not. However, we wanted to have an effective interview that covered every aspect we needed with the time to ask follow-up questions.

Unstructured

The unstructured interview only had topics we wanted to discuss, without predetermined questions. It is of further importance to not be affected by existing preconceptions, which the expert informants help to eliminate and increase the research quality (Yin, 2018, p. 120-122). Unstructured interviews are more informal than semi-structured interviews and are often used to explore in-depth a general topic (Saunders et al., 2016, p. 391).

3.2.2 Document Analysis

The board protocols are used as documentation to verify and support the findings in interviews and observations, or potentially provide new findings. As the board protocols are secondary data, it is essential that during the reviewing process, we understand that these documents were written for other reasons than those of this case study. It is one of the reasons that several researchers are critical to overreliance on documentation in case study research (Yin, 2018, p. 158-159).

We were given a personal log-in account to the Board's digital platform. The platform provided access to the agendas and protocols from the last five years. The main intention with the board protocols is to identify how often IT-related matters are on the Board's agenda and how they emphasize it in the board meetings. To identify this, we will determine how often focus areas as; strategic alignment, value delivery, risk management, resource management, and performance measurements were discussed by the Board relating projects that have relevance to IT. We will also identify who is involved. Listening skills in the inspection of documentary evidence are also needed, which refers to being able to read *between* the lines to learn the essence of what is being written (Yin, 2018, p. 122).

3.2.3 Observation

According to Saunders et al. (2016, p. 354), there are two different types of observations. Structured is quantitative, and the participant is qualitative and involves studying social actors and social phenomena in their natural settings. In this study, we will use participant observation in two board meetings. Participant observation range from pure observation to full participation (Saunders et al., 2016, p. 358-360). Our role in the board meetings is observer-as-participant, where the purpose of our observation is known, but we do not participate.

The benefit of the observer-role is that it allows us to see how the Board interacts. The experience adds a new dimension of understanding how IT is being governed and enables us to answer the research question better. Contrary, some disadvantage includes, time-consumption, and the closeness of the researcher to the situation being observed can lead to

observation bias (Saunders et al., 2016, p. 363). However, as participant observation is used as a supplement in the data collection, we believe that observations enable us to identify better any differences between what being said and what they do.

The first observation was conducted in the beginning, which gave us a general understanding of how a board meeting is conducted. Then, after three months, when we had finished the data collection, we attended the second board meeting. Even though it was not our intention to have this much time between the first and second observation, it turned out to be useful. It is, to an extent, similar to a longitudinal case, where we study the same case at different points in time (Yin, 2018, p. 87). During these three months, we have had the time to reflect and mature both theoretical and in our findings. Therefore, the second observation allowed us to verify our findings better.

3.3 Research Quality

It is essential to assess the quality of both the research and its design when choosing the research design for the study. Yin (2018, p. 78) has identified four factors that should be tested when evaluating quality. (1) the trustworthiness of the data, (2) the credibility of the data, (3) the confirmability of the data, and (4) the dependability of the data. To verify that these factors are evaluated, the researcher needs to consider validity and reliability.

3.3.1 Validity

When evaluating the validity of the research, it is essential to assess all construct validity, internal- and external validity. The first test is to construct validity, which refers to developing a sufficient operational set of measures and that 'subjective' judgments are used to collect the data (Yin, 2018, p. 79). One of the techniques is to use multiple sources of evidence that converge in the same findings. To achieve this, we chose a data triangulation with semi-structured and unstructured interviews, document analysis of previous board protocols, and two observations of board meetings. We consider these methods the most relevant to answer the research question in-depth. A second technique is to establish a chain of evidence during the data collection. This means that the reader can "follow the derivation of any evidence from the initial research question to ultimate case study findings" (Yin, 2018,

p. 179-180). The chain of evidence can be followed in the findings from the data collection in chapter 4. The third technique is to have the draft of the case study report reviewed by key informants (Yin, 2018, p. 80). Using expert informants to examine the case study report is also helpful, as it will enhance the overall quality of the case study report and thereby increase the construct validity of the case study. The expert informants can, in this way, also challenge the case study's main findings (Yin, 2018, p. 299). We have therefore sent a draft to the expert informants to get constructive feedback and clarify any potential misunderstandings.

The second test of internal validity refers to the establishment of a causal relationship within the study (Yin, 2018, p. 80). It means that the study should look for causal relationships, where events are expected to lead to other events, and sense false connections. The demand for strong causal links is not as rigorous in a descriptive study, compared to explanatory studies, which focuses on revealing the causal relationship (Yin, 2018, p. 78). We have in this study used the interview guide to ensure that the same questions have been asked to all three of our informants and compared the answers. Hence, the interview guide contributes to some degree of maintenance of internal validity.

The third test is external validity that refers to whether the study can be generalized and applied to other similar situations (Yin, 2018, p. 81). As a single case study, the external validity is naturally lower than, for instance, a comprehensive quantitative statistical survey, which is taken into account in section 3.4 methodical reflections. The scope of this study is defined to examine a medium-sized enterprise. Hence, our findings will perhaps not be generalizable for every enterprise.

3.3.2 Reliability

The reliability of a study refers to the ability to repeat the research and get the same results if another researcher were to conduct the same research over again (Yin, 2018, p. 82). If the findings are reliable, one should essentially come to the same conclusion. Saunders et al., (2016, p. 397) describe different threats to reliability, for instance, interviewer bias, observer error, and observer bias.

Due to a lack of standardization in in-depth interviews, Saunders et al. (2016, p. 397) claim this data collection potentially can lead to concerns about reliability. We met every informant before conducting the interviews, which made us more aware of how to communicate and create a trustworthy environment, which reduces interviewer bias. Another bias refers to the situation where the informants only tell part of the truth or intentionally omits essential information. It is necessary to be aware that informants provide their subjective meaning. We, therefore, have to evaluate if they are providing a better version than what is real. Every informant and the enterprise are anonymous, which allows for a more freely speaking interview and access to more sensitive information about the topic being studied. Another way we dealt with the potential bias was to invite expert informants within this topic to discuss the chosen literature and main findings. Seeking another perspective makes us better suited to evaluate key findings from the data collection (Yin, 2018, 299).

Observer error and observer bias can also affect the reliability of the study. All data collection has been recorded and transcribed to reduce the threat of these potential errors. During the board meetings, we both took notes which were later discussed and transcribed. We then reduced the risk of misinterpretation of the situation or of what being said. It is argued that being two observers helps increase reliability (Yin, 2018, p. 167). During data collection, we have developed a case study database for our raw notes and original documents collected throughout the research period. In this way, the database can then be the subject of separate secondary analysis, independent of any reports by the original researcher (Yin, 2018, p. 176). In theory, this could be possible. However, in this case, the enterprise is anonymous, and we are only allowed to use the collected data in this study.

3.4 Methodical Reflections

There are strengths and weaknesses to every method used, and a case study does not necessarily go entirely as planned (Yin, 2018, p. 55). One of our reflections relates to the number of interviews. It could be beneficial to extend the number of interviews and collect answers from, for instance, the whole Board. We have discussed this, but due to the scope of this thesis, we evaluated it to be sufficient, with the three chosen informants, to answer the

research question. Another reflection relates to sending the interview guide to the informants in advance. It is debated if this prevents the 'true' answer, as the informants can prepare a more desirable answer. However, as our informants and the case itself is anonymous, we evaluated this threat as insignificant. The unfortunate situation of the Covid-19 outbreak, we had some obstacles. For instance, we intended to pre-test the interview guide. The document analysis and observation are based on our interpretation, and it is, therefore, possible to misunderstand or not capture every detail.

Regarding the decision of single-case versus multiple-case, the theory has distinct pros and cons of both (Yin, 2018, p. 91, 302). The original plan was to examine two cases, but due to Covid-19, we did not get access to the second case. It was then to challenging to find another case that could provide the same comprehensive information, which is desirable when comparing two cases. The choice of a single-case study is also supported in theory when the chosen case represents a real-world situation that researcher has not yet been studied (Yin, 2018, p. 302).

4 Empirical Findings

In this chapter, we will present the findings from the data collection, which includes three interviews with key informants at the enterprise, one group interview with three expert informants, document analysis of five years of board protocols, and observations of two board meetings. The findings from the interviews are presented together but specified who makes the statements.

4.1 Interviews

We will present the information provided by the informants at the enterprise, along with the reflections provided by the expert informants throughout the chapter. Table 2 illustrates how we refer to the informants, their competence, title, and who they represent, the enterprise or consulting company.

Table 2: List of our informants

Interview object	Informant	Relevant competence	Representing
The Chair	The Chair	• Long experience at the board-level as chair and board member.	The case study
CEO	CEO	• Long experience at the board-level as chair and board member.	The case study
S&D Manager	S&D Manager	• Has a technical background.	The case study
Expert informant 1	The Chair	• Has long experience as CIO from a large Norwegian company.	Consulting company
Expert informant 2	CEO	• Experience at the board-level as chair and board member. • IT expertise.	Consulting company
Expert informant 3	Advisor	• Board member experience. • Expert on strategy, performance, and risk management.	Consulting company

Structures

The Board has a supervisory structure, composed of non-executive directors, which consists of the Chair, Vice-Chair, five members, and three deputy board members. Two of the board members are employee representatives. They were elected by the enterprise employees in 2016 and re-elected in the General Assembly in 2018. 2016 to 2018, one board member was also employed as a project manager in the strategy and development department in the enterprise. As of 2018, the Board consists of only non-executive directors. There are 8 to 10 set board meetings every year. The main role of the Board is fulfilling the responsibilities of the Norwegian Private Limited Liability Companies Act, which include overseeing the enterprise, ref §6-12, and §6-13 (Lovdata, 1999). The Chair also states,

> "*Along with the formal responsibilities, the Board is also very committed to motivate and encourage the management to be innovative and forward-thinking*" - the Chair.

Expert informant 1 emphasizes that the management are responsible for the execution of providing a satisfactory business now and, in the future,

> "*For the Board to maintain their role and responsibilities as board members, they have to find the right balance of trusting the management and ensuring they feel confident in the information they base their decisions on*" – Expert informant 1.

The Board is not responsible for any implementation and take responsibility of the management's hands. However, the Board has to find the right IT governance approach to enable business and IT alignment that creates business value. The relevant measures have to be evaluated regarding the context in which the enterprise finds itself. Expert informant 1 further elaborates,

> "*The most important when discussing which measures are relevant is whether it is value-adding or resource-demanding. It has to be evaluated against the context the enterprise finds itself in*" – Expert informant 1.

IT oversight or similar committee

The Board does not have IT oversight or similar committee, and the board members do not have different roles in the Board, according to the Chair and CEO.

"It is more important to have this integrated in the organization, in the daily routines. I do not see it necessary to have it at the board level as well" - CEO.

However, on two occasions, they have delegated more responsibilities to two board members on projects that come with high risks. The Chair recognizes that this may be the approach for other companies with committees in audit, compensation, IT, etc. and that the solution could be beneficial in some projects. The Chair emphasizes that the reason for not pursuing a committee at the board level wants to discuss everything in plenary in the board meeting. Based on the competencies of the board members, this is enough to highlight every relevant perspective, according to the Chair.

On this note, expert informant 1 states,

"It might be appropriate to have a committee or a division of 'roles' within the Board. However, it is essential to state that this does not change the overall roles and responsibilities of the Board, where every board member is still accountable for the actions of the board" – Expert informant 1.

IT expertise

The informants recognize that IT has played a more significant role in the last few years since the Board was elected. The Board does not have an active part in the technology development in the enterprise other than decision making and strategy for future actions, according to the CEO. The enterprise pursues a culture that is dynamic and forward-thinking, within the organization as well as in the Board, and holds the right competencies. In the Board, it is essential to have experience with IT on a strategic level, to see the opportunities that IT enables, which is something the election committee has pursued.

"It is not necessary to have technical competencies within IT inside the Board but understand the importance of IT. But of course, you wish that there is someone who is extremely competent in IT, but this is the case for every professional discipline. The most important is being able to understand it in a strategic context" - The S&D Manager.

The Chair also has many years of relevant experience from IT in a strategic context. In this way, the Chair and CEO believe that they are ready to handle the development in the market.

"There is expertise covering the entity" – CEO.

Expert informant 3 support that it is not necessary to have IT technical expertise at the Board. Most importantly, the board members have to have the ability to see the possibilities enabled by IT and digitalization and how they can create business value. It is about making the right strategic decisions for the enterprise, now and in the future. The Board, therefore, has to understand the market the enterprise is operating in, for instance, trends and state-of-the-art.

CIO reporting to the CEO

There is no CIO in the enterprise, and the CEO does not see this as necessary in this enterprise-size. However, the organization has a Strategy and Development (S&D) Manager who has the CIO responsibilities that are more customer orientated. The S&D Manager is a part of the management and reports to the CEO. The CEO is responsible to report further to the Board. On some occasions, the S&D Manager attends the board meetings if the Board desires more information on high-risk projects or the S&D Manger finds it necessary for the Board to be more involved. However, the S&D Manager does not feel it necessary to be included in the Board.

CIO being a part of the Board

The communication is formal through board meetings in an informal context, according to the Chair and CEO. The informants see it necessary to separate the Board from the enterprise.

"This provides clear roles of the Board and the management. The Board should be concerned about seeing the entirety and discuss freely. It would be inhibiting if the management was a part of the Board" - CEO.

The Chair and CEO both have experience from other boards that pursues a mix of executives and non-executives at the board and do not see it beneficial for the Board.

However, the S&D Manager elaborates,

"At times, it would be beneficial to have a closer dialogue and that there be more informal communication" - the S&D Manager.

Processes

All three informants identified the enterprise in strategic mode, as they are first movers both nationally and internationally. IT is very important for the enterprise as they strive to be leading within its market. The Chair says,

"The most important goal for the company is to retain and attract new customers, which IT enables" - the Chair.

The S&D Manager presents a different perspective,

"Digitalization is not a goal in itself. We use what the market offers and the best tools to reach our goal and increase competitiveness. Our goal is not to digitize, but IT is often used. Therefore, we do not have a digital strategy, only a strategy. It comes down to being up to date in the market" - the S&D Manager.

The Board does not ask specific questions or have a set approach for evaluating new IT projects, according to the Chair. The Chair and CEO both support that the board members' competencies are enough to highlight every relevant perspective and ask the right questions in board meetings. The S&D Manager, however, claim

"There are obviously similar questions from the board members when evaluating new projects but not as a set procedure" - the S&D Manager.

Expert informant 2, states that the Board needs to ensure that the management is doing their job by asking control questions in board meetings.

"The Board should therefore have a structure in how they approach IT matters to ensure this. The Board can rely on the frameworks the enterprise uses such as COBIT, COSO, ITIL, etc. To ensure value, the use of the framework has to be adapted to the enterprise's context" – Expert informant 2.

The framework can be an inspiration on focus areas and provide notes for the Board to remember important aspects they have to discuss further. Expert informant 2 further elaborates that it is important to state that the Board is not responsible for implementing such a framework but can ask the management to do so. According to expert informant 1, when

using the frameworks, it is important to see what it demands of the enterprise and Board to succeed with the use of it. This includes the attitude and willingness towards the implementation, how the management plans to deal with it, and how the Board intends to control and monitor it. To implement successfully, there has to be established the right management approach.

"The Board has to ensure that they are ensuring that the management is providing satisfactory operations now and, in the future, – Expert informant 1.

The Board has delegated more responsibilities to the auditor to sustain some risk management before and during the projects. The Chair has its full trust in the auditor and management to evaluate and present reports on the issue. The Chair recognizes that the Board could be more involved in this risk management.

The informants all emphasize the cost/benefit-method when evaluating new IT projects and ultimately be a measure to reach the goal of retaining and attracting new customers.

"If we do this, will it gain more customers? We have to be willing to invest in the short-term to gain profit in the long-term" – the Chair.

The decision of what should be done in-house and what should be outsourced is also challenging. There are increased costs by doing it in-house, but potentially losing pace in the process of outsourcing. Everything is developing fast, and it is essential to understand when to hit the market. The informants emphasize the enterprise's desire to use local knowledge when developing new technology. The informants recognize the complexity in evaluating a strategical IT investment,

"We cannot just choose the cheapest solution, as customer satisfaction cannot be quantified" – the S&D Manager.

Relational mechanism

The Chair is satisfied with the management, which gives thorough presentations and reports from the work of the enterprise. The Board might request additional board meetings, which might concern new contracts or more information on high-risk projects. The Board also frequently invite external informants to present further details on projects; this includes project managers, employees, and advisors. The practice is more or less every other meeting. It is timesaving for the management and provides direct communication to the Board.

The CEO highlights some challenges having the Board working at the same pace as the management,

> "*We work with development every day, so to keep the Board in the same pace can be challenging at times. However, the Board is flexible to gather on short notice if necessary*" - CEO.

4.2 Document Analysis

In the document analysis of board protocols, the main emphasis will be on processes, where we intend to identify *strategic alignment, value delivery, resource management, risk management, and performance measurements* in the board protocols, as these topics have been introduced as important for the Board to emphasize in the board meetings.

Table 3: Summarize of Board protocol-studies

Year	2016	2017	2018	2019	2020
Board meetings	5	8	7	6	2
Extra board meetings				4	1
Total	5	8	7	10	3

Structures

In the last five years, 33 board meetings have been held, which on average, is around seven meetings a year. Four out of five additional board meetings have been held in the allocation of more extensive acquisitions, while one has been due to one of the most innovative projects with a high-risk profile. At each board meeting, there is a monthly briefing from the CEO to the Board, which includes regular posts on technology and product development, HSE and safety, future threats and opportunities, statistical calculations, and the financial and audit status. Moreover, the Board and management have created board instruction. The purpose of the board instructions is to determine the main content of the Board's duties and responsibilities for the management and the organization. It specifies not only the duties and responsibilities of the Board but also the management and CEO, as well as the rules for the Board's case management. The board instruction complements the provisions of the Act of 13 June 1997 No. 44 on limited companies, the company's articles of association, and other resolutions of the general meeting. In the event of a conflict between the instructions and mandatory regulations and decisions as discussed, the board instructions apply.

Processes

We have quantified what the Board focuses on the mentioned topics, *strategic alignment, value delivery, resource management, risk management, and performance measurements* to give a picture of what the Board emphasizes in the elaboration of IT-related matters in the board meetings. We highlight four of the projects relating to technology and higher use of IT. Below is a short introduction of the projects to give further reading some context:

- Project 1 is very innovative and has a high-risk profile, especially relating to costs. The Board is more involved in this project than others. Two board members support the project to understand the complexity of this project better. The appointed board members have contractual expertise and professional experience. If the project is executed as desired, the enterprise will be the first in the world.
- Project 2 is also very innovative and has a high-risk profile. The project has some technical challenges, but the enterprise is in dialogue with suppliers and partners to handle these. The enterprise is first in Norway to offer this as a pilot project, which

today is already in motion. The Board is involved in the following process, where the intention is to expand the project further in the next few years.

- Project 3 is an innovative project that is continuously improving as technology advances. The project supports other projects as well as daily operations and is often on the Board´s agenda. In this case, the enterprise is also regarded as the first in the world by using highly advanced technology.

- Project 4 is unique in Norway, but it is not classified as high risk. It is, however, a new service and a supplement in the enterprise's portfolio. This project is directly influenced by Project 3, in a way that it complements the overall customer experience.

The table below quantifies and summarizes the focus areas of the board meetings with examples from 2016 to 2020. We have omitted the extra board meetings in the quantification because four out of the total five additional board meetings were about awarding contracts. A more comprehensive text follows after the table.

Table 4: Focus areas at the board meetings

Year	Focus areas at the board meetings	Frequency
2020	**Strategic alignment:** - Follow-up on project 1, partly on hold because of the Covid-19 situation. - World-leading IT improvements on project 3. - Two different collaboration solutions have been identified regarding a digital service, one connected to project 1.	2/2
	Value delivery: - A section on IT project in the annual report. - Two smaller digital engagements are mentioned to improve-day-to-day operations and to gather accurate data that will improve efficiency and increase customer satisfaction. - Higher support of digital solutions regarding the Covid-19 situation.	2/2
	Resource management: - CEO, CFO, CCO participated in every board meeting.	2/2

	• Internal resource allocation regarding project 1. • Six external informants at the board meetings.		
	Risk management: • Ensured control over risk elements in project 1: financial, currency, operational, and technical. • Evaluated the operator in project 1, to reduce some of the risk element.	2/2	
	Performance measurement: • Follow-up on customer satisfaction score. • The Board requested scorecards. • Internal board evaluation.	2/2	
2019	**Strategic alignment:** • Status on project 2. • Ensured optimal collaborations with partners. • Digital improvements in project 3. • Strategy evaluation. • One additional board meeting regarding project 1.	4/6	
	Value delivery: • Ensured technological development across projects/operations. • Direct customer focus on IT developments. • Update and outsource the technical process of a software program. • Project 1 ensures a first-mover advantage in the market. • Ensured precise information on each project, which now is implemented in the monthly report.	4/6	
	Resource management: • The CEO, CFO, and CCO participated in every board meeting. • S&D Manager participated to inform about more technical or digital matters. • Use of external informants at the board meetings. • Ensured the right competence regarding project 1. Involving expertise from two board members. • Hired project leader for project 3. • In-house training for a new digital tool.	6/6	
	Risk management:	6/6	

	• The risk elements in project 1 are required to be mapped and visualized (including safety, financial, reputation, and operational).	45
	• Requested actions to reduce the risk relating to project 1.	
	• Ensured equal proper risk analysis on another project, as done with project 1.	
	• Ensured control over risk in project 1, especially cost.	
	Performance measurement:	3/6
	• Ensured right tools and careful cost control for project 1.	
	• Focused on how the cost is developing.	
	• Presented budget for project 1.	
	• Frequently present statistics on project 4.	
2018	**Strategic alignment:**	5/7
	• Ensured full use of the digital capacity of a software program.	
	• Ensured preparations for the establishment of GDPR in mid-2018.	
	• Ensured a good start for project 1, which has a high-risk profile.	
	• Modernizing project 3 and making its supplier independent. The enterprise now has full ownership but is advised to seek cooperation and use standardized platforms whenever appropriate.	
	• Ensured collaborative technology partners.	
	• Total ownership over project 4.	
	Value delivery:	4/7
	• Update project 3 in line with technology development in the later years. Also crucial for customers. (insourcing of IT).	
	• New, more stable software program.	
	• Use of technology to create value internal and external.	
	• International trade fair for project 3.	
	• Project 1 ensures a first-mover advantage in the market.	
	Resource management:	7/7
	• S&D Manager participated four times at board meetings.	
	• The CEO and CFO attended all board meetings.	
	• CCO participates in nearly every board meeting.	
	• Thirteen external informants attended board meetings.	

	• Weekly operational meetings regarding project 3.	
	• Hired a digital designer.	
	Risk management:	4/7
	• Request a complete risk analysis for project 3.	
	• Ensured full cost control over project 3.	
	• Risk evaluation of taking over project 4.	
	• Monthly reports on financial and technology developments.	
	• A report from a lawyer on contract format, regarding project 1.	
	Performance measurement:	4/7
	• Digital service budget.	
	• Explicit information in a monthly report on digital solutions.	
	• Specific details on IT expenditure in project 3.	
	• Request key factors to ensure progress/quality.	
2017	**Strategic alignment:**	7/8
	• The contour of project 1 is taking form, highly innovative, and with a high-risk profile.	
	• Improved customer solutions.	
	• Launched a new strategy after an increase in market share.	
	• Collaborative partnerships.	
	• Project 2 is developing, and the Board challenges the management of its potential.	
	Value delivery:	6/8
	• Update project 3 with international suppliers.	
	• Technical update to improve customer experience.	
	• New digital design to be more user friendly.	
	• Cost/benefit analysis.	
	• Smaller technical problem with project 4.	
	Resource management:	7/8
	• Hired a CCO.	
	• Six external informants participated at the board meeting.	
	• S&D Manager attended the board meeting four times.	
	• New project manager position with a primary focus on a new digital system.	
	• Ensuring the right competencies.	
	• Used legal and consultant assistance.	

	Risk management:		3/8
	• Workshop to discuss technical problems in project 3.		
	• Requested a forecast for the rest of the year in future reports.		
	Performance measurement:		3/8
	• Requested an analysis that presents developments.		
	• Improvements in project 3 regarding a new technical installation. Request implemented in the monthly report.		
2016	**Strategic alignment:**		5/5
	• Develop international networks relating to new technology.		
	• Strategy, development, and innovation concerning digitalization.		
	• Project 2 is in the starting phase.		
	• Reaching out to the global network for input on technology development for project 3.		
	Value delivery:		3/5
	• Utilized new technology in project 3.		
	• IT improvements.		
	• New ideas for higher effectiveness and customer satisfaction.		
	Resource management:		5/5
	• One external informant participated.		
	• Hired a project manager for developing apps.		
	• Necessary IT training concerning project 3.		
	• Work with tree subcontractors.		
	• S&D Manager participated in one board meeting.		
	• Election of a new employee representative to the Board.		
	Risk management:		3/5
	• Used law firm to evaluate risk regarding a technical solution between two parties.		
	• Contingency plan.		
	Performance measurement:		2/5
	• Budget for internal IT improvement.		
	• Budget for project 3.		
	• Follow-up on the report system.		

Strategic alignment

Strategic alignment is most often on the Board's agenda, with a frequency rate of 82% throughout all five years. From the board protocols in 2016, it is identified that the enterprise has had international networks relating to new technology. The Board has expressed satisfaction over the management who has a forward-looking attitude when it comes to utilizing new technology equipment. This development is consistent throughout all years, and in 2017 the shareholders acquired the enterprise to further develop in the market. From this year, and further, it is reported various collaboration and procurement to achieve better coordination. During this phase, the Board expressed the importance of a more comprehensive strategy. With more services, the Board adopts the enterprise as a 'branded house' as a principle for brand architecture. There have also been hired new positions in the enterprise to have a focus on alignments and to drive different development projects, project leaders, and a CCO in 2017. The enterprise collaborates with several other technology developers. From the board protocols, it appears that it is to get a grip on the latest technology solutions. They do, however, not own or develop the technology themselves; this is developed together with external parties.

In 2018, the management presented more innovative projects to the Board. For instance, project 1, with a high-risk profile. They are world-leading in this area, which will naturally have further benefits for the enterprise if it goes as planned. The Board is more involved in this project compared to other projects. Another example is collecting big data to improve customer service and website and app enhancements after the latest technology. A third example is project 3, which often comes up in the board protocols, is the digital use of automatic systems to get accurate data collection.

During 2019, innovative projects have been on the Board's agenda. There are several projects; some are over a long period and include collaborative solutions, whereas others are not so long nor advanced. The management share updates on approved projects, and from the protocols, we most often find questions from the Board. The questions are most often related to value delivery, focusing on their customers, or risk management. In 2020, two different collaborative solutions have been identified. The situation of Covid-19 has, however, given

the enterprise several challenges. It has, therefore, been necessary to postpone some of their ongoing projects, and the protocols focus more on daily operations.

Value delivery

Value delivery appears on the Board's agenda, with a frequency rate of nearly 68%. In the 2016 protocols, it is stated that the board meeting from now on will spend more time discussing the future and less time in the past. The Board frequently emphasizes the value of operations relating to the customers, questions around customer analysis, and the use of IT is usually reported in the protocols when the management presents new improvements.

In 2017 and 2018, there has been a continuous development of digital solutions to make it easier to offer functionality that can increase self-service. Furthermore, the enterprise has several times invited suppliers to a technical workshop to jointly fix technical problems and other adjustments to increase the output. On one of the installations, the enterprise conducted nine work meetings with subcontractors for an IT upgrade, where they were trying to be more cost-effective. The Board challenges the management of how collected data can be used daily and in strategic planning to optimize expenses and provide a better service to their customers. Further, there is identified that both the Board and the enterprise are alert and discuss how they best can benefit from IT, creating value internally as well as externally for customer satisfaction.

In 2018, the administration and two members of the Board participated at a trade fair abroad related to technology development. The board members who attended the fair gave thorough summaries of their impressions. Moreover, the Board nor the management are afraid of outsourcing expertise when it is necessary. As mentioned under risk management, there are normally outsourced consultants and lawyers when they need more advanced or comprehensive analysis. These reports are usually very detailed and can include all aspects of the subjects, such as strategies, future opportunities, market changes, digital improvements, potential risk, scenario analysis, sensitivity analysis, and cost/benefit analysis in different variants. These documents are linked to the board protocols.

During 2019, there have been eight acquisitions of varying importance. In 2020, the management is working on a digital platform to manage and secure follow-up on their contracts. Because of Covid-19, IT and digital solutions have been reported in more use for the employers. For instance, less manual work and more reliance on their digital communication system to customers.

Resource management

Resource management, compared to other topics, has the highest frequency rate of 96%. From 2016 to 2020, there is usually external participation in every other board meeting. The Board has invited 37 external persons to participate in board meetings. The external informants are not always connected to IT-related matters but illustrate how the Board uses external competence when discussing cases in the Board. The number of people does not include the CEO, CFO, and CCO, who attend almost every board meeting to provide professional expertise and information on the topics the board is discussing. Concerning the S&D Manager, the communication seems to be passing through the CEO, which is presented in the monthly reports. From the protocols, the S&D Manager has participated in the Board meetings 11 times, representing almost 40% of the board meetings.

Regarding projects 1 and 3, there have been discussions at board-level, right competence within this project. The management often holds the right competencies and resources, but when they do not, there are examples of external support, or as in project 3, they hired a project leader. In project 1, the Board assists and supports with relevant expertise and experience, such as overlooking the contract. Lastly, when developing a new feature, there has been reported use of customers in the testing phase four times.

Risk management

Risk management is represented in the board protocols with a frequency rate of 64%, dealing with the IT-related business risk. Risk analysis is carried out by management, employers, or by external companies, either consultancy companies or law firms that assess risk regarding contract and format. In the board protocols, the CEO presents monthly reports on; financial

and technology developments and statistics. Note from the board members in 2018, was to seek a partner in the same industry to reduce the risk associated with investment costs and operating costs in the future. In 2020, the enterprise has partnered up with two different collaborators.

In 2019, there have been identified two projects that contain a high risk. Throughout the board protocols of this year, the most frequent risk is firstly financial risk and then the operational or technical risk attached to these projects. Both of the projects have, in the first presentation, an overall risk analysis performed by the management of the projects in total. Of smaller projects, or projects with a lower risk rate, there is still the financial and technical risk that is most frequently mentioned. In the mentioned procurement contracts, external consultants have evaluated the flexibility of the contract, activity ability, and contractual relations.

From 2018 to 2020, there has been development in the high-risk and innovative project 1, and the Board expresses the importance of controlling financial risk. There are identified unpredictable factors, e.g., currency risk and equipment costs. Due to Covid-19, there has been a setback where one of the contractors has a problem with the risk aspect as the circumstances make the future more uncertain.

Performance measurement

Performance measurement represents the least frequent topic on the Board's agenda, with a rate of 50%. However, throughout all board protocols from 2016 to 2020, both the management and the Board has a high focus on their customer and uses statistical tools to measure the development of their satisfaction and overall use of their services. The management presents a statistical summary of each month, which includes the status quo and explanations and forecasts (income and costs) for the rest of the year. The Board has, on two occasions, in 2017 and 2018, asked for extended statistics on different posts. The auditor comments on annual financial control and is included in the board protocols every year, which have only been positive comments about the enterprise's operations. During these years, there have been different performance measurements, such as comparisons either

against own figures or benchmarking against others, financial evaluation of a marketing campaign, ensure proper analysis regarding environmental technology when awarding contracts. In 2020, the Board requests follow-up on a scorecard and that it is included in monthly reports (it is unclear what type of scorecard they are referring to).

Relational mechanisms

Resource management covers most of what relates to the relational mechanism. There are often external informants presenting information at the board meeting, which is described above. It enables effective communication as the Board has the opportunity to communicate directly with the people responsible for the work. Concerning IT-related matters, the S&D Manager participated in almost 40% of the board meetings. However, we have identified that IT is on the Board's agenda every board meeting but in various degrees.

4.3 Observation

The observation is based on two board meetings, which will emphasize discussions of IT-related matters. Our findings are presented below, categorized in structures, processes, and relational mechanisms. In the first observation, three representatives from the management participated, CEO, CFO, and CCO, the auditor, and three project managers. The second observation was conducted through Microsoft Teams with the presence of the CEO, CFO, CCO from the enterprise, two project managers, and S&D personnel.

IT is a big part of many projects at the enterprise. It is, therefore, on the Board's agenda on several cases during the two observations. This relates to project 1, 2, 3, and 4, where every project was on the Board's agenda on the first observation, and every project except 3 was on the Board´s agenda the second observation.

Structures

The Board has a structured approach in the board meeting, where the management elaborates on the monthly report. The board members acknowledge the thorough reports and express

that they feel confident in the information the management presents. In the first observation, two of the board members have been appointed to go in-depth on project 1, which demands comprehensive information gathering and risk analysis. This looks like an IT oversight or a similar committee. However, it is unclear if these are set roles or just related to this current project. The Chair asks board members that either have expertise or experience on the case to elaborate their perspective and invites everyone to confirm before they proceed further. The S&D manager did not attend any of the board meetings we observed.

Processes

In the first observation, the Board did not ask too many control questions. The first board meetings were mostly about the annual report, and the projects were only in orientation. However, they discuss strengths, weaknesses, opportunities, and future challenges in project 1. In this project, the Board requests an additional board meeting to discuss further this high-risk project. The auditor elaborated on value delivery and risk management at the first observation. In the second observation, board members challenged the management and project managers on the strategy and consequences of projects and provided some input for future work. They requested a presentation for more information and a separate board case on a later occasion. It was various degrees of control questions, but we are aware that this might have several explanations.

The Covid-19 crisis has influenced most enterprises and set its mark on the second board meeting. The new situation has taken much attention during the board meetings. But the enterprise adapted early to the situation, which has been beneficial for the enterprise now from a cost-saving perspective.

Relational Mechanisms

The management and project managers present information from the monthly reports to the Board. The Board brags about the project managers when they present information. In the first observation, one of the board members identified a communication problem with the technical team; when the enterprise is in the development of new IT projects, they find it

challenging to know when to give input on challenges. It has resulted in poor work flow and communication. No solution was provided at this board meeting.

The Board requires the management to keep them updated on the situation regarding the Covid-19 and updates on projects through e-mail between board meetings. The Chair and CEO also meets a day before board meetings to discuss high-risk projects, when necessary.

4.4 Summary of Main Findings

A summary of min findings thorough the data collection is presented in the figure below.

Structures

- In strategic mode
- Supervisory board (external directors)
- 8-10 board meetings a year
- No IT oversight or committee at the board-level
- One board member with a technical background
- Other board members have experience with IT on a strategic level
- Delegated more responsibility to two board members on high-risk project 1 and 2
- S&D Manager reports to the CEO
- The CEO presents monthly/annual reports to the board (which includes; technology and product development, HSE and safety, future threats and opportunities, statistical calculations, and the financial and audit status)

Processes

- No IT strategy
- No fixed approach to handle IT matters at the Board
- In orientation of projects, the Board varies when they ask follow-up questions related to the stages and risk profile of the different projects
- From interview: most important cost/benefit – method to reach the goal of attracting and retaining customers
- The CEO, CFO, and CCO participated in almost all board meetings, as well as external attendees to provide the Board with professional expertise/information on the topic they are discussing
- They seek to collaborate and outsource technical solutions in order to share both investment costs, and knowledge
- Board protocols show a higher focus on strategic alignment, and resource management

Relational mechanisms

- Formal communication: only communication through e-mail between board meetings if it is necessary for the Board to be updated
- External informants attend the board meetings to elaborate on different projects
- The S&D Manager presents information on some occasions to the Board
- The S&D Manager desires more informal communication with the Board
- Challenges relating effective communication between the Board, management, and IT personnel

Figure 7: Summary of main findings

5 Discussion

In this chapter, we will discuss the main findings from the data collection in light of chosen literature to answer the research question:

"How does the Board of Directors govern IT in a medium-sized enterprise?"

We will continue to emphasize structures, processes, and relational mechanisms when discussing IT governance, as this is the chosen perspective presented by De Haes and Van Grembergen (2015). We will further discuss measures the Board could introduce and thereby provide recommendations to further increase IT governance at the board-level.

Structures

The enterprise has a supervisory board composed of only non-executive directors and a management board. It enables the Board to be separate from the organization and is better equipped to evaluate the work of the management and enterprise in the informants' opinions. Besides overseeing the organization in terms of legal obligations, the Chair emphasizes that motivating and encouraging the management to be innovative and forward-looking is a part of the responsibilities of the Board. We identify the enterprise in strategic mode regarding IT. There are no organizational units and roles in the Board. The Board structures appear to be the same as when they were elected a few years ago, even though the enterprise has started several projects that have driven them towards a strategic mode in the last few years. However, the literature demands a more hands-on approach from the board, especially when the enterprise is in strategic mode (Nolan & McFarlan, 2005).

IT oversight or similar committee

The informants do not perceive an IT oversight or similar committee to enable the Board to make better decisions, even though it is recognized in research (Premuroso & Bhattacharya, 2007). It was stated that they desire to discuss everything in plenary. It is essential to state that the intention of the IT committee is not to exclude discussions of IT investments from the Board or any responsibilities relating to this. It provides more information on IT matters, regarding market, trends, and ensures that the Board makes the right decisions for the

enterprise. The Board relies on auditors evaluating IT investments in light of value delivery and risk management, along with monthly reports from the management. It is more similar to an enterprise in defensive mode, according to research (Nolan & McFarlan, 2005) and could potentially threaten their competitive advantage regarding projects 1, 2, and 3, if they do not have a more aggressive approach.

The findings support earlier research that few enterprises use committees at the board-level (Price & Lankton, 2018, p. 109; Caluwe & De Haes, 2019, p. 271). On two occasions, the Board has appointed two board members, in project 1 and 2, to go in-depth, which is similar to an IT committee approach. It is positive that the Board is flexible to include new measures when projects come with high risk. According to research, an IT committee could be beneficial to implement if they want to continue in a strategic mode. It might also contribute to further competitive advantage and signal superior IT governance (Caluwe & De Haes, 2019, p. 271). Researchers claim that it is dangerous not to have an IT committee, in the same way, if the auditor fails to audit, as IT is more often a considerable part of the operations in many enterprises (Nolan & McFarlan, 2005). The expert informants also see it appropriate to have a division of 'roles' within the Board but emphasize that this does not exclude their overall responsibilities as board members.

IT expertise

Based on the statements from the Chair and CEO, the Board has IT expertise. They refer to one board member with a technical background and several other board members with experience with IT on a strategic level. The Chair and CEO believe that the Board has the right competencies to handle the rapidly changing industry. We can, therefore, not identify any lack of IT expertise. In the board meetings, we could observe that the board members that have been appointed more responsibilities relating to project 1 and 2, were more active in these discussions, which indicates IT expertise.

CIO reporting to the CEO

The S&D Manager reports directly to the CEO, which is the most frequent practice according to the research (Andriole, 2009). The CEO is therefore responsible for reporting to the Board. However, the S&D Manager attends several board meetings yearly to present information to the Board directly but did not participate in any of the board meetings we observed, even though projects relating to IT were discussed. It is not necessarily wrong as the management provides thorough monthly reports and invites other employees to present information.

CIO a part of the board

The Board and the S&D Manager is responsible for IT performance, where the Board has legal obligations. To handle the IT alignment, challenge the research emphasizes that the CIO could be a part of the board (Coertze & von Solms, 2013, p. 3365). The case study research has not examined the business and IT alignment at the enterprise. However, this measure aims to achieve this. The document analysis shows that IT is on the Board's agenda most often. The S&D Manager could, therefore, be a part of the Board, to strengthen the interplay between the S&D Manager and the Board. However, we want to respect the informant's desire only to have non-executive board members, as they already have experience from it, and tried a mix at the Board before. We, therefore, emphasize that the S&D Manager should attend every board meeting on the same level as CFO and CCO, who attend every time. It contributes to more communication between the S&D Manager and the Board, which the S&D Manager desires. Contrary to Andriole's (2009) research, where he indicates that the CIO is reluctant to involve the board in IT-related matters.

Processes

The Board does not use a standard approach by asking fixed IT-related questions in IT decision-making and IT monitoring procedures. It might prevent the Board to ensure that the daily behaviors are consistent with policies and provide input on strategic IT decision-making. A framework to help structure essential questions could be COBIT, for instance. However, the Board has a structured approach in the board meeting by following the monthly report. The board members acknowledge the thorough reports and express that they feel confident in the information the management presents. The monthly reports contribute to

ensuring that the Board covers the critical aspects of an IT decision. The Board seems to trust the management to provide satisfactory business now and, in the future, which is good. However, the Board should more often ensure that they are ensuring IT-related matters, which is widely recognized in literature and by expert informants. The Board is legally liable and should, therefore, introduce a question set, to better control decisions relating to IT and better control for the self-interest of the management (Hillman & Dalziel, 2003; Nolan & McFarlan, 2005, Baker, 2012).

Based on our interpretation of the board protocols, it appears that resource management is the most frequent topic at the board meetings, followed by strategic alignment. The enterprise and Board seem to be concerned to have the right resources in an IT investment, with internal resources or outsourcing them. The enterprise also frequently uses collaborative deals with other companies, which the Board has requested along with more information in the monthly reports. The market-leading projects are strategic towards their overall goal to retain and attract customers, which correspond with strategic alignment. The enterprise successfully exploits new technology, and on projects 1 and 2, the board members have been more engaged. Project 3 has also been discussed more often at the board. The other themes, value delivery, risk management, and performance measurements, have also been covered, respectively, 68%, 64%, and 50%, but there are improvements regarding them. This corresponds with the other data collection, where the Chair also recognizes that the Board could especially be more involved in risk management, and the Board has requested more performance measurement. To fully take advantage of an IT investment, it is essential to cover every theme every time.

Relational mechanisms
The main challenge is to facilitate more efficient communication on IT matters to and from the Board, where the CEO identified problems relating to keeping the Board up to speed. It may be challenging when the Board only meets every 6 to 8 weeks, compared to the management who works every day on the same matters.

Facilitating more effective communication has a significantly positive effect on organizational performance (Kuruzovich et al., 2012). Having the S&D Manager attend more frequently, along with the detailed monthly reports and external informants, as project managers and advisors. Having the people who work on the matter attend the board meetings contributes to facilitating effective communication. The Board is proactive in taking a more substantial part in the communication process by requesting to be updated between the board meetings.

6 Conclusion and Implications

In the final chapter, we present the conclusion and evaluate the case study research. Lastly, we will consider the implications of the main findings and propose further research on IT governance at the board level.

6.1 Conclusion

We have pursued De Haes and Van Greenberger's (2015) definition of IT governance at the board level, which includes a mixture of structures, processes, and relational mechanisms, to answer the chosen research question:

> *"How does the Board of Directors govern IT in a medium-sized enterprise?"*

To answer the research question, we have emphasized research that has proven significant positive results along with our main findings from the triangular data collection. The comprehensive data collection is complementary, which enables us to describe the research question more precisely. We have collected data through three semi-structured interviews with key informants represented by Chair of the Board of Directors, CEO, and the S&D Manager in the enterprise. Document analysis of five years of board protocols, two observations at board meetings, and one unstructured interview with three expert informants. Collectively, these data collections provided a deeper understanding of how our central informants recognized IT governance at board level, how they interact in board meetings, and how often IT has been on the Board's agenda.

Through the case study research, we have identified the enterprise to be in a strategic mode, but there is some uncertainty whether the Board has adapted fully to this situation. The enterprise uses advanced technology successfully and is market-leading on several projects, where IT has a central role. The informants believe that the Board holds the right competencies to evaluate, monitor, and direct IT-related matters and ask the right questions at the board meetings, without a structured approach in asking questions. We find that the Board and management collaborate efficiently, with some potential for improvements. The IT governance model at the board-level is considered sufficient, but our recommendations will

further improve the governance of IT and contribute to increasing organizational performance.

In structures, we recommend introducing an IT committee at the board level. Further, we recommend a more structured approach when asking IT-related questions, which relate to processes. A more structured approach will better ensure that the Board covers strategic alignment, value delivery, risk management, resource management, and performance measurement trough fixed questions or use frameworks, such as COBIT. Lastly, relating to relation mechanisms, we recommend facilitating more efficient communication between the Board and the S&D Manager. The S&D Manager should participate as frequently as the CFO and CCO. The Board is ultimately responsible for the success and failure of the enterprise, with legal obligations. The increased importance of IT in the enterprise requires more involvement of the Board. Being in strategic mode demands the enterprise and the Board to be aggressive and adapt its governance model to meet the role of IT. A more aggressive approach might provide a more competitive advantage and a superior governance model. We argue that these recommendations will be value-adding for the Board.

6.2 Evaluation of the Case Study Research

This case study research describes *how the Board of Directors govern IT in a medium-sized enterprise* and contributes to the understanding of IT governance in a real-life case. Some limitations can be identified. The case study relies on the informants' description of the situation, which potentially provides a subjective opinion. It could potentially be beneficial to interview the whole Board in order to provide an objective view. The scope of the case study also relies on one case, where it could be beneficial to have multiple cases to compare the findings and performance against each other. It is, therefore, difficult to state if these findings are generalizable and to what extent. As described in the scope of the study, we believe that the findings are most relevant for enterprises in the same strategic mode and similar size.

Furthermore, the Covid-19 virus has also influenced our work, as we, for instance, did not get the opportunity to test the interview guide with an external informant, and that the interviews were conducted at a later time than planned and through Microsoft Teams. However, as we

recorded the interviews, in line with the ethical requirements, which better ensures that we interpret the answer correctly. Additionally, the case study is anonymous, which is not always preferred. Nevertheless, we would not be able to gather this amount of sensitive and in-depth information if not.

6.3 Implications

The case study research can have implications for the organization, as well as further research on IT governance at the board level as a subject area. In this section, we want to highlight the managerial implications and research implications, which includes future research on the topic.

6.3.1 Managerial Implications

Our findings, from this case study, identifies that the Board of Directors', to some extent, have a conscious IT governance model at the board-level. However, some of the research have yet not found its way into the boardroom. This indicates that the informants hold essential knowledge on the topic but we hope that the findings will further increase their knowledge on IT governance at the board-level with relevant measures for the enterprise.

Today most organizations depend on IT to support and enable the growth of the enterprise. Due to the critical nature of IT in many organizations, the board should extend its responsibilities to include IT governance. This applies not only for our enterprise but for almost every enterprise in the market. The development is something an enterprise has to take into considerations to fully exploit the opportunities IT enables. Research have identified increased organizational performance in response of board-level IT governance. Enterprises can leverage this by the use of structures, processes, and relational mechanisms to adapt the right IT governance approach at the board.

The right IT governance model and measures need to be evaluated based on several factors. First, how mature are the enterprise regard to IT, second, what context or mode are they in, and third, where do they want to be in the future. However, the enterprise is perceived as mature, where they, for instance, have their IT strategy integrated in the overall business strategy. It is important to note that they could benefit from having a separate IT strategy, by

expressing the crucial role of technology in the future. Moreover, we see this as more important if the enterprise will continue to provide market-leading technology. Where the strategy is both a reminder and a clear way to communicate where the focus for the next years should be. Together with our other recommendations, the strategic approach will further provide business and IT alignment, which again will increase their business value.

6.3.2 Research Implications

The case study research has contributed to further knowledge on how board of directors governs IT and what measures they apply regarding structures, processes, and relational mechanisms. The case study reveals that there are no one-fit-all models for IT governance at the board-level but has to be adapted to each and every enterprise in order to provide strategic alignment of business and IT to enable business value. The findings may, therefore, not be fully generalizable but have to be seen in which context the enterprise finds themselves in and their future desires.

The research on IT governance at the board level is not complete, where especially processes and relational mechanisms are lacking research. There could be more measures regarding processes and relational mechanisms, to provide a more comprehensive guidance to boards. Based on this, future research should, therefore, aim to provide more measures that prove significant positive. The link between IT governance at the board-level and increased organizational performance could also be further examined. There are different variables that can mediate or moderate this link, where future research should aim to provide more intel on these variables in order to understand the consequences of increasing the engagement of board in IT governance.

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Appendix A: Interview Guide for the Chair and CEO

<div align="right">Stavanger, 22. april 2020</div>

Styreleder & CEO

Intervjuguide til styrets leder og daglig leder

Konfidensiell

Intervjuguide i masteroppgave for å besvare følgende problemstilling; «How does the Board of Directors govern IT in a medium-sized enterprise?»

Formålet med denne masteroppgaven er å kunne si noe om hvordan styret håndterer IT i virksomheten. Intervjuguiden er forankret i etablert teori om IT governance som vektlegger struktur, prosess og relasjonsmekanismer, for å best mulig håndtere digitalisering i virksomheten.

Før vi går i gang med intervjuguiden har vi noen innledende spørsmål:

- ☐ For å sikre korrekt transkribering ønsker vi å ta opp videosamtalen av dagens intervju. Som beskrevet i informasjonsskrivet, vil opptaket kun bli brukt av studentene; Sofie og Janne, og vi vil slette videoen etter masteroppgaven er innlevert og godkjent. Godkjenner du at vi tar opp videosamtalen vår i dag?
- ☐ I henhold til personvern ønsker vi at tredjepersoner ikke blir identifisert i løpet av intervjuet. Vi ber derfor om mer generell fremstilling ved for eksempel spørsmål om styremedlemmer.

Strukturer inkluderer roller og organisatoriske enheter som er ansvarlige for IT-beslutningsfunksjoner og muliggjør samordning mellom virksomhet og IT

1. Hvor mange medlemmer er det i styret? (Kane, Palmer, Phillips, Kiron, & Buckley, 2015)
2. Hvor ofte arrangeres styremøter? (Kane et al., 2015)
3. Er det noen fra organisasjonen som er en del av styret? (OECD, 2015)
4. Hva mener du er styrets overordnede rolle? (Baker, 2012)
5. Hva mener du er styrets rolle relatert til den digitale utvikling? (Andriole, 2009; Baker, 2012; Nolan & McFarlan, 2005)
6. Har virksomheten en CIO, eller tilsvarende rolle?
7. Hvis ja, hvem rapporterer CIO til? (Andriole 2009; Valentine & Stewart, 2013b)
8. Hvis ja, er CIO en del av styret? (Coerteze & von Solms, 2014)
9. Har virksomheten en IT-tilsynsgruppe eller komite for å håndtere digitalisering på styrenivå? (Coertze & von Solms, 2014; Nolan & McFarlan, 2005; Posthumus et al. 2010; Turel & Bart, 2014)
10. Hva er de viktigste grunnene for at virksomheten (ikke) har IT-styringsgruppe eller komite? (Andriole, 2009)
11. Har styremedlemmene forskjellige roller eller ansvarsområder internt i styret? (Andriole, 2009)
12. Hvor ofte deltar eksterne for å presentere informasjon om digitalisering? (Andriole 2009; Corteze & von Solms, 2014)
13. Har utviklingen innen digitalisering endret bedriftens kompetansebehov, eventuelt på hvilken måte? (Nolan & McFarlan, 2005)
14. Hvilke egenskaper og kompetanse blir vektlagt hos styremedlemmer? (Mohamad et al., 2014; Valentine & Stewart, 2015)
15. Har noen styremedlemmer formell utdanning eller erfaring fra IT?
16. Har styreleder formell utdanning eller erfaring fra IT?

Prosesser for formalisering av prosedyrer relatert til beslutninger og overvåkning av IT

17. Forskere har laget en matrise for å identifisere digitaliseringsbehovet i virksomheten. Hvor vil du plassere dere i matrisen under? (Nolan & McFarlan, 2005)

*Bedrifter i **Support Mode** er minst avhengig av IT; de som er i **Factory Mode** er mye mer avhengige av det, men er relativt lite ambisiøse når det gjelder strategisk bruk. Bedrifter i **Turnaround Mode** forventer at nye systemer vil endre virksomheten; de i **Strategic Mode** krever pålitelige systemer samt nye teknologier for å beholde eller fremme sine konkurranseposisjoner.*
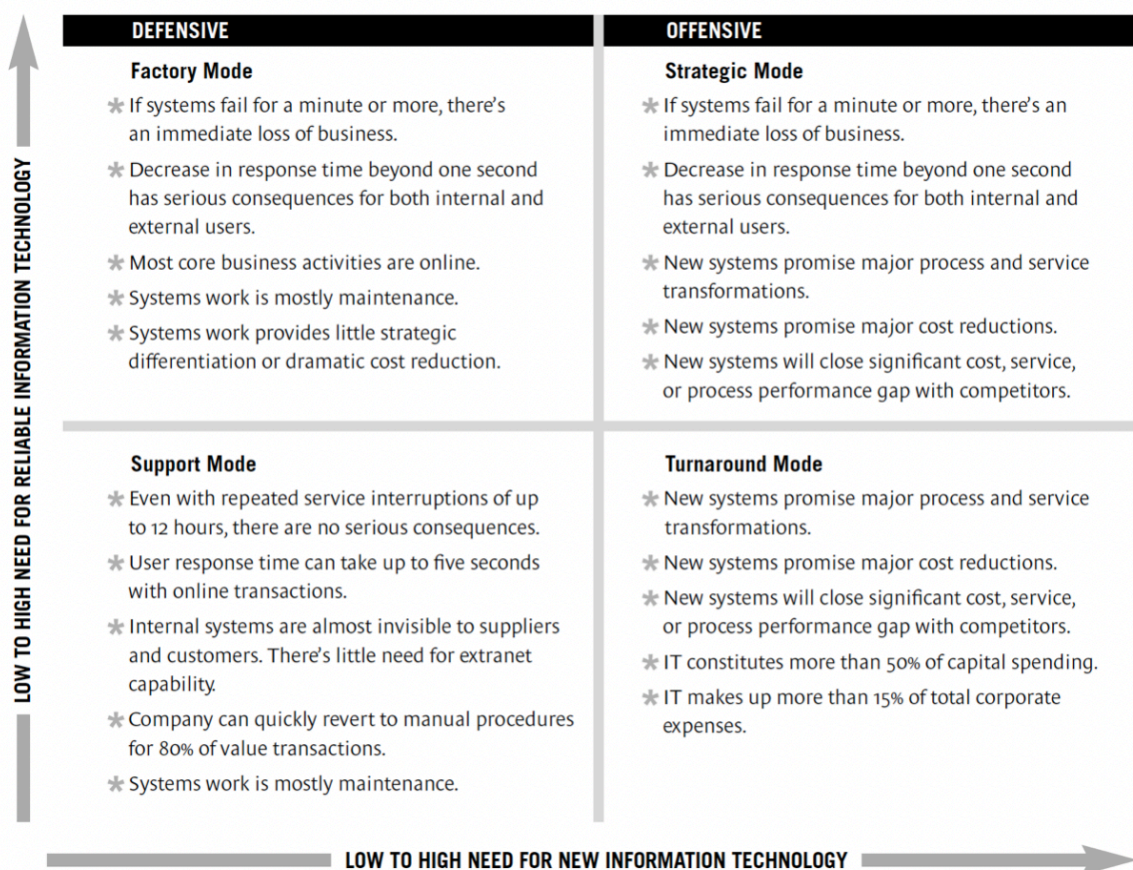
(Nolan & McFarland, 2005)

18. I hvilken grad er det viktig at investeringer knyttet til digitalisering er forenelig med den overordnede bedriftsstrategien? (De Haes & Van Grembergen 2015; Kane et al., 2015)

19. Hva er den viktigste verdiskapningen med digitaliserings for virksomheten? (Baker, 2012; Kane et al., 2015)

20. Hva mener du er viktigst å vurdere ved beslutning av nye IT investeringer? (Baker, 2012)

21. I hvilken grad er virksomheten forberedt på digitale trusler? (Andriole, 2009)

22. Bruker styret faste virkemidler ved vurdering av IT investeringer, f.eks. stiller faste spørsmål? (Bart & Turel, 2010, 2014; Nolan & McFarlan, 2005)

23. Hvilke utfordringer relatert til digitalisering opplever styret? (Kane et al., 2015)

Relasjonsmekanismer er de praksisene som tilrettelegger for samarbeid mellom ledelsen, styret og IT-ansvarlige

24. Opplever styret å få den nødvendige informasjonen i forkant av beslutninger om IT investeringer? (Andriole, 2009)

25. Hvor ofte, og på hvilken arena, kommuniserer styret med ledelsen og andre sentrale personer innenfor IT? (Andriole, 2009; Butler & Butler, 2010; Coertze & von Solms, 2014; Kuruzovich et al., 2012; Oliver & Walker, 2006; Yayla & Hu, 2014)

26. Opplever du at ledelsen, styret og andre sentrale personer innenfor IT, har samme mål med digitalisering for virksomheten? (Andriole, 2009; Caluwe & De Haes, 2019)

27. Er det noe du ønsker å tilføye?

Appendix B: Interview Guide for the S&D Manager

<div align="right">Stavanger, 29. april 2020</div>

Strategi- og utviklingssjef

Intervjuguide til strategi- og utvikligssjef

Konfidensiell

Intervjuguide i masteroppgave for å besvare følgende problemstilling; «How does the Board of Directors govern IT in a medium-sized enterprise?»

Før vi går i gang med intervjuguiden har vi noen innledende spørsmål:

- [ ] For å sikre korrekt transkribering ønsker vi å ta opp videosamtalen av dagens intervju. Som beskrevet i informasjonsskrivet, vil opptaket kun bli brukt av studentene; Sofie og Janne, og vi vil slette videoen etter masteroppgaven er innlevert og godkjent. Godkjenner du at vi tar opp videosamtalen vår i dag?
- [ ] I henhold til personvern ønsker vi at tredjepersoner ikke blir identifisert i løpet av intervjuet. Vi ber derfor om mer generell fremstilling ved for eksempel spørsmål om styremedlemmer.
- [ ] Formålet med denne masteroppgaven er å kunne si noe om hvordan styret håndterer IT i virksomheten. Intervjuguiden er forankret i etablert teori om IT governance som vektlegger struktur, prosess og relasjonsmekanismer, for å best mulig håndtere digitalisering i virksomheten. Kan du si noe om hvilket forhold har du til IT governance i ditt daglige arbeid som strategi- og utviklingssjef?
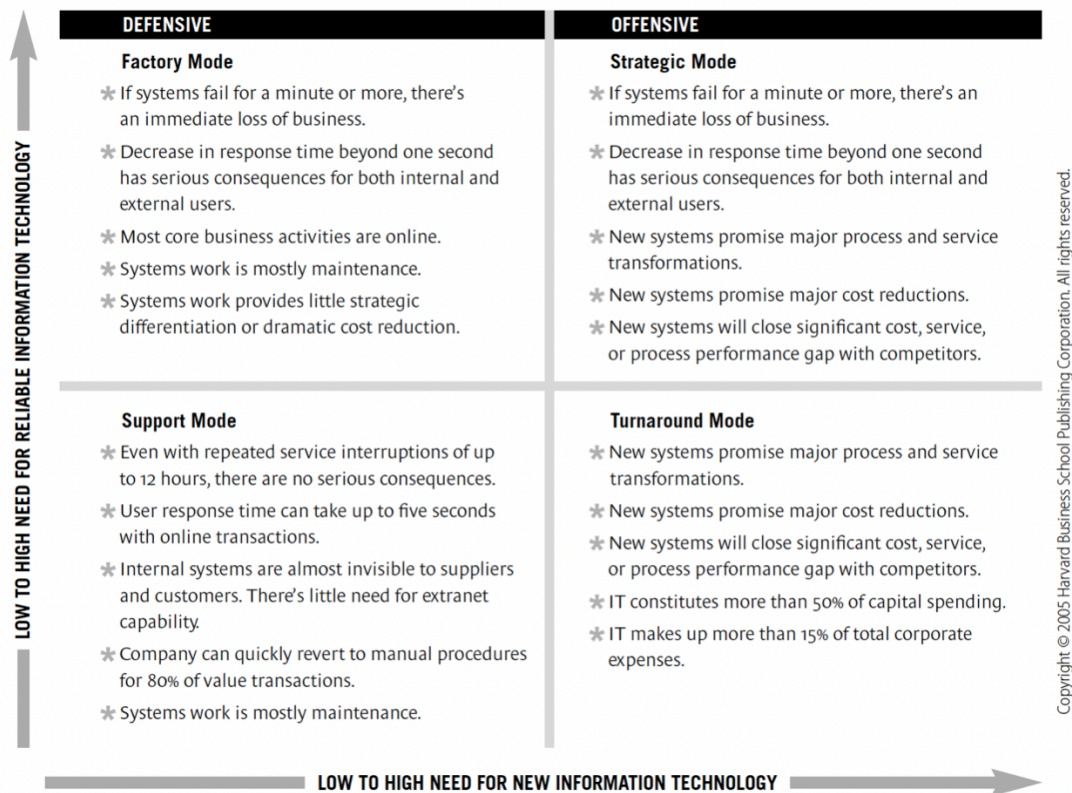
Strukturer inkluderer roller og organisatoriske enheter som er ansvarlige for IT-beslutningsfunksjoner og muliggjør samordning mellom virksomhet og IT

1. Hva mener du er styrets overordnede rolle? (Baker, 2012)
2. Hva mener du er styrets rolle relatert til den digitale utvikling? (Andriole, 2009; Baker, 2012; Nolan & McFarlan, 2005)
3. Hvordan fungerer din rolle sammenlignet med en CIO stilling? (De Haes & Van Grembergen, 2015)
4. Hvem rapporterer du til? (Andriole, 2009; Valentine & Stewart, 2013b)
5. Hadde du sett det hensiktsmessig at din rolle var en del av styret? (Coertze & von Solms, 2014; Posthumus et al., 2010)
6. Er det nødvendig med en IT-tilsynsgruppe eller komite for å håndtere digitalisering på styrenivå, etter din mening? (Coertze & von Solms, 2014; Nolan & McFarlan, 2005; Posthumus et al., 2010; Turel & Bart, 2014)
7. Hvor ofte deltar du på styremøter? (Posthumus et. al., 2010)
8. Har utviklingen innen digitalisering endret bedriftens kompetansebehov, eventuelt på hvilken måte? (Nolan & McFarlan, 2005)
9. Har styret, etter din mening, egenskaper og kompetanse som sikrer og utvikler digitalisering i virksomheten? (Mohamad et al., 2014; Valentine & Stewart, 2013a, 2015)

Prosesser for formalisering av prosedyrer relatert til beslutninger og overvåkning av IT

10. Forskere har laget en matrise for å identifisere digitaliseringsbehovet i virksomheten. Hvor vil du plassere dere i matrisen under? (Nolan & McFarland, 2005)

*Bedrifter i **Support Mode** er minst avhengig av IT; de som er i **Factory Mode** er mye mer avhengige av det, men er relativt lite ambisiøse når det gjelder strategisk bruk. Bedrifter i **Turnaround Mode** forventer at nye systemer vil endre virksomheten; de i **Strategic Mode** krever pålitelige systemer samt nye teknologier for å beholde eller fremme sine konkurranseposisjoner.*

DEFENSIVE	OFFENSIVE
Factory Mode * If systems fail for a minute or more, there's an immediate loss of business. * Decrease in response time beyond one second has serious consequences for both internal and external users. * Most core business activities are online. * Systems work is mostly maintenance. * Systems work provides little strategic differentiation or dramatic cost reduction.	**Strategic Mode** * If systems fail for a minute or more, there's an immediate loss of business. * Decrease in response time beyond one second has serious consequences for both internal and external users. * New systems promise major process and service transformations. * New systems promise major cost reductions. * New systems will close significant cost, service, or process performance gap with competitors.
Support Mode * Even with repeated service interruptions of up to 12 hours, there are no serious consequences. * User response time can take up to five seconds with online transactions. * Internal systems are almost invisible to suppliers and customers. There's little need for extranet capability. * Company can quickly revert to manual procedures for 80% of value transactions. * Systems work is mostly maintenance.	**Turnaround Mode** * New systems promise major process and service transformations. * New systems promise major cost reductions. * New systems will close significant cost, service, or process performance gap with competitors. * IT constitutes more than 50% of capital spending. * IT makes up more than 15% of total corporate expenses.

Vertical axis label: LOW TO HIGH NEED FOR RELIABLE INFORMATION TECHNOLOGY

Horizontal axis label: LOW TO HIGH NEED FOR NEW INFORMATION TECHNOLOGY

(Nolan & McFarland, 2005)

11. I hvilken grad er det viktig at investeringer knyttet til digitalisering er forenelig med den overordnede bedriftsstrategien? (De Haes & Van Grembergen 2015; Kane et al., 2015)

12. Hva er den viktigste verdiskapningen med digitaliserings for virksomheten? (Baker, 2012; Kane et al., 2015)

13. Hva mener du er viktigst å vurdere ved beslutning av nye IT investeringer? (Baker, 2012)

14. Burde styret bruker faste virkemidler ved vurdering av IT investeringer, f.eks. stiller faste spørsmål, etter din mening? (Bart & Turel, 2010, 2014; Nolan & McFarlan, 2005)

15. Hvilke utfordringer relatert til digitalisering tror du styret kan oppleve? (Kane et al., 2015)

16. I hvilken grad er virksomheten forberedt på digitale trusler? (Andriole, 2009)

Relasjonsmekanismer er de praksisene som tilrettelegger for samarbeid mellom ledelsen, styret og IT-ansvarlige

17. Opplever du at styret innhenter den nødvendige informasjonen i forkant av beslutninger om IT investeringer? (Andriole, 2009)
18. Hvor ofte, og på hvilken arena, kommuniserer andre sentrale personer innenfor IT med styret? (Andriole, 2009; Butler & Butler, 2010; Coertze & von Solms, 2014; Kuruzovich et al., 2012; Oliver & Walker, 2006; Yayla & Hu, 2014)
19. Opplever du at ledelsen, styret og andre sentrale personer innenfor IT, har samme mål med digitalisering for virksomheten? (Andriole, 2009; Caluwe & De Haes, 2019)
20. Er det noe du ønsker å tilføye?

Appendix C: Approval from the Norwegian Center for Research Data

NSD sin vurdering

Prosjekttittel
Masteroppgave

Referansenummer
184436

Registrert
30.01.2020 av Janne Igelkjøn Frydenberg - ji.frydenberg@stud.uis.no

Behandlingsansvarlig institusjon
Universitetet i Stavanger / Handelshøgskolen ved UiS

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)
Bjarte Ravndal, bjarte.ravndal@uis.no, tlf.: 51831593

Type prosjekt
Studentprosjekt, masterstudium

Kontaktinformasjon, student
Janne Frydenberg, jannefrydenberg@gmail.com, tlf.: 98666737

Prosjektperiode
03.02.2020 - 15.06.2020

Status
12.02.2020 – Vurdert (1)
30.04.2020 – Vurdert (2)

Vurdering (2)
30.04.2020 - Vurdert
NSD har vurdert endringen registrert 30.04.2020.

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 30.04.2020. Behandlingen kan fortsette.

Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 15.06.2020. Etter prosjektslutt vil data med personopplysninger oppbevares frem til 07.09.2020, i påvente av sensur. Data vil oppbevares internt ved behandlingsansvarlig institusjon.

SurveyXact er fjernet og Microsoft Teams er lagt til som databehandler i prosjektet. NSD legger til grunn at behandlingen oppfyller kravene til bruk av databehandler, jf. art 28 og 29.

OPPFØLGING AV PROSJEKTET
NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

Kontaktperson hos NSD: Marita Ådnanes Helleland
Tlf. Personverntjenester: 55 58 21 17 (tast 1)

Vurdering (1)
12.02.2020 - Vurdert
Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet 12.02.2020 med vedlegg, samt i meldingsdialogen mellom innmelder og NSD. Behandlingen kan starte.

MELD VESENTLIGE ENDRINGER
Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til NSD ved å oppdatere meldeskjemaet. Før du melder inn en endring, oppfordrer vi deg til å lese om hvilke typer endringer det er nødvendig å melde: https://nsd.no/personvernombud/meld_prosjekt/meld_endringer.html
Du må vente på svar fra NSD før endringen gjennomføres.

TYPE OPPLYSNINGER OG VARIGHET
Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 15.06.2020.

LOVLIG GRUNNLAG
Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

PERSONVERNPRINSIPPER
NSD vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om:
- lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen

- formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke viderebehandles til nye uforenlige formål
- dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet
- lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER

Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: åpenhet (art. 12), informasjon (art. 13), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19), dataportabilitet (art. 20). NSD vurderer at informasjonen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER

NSD legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32). SurveyXact er databehandler i prosjektet. NSD legger til grunn at behandlingen oppfyller kravene til bruk av databehandler, jf. art 28 og 29.

For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og eventuelt rådføre dere med behandlingsansvarlig institusjon.

OPPFØLGING AV PROSJEKTET NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

Kontaktperson hos NSD: Marita Ådnanes Helleland

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

Appendix D: Declaration of Consent

Vil du delta i forskningsprosjektet om
«How does the Board of Directors govern IT in a medium-sized enterprise»

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor målet er å kunne si noe om modenheten på digitalisering i styrerommet; hvordan styret påvirker og styrer IT i virksomheten. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål
Formålet med denne masteroppgaven er å kunne si noe om hvordan styret håndterer IT i virksomheten. For å kunne svare på dette gjennomføres først noen observasjoner i styrerommet, dernest semi-strukturerte dybdeintervjuer og analyse av styreprotokoller.

Hvem er ansvarlig for forskningsprosjektet?
Universitetet i Stavanger er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?
Dette er en casestudie og utvalget skal være representativt for en mellomstor bedrift som fokuserer på digitalisering. Informanter skal være sentrale personer i styrearbeid, ledelsen og IT-personell.

Hva innebærer det for deg å delta?

Ved å delta i prosjektet, innebærer det et intervju på ca. 1-1,5 time. Intervjuet er for å gi forfatterne av oppgaven en bedre forståelse for hvordan styret styrer IT i virksomheten. Intervjuet vil bli tatt opp på video- og lydbånd og det vil bli tatt skriftlige notater underveis.

Det er frivillig å delta
Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykke tilbake uten å oppgi noen grunn. Alle opplysninger om deg blir anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger
Microsoft Teams benyttes til innhenting av data gjennom intervju. Videre vil opplysningene bli lagret, i forskningsperioden, på en kryptert ekstern minnepenn. Vi vil bare bruke

opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Personer som vil ha tilgang til opplysninger gitt i intervju gjelder student Sofie Birkedal og student Janne Frydenberg. Vi vil sikre at ingen uvedkommende får tilgang til eventuelle personopplysninger og vi vil anonymisere eventuelle navn med «informant» ol.

Som deltaker i dette forskningsprosjektet vil du ikke kunne gjenkjennes i publikasjonen. Det er generelle opplysninger som sier noe om tendenser til modenhet i styrerommet som rettes fokus mot.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?
Prosjektet skal etter planen avsluttes 15. juni 2020. Personopplysninger vil bli slettet når sensur for oppgaven foreligger, som per i dag er datert 7. september 2020.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:
- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke. På oppdrag fra Universitetet i Stavanger har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:
- Universitetet i Stavanger ved Bjarte Ravndal, på e-post: bjarte.ravndal@uis.no
- NSD – Norsk senter for forskningsdata AS, på epost: nsd@nsd.no eller telefon: 55 58 21 17.

Med vennlig hilsen

Bjarte Ravndal
Prosjektansvarlig, veileder   Student, forsker

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «modenhet på digitalisering i styrerommet», og har fått anledning til å stille spørsmål. Jeg samtykker til:

☐ observasjon i styrerommet
☐ å delta i intervju

Jeg samtykker til at mine opplysninger behandles frem til prosjekt slutt, medio september 2020.

(Signert av prosjektdeltaker, dato)