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IT GOVERNANCE AND DIGITAL TRANSFORMATION: ASSESSING GOVERNANCE CONTINGENCIES IN LARGE FINNISH BANKS WITH COBIT 2019



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ABSTRACT

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Widespread digital change in the banking sector has prompted the need for digital transformation. Digital transformation refers to organization-wide change influenced by information technology (IT). IT governance covers the management and assignment of the roles and responsibilities related to IT and has evolved to meet the needs of digital change. Based on the findings in contingency analysis research, IT governance has organization-specific factors that require closer evaluation for its successful implementation. COBIT 2019 is an IT governance framework that provides tools to assess contingencies related to a specific organization. Specifically, COBIT 2019 allows enterprises to assess governance factors tailored to their context through "design factors". In this thesis, externally measurable factors within the refinement stage of the framework were applied to large Finnish banks. Through this process specific contingencies that affect all the target constituents were outlined. The conclusions are as follows. Large Finnish banks' integral position in the financial system has produced an elevated level of information security threats in their threat landscape. The cohort has a strategic role of IT as IT has become critical for running the business while also being an innovation method. The cohort has a hybrid sourcing model of IT where both external and internal capabilities are utilized. Finally, the cohort has a follower technology adoption strategy where banks mainly innovate by adopting proven technologies.

Keywords: IT Governance, digital transformation, COBIT 2019, design factors
Finnish banking, contingency theory

TIIVISTELMÄ

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Ohjaaja: Kokko, Tuomas

Laaja-alainen digitaalinen muutos on vaatinut pankeilta uudistumista digitaalisen transformaation avulla. Digitaalinen transformatio viittaa informaatioteknologian (IT) aiheuttamaan organisaatiolaajuiseen muutokseen. Tietohallinto (engl. IT governance) käsittelee IT:hen liittyvien roolien ja prosessien vastuunjakoja ja johtamista. Kontingenssiteorian mukaan jokaisella yrityksellä on organisaatiokohtaisia tekijöitä, joiden arviointi mahdollistaa tietohallinnon mukauttamista organisaation omaan kontekstiin. COBIT 2019 on tietohallinnon viitekehys, jonka avulla voidaan muodostaa nämä organisaatiokohtaiset tekijät. Viitekehyksessä suunnittelutekijät (engl. design factors) ovat työkalu tietohallinnon organisaatiokohtaiseen mukauttamiseen. Tässä tutkielmassa viitekehysten ulkoisesti arvioitavat suunnittelutekijät kohdistettiin isoihin suomalaisiin pankkeihin seuraavin tuloksin. Kohderyhmän tietoturvaluhat (engl. threat landscape) ovat korkeat. Pankit ovat finanssijärjestelmän keskiössä, jonka takia ne ovat olleet useiden uhkien ja toimijoiden tietoturvahyökkäysten kohteena. Kohderyhmässä IT:n rooli (engl. role of IT) on strateginen. Tämä tarkoittaa, että pankit tekevät liiketoimintaa IT:n avulla sekä käyttävät sitä innovaatioon. Kohderyhmän IT:n hankintamalli (engl. IT sourcing model) on hybridi eli pankit hyödyntävät sisäisiä ja ulkoisia kyvykkyyksiä IT:ssä. Kohderyhmän pankit ovat seuraajia teknologian käyttöönottostrategiassa (engl. technology adoption strategy), sillä ne käyttööön ottavat teknologioita vasta, kun niiden toimivuus on todistettu.

Asiasanat: Tietohallinto, digitaalinen transformatio, COBIT 2019, suunnittelutyökalut, Suomen pankkiala, kontingenssiteoria

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1 INTRODUCTION

IT governance is the top-level function that allocates roles and duties connected to an organization's IT (Weill & Ross, 2004). While IT investments continue to be made for improving an organization's efficiency and effectivity, recent practices have also expanded IT governance to be an approach for finding competitive advantages, and responding to the disruptive impacts of technology with IT (Peppard & Ward, 2004). This organizational change prompted by a widespread embrace of technological innovation is referred to as digital transformation (Hanelt et al., 2021).

Digital entrants have fuelled disruption across industry lines affecting both direct and indirect incumbents (Verhoef et al., 2021). Characteristically, disruptive IT innovation creates new technologies and opportunities but at the expense of existing incumbents (Ebert & Duarte, 2018; Lyytinen & Rose, 2003). Digital technologies, digital competitors and digitally shifting consumer behaviour has left many businesses with no option but to reinvent themselves through digital transformation (Verhoef et al., 2021).

Fundamentally, Banks act as intermediaries between savers and borrowers, offering loan and deposit services and payment and transfer services (Broby, 2021; Buchak et al., 2017; Murinde et al., 2022). While technological advancement has enabled banks to utilize more IT benefits it has also increased competition from non-traditional operators and other banks (Buchak et al., 2017). Moreover, the management practices that govern technologies have not kept up with its rapid advancement rate (Campanella et al., 2017). As a result, banks face challenges in finding a positive balance between IT and organizational structures, and business processes (Campanella et al., 2017).

This thesis will review how IT governance controls IT and digital transformation and what contingencies affect its efficacy. With this foundation it will outline externally assessable factors that can refine and enhance the IT governance of large Finnish banks. The assessment of the cohort will be done utilizing COBIT 2019. COBIT 2019 is a framework enterprises utilize to develop, organize, and implement tailored IT governance systems (De Haes et al., 2020).

The scientific literature referenced in this thesis was gathered through the following databases: ResearchGate, Scopus, JYKDOK and Google Scholar. The following search terms were used in the search process: “digital transformation”, “IT governance”, “IT Control”, “digital disruption”, “change management”, “digital change”, “change resistance”, “corporate governance”, “COBIT 2019”, “banking innovation”, “banking disruption”, “banking regulation”, “IT governance and banking”, “IT control and banks”, “IT Management and banks” and “Finnish banking”. This thesis also references websites and documents of Finnish banks, websites of Finnish banking regulators and official COBIT 2019 framework documents and articles, published by the Information Systems Audit and Control Association (ISACA). These sources are utilized to provide additional and up-to-date insight for the assessment of COBIT 2019 and large Finnish banks. This thesis is a literature review and aims to answer the following research questions:

- 1) How is COBIT 2019 in line with research on IT governance contingency analysis?
- 2) What are the contingencies that can refine IT governance in large Finnish banks?

2 DIGITAL TRANSFORMATION AND IT GOVERNANCE

This chapter presents an overview of digital transformation and IT governance. It covers the isolated aspects and relations of both concepts. It also provides a general overview of issues companies face in IT governance and why tailoring its implementation is considered essential to its efficacy.

2.1 Digital Transformation

This section discusses how digital transformation has gained prevalence in information systems research, and how literature views it in the context of digitalization and other research areas. It conveys how digital transformation has organization wide effects. Furthermore, it discusses what factors affect its strategy and lists management processes and organizational structures that can improve its outcomes.

2.1.1 Digital Transformation: Fundamentals

Digital transformation has had differing specifications based on the context of discussion. Focusing on value generation for transforming organizations, Fitzgerald et al. (2013) view digital transformation as utilizing new digital technologies to fuel substantial business advancements. With a focus on its technical application, Liu et al. (2011) refer to digital transformation as the integration of business with digital technologies. Certain researchers also point out that an organizations digital transformations have societal effects, such as improving accessibility to technologies and influencing changes in the education system to meet newly needed skills (Ebert & Duarte, 2018; Parviainen et al., 2022). A consensus among numerous authors on digital transformation has focused on intertwining technicality and business goals, which will serve as its definition in this thesis. These definitions describe digital transformation as organization-

wide change that leverages digital technologies to create new business models, products, and services to transform the way companies create and capture value (Ebert & Duarte, 2018; Matt et al., 2015; Petruzzelli et al., 2020, p. 24; Verhoef et al., 2021, p. 889).

It is relevant to separate digitalization from digital transformation. Digitalization is generally discussed as the changes digital technology causes in all aspects of society while digital transformation focuses on technological developments and effects on an organizational level (Parviainen et al., 2022). IN research this is illustrated through the structure of digital transformation. Nadkarni & Prügl (2021) examine digital transformation in two dimensions: the technology dimension and the actor dimension. Technology covers changes that digital technologies cause in an organization whilst actors refer to human effectors in the organization such as governance, processes, organizational cultures, and work environments (Nadkarni & Prügl, 2021).

Similarly, Ebert & Duarte (2018) present a two-dimensional approach to digital transformation, in which people and the organization act together with IT. Their perspective highlights the convergence of these dimensions, resulting in improved customer and business value (Ebert & Duarte, 2018). Fundamentally, digital transformation distinguishes itself from isolated IT strategies by prioritizing both technical and business considerations in the integration of new technologies within an organization (Hess et al., 2016; Matt et al., 2015).

2.1.2 Digital Transformation: Holistic Change

IT strategies usually focus on managing IT infrastructure and application systems while overlooking the business-centric orientation that is required to realize the potential of digital change (Hess et al., 2016). Effective digital transformation demands change at multiple levels throughout an organization, in areas such as adapting the core business, sharing capabilities and resources, redefining structures and processes, and modifying organizational oversight (Nadkarni & Prügl, 2021). Digital transformation strategy is the central concept which integrates an organizations internal coordination, prioritisation, and implementation of digital transformation (Matt et al., 2015).

An organization's ability to instantiate digital transformation is discussed under organizational agility. Organizational agility refers to an organizations proficiency to continuously monitor and react to market change (Lee et al., 2015). With this in mind, IT ambidexterity – an organization's capability to pursue both exploratory and exploitative IT initiatives at the same time (Gregory et al., 2015; Lee et al., 2015), can also be seen as interlinked with digital transformation. Ebert & Duarte (2018, p. 17) note that digital transformation causes organizations to reorganize their operations into two distinct modes. A standard mode is where the traditional business continues to operate, and a disruptive mode is where the business attempts to disrupt and innovate through new markets, technologies, services, and processes (Ebert & Duarte, 2018, p. 17). In like manner, exploitative initiatives focus on improving current technologies

and processes whilst exploratory initiatives experiment with new ones (Gregory et al., 2015; Lee et al., 2015).

Lee et al. (2015) conducted a quantitative study of 202 organizations and found that IT ambidexterity plays a crucial role in improving organizational agility. The study suggests that organizations should strive to balance their exploratory and exploitative initiatives to adapt to changes while maintaining a stable foundation in their existing operations (Lee et al., 2015). Implementing balance in practice can have structural and cultural headwinds. Hess et al. (2016) see that executives with profitable core businesses may not see urgency for digital transformation due to potential risks. Ebert and Duarte (2018) argue that market leaders do not want to cannibalize or disrupt their existing business and so rarely engage in digital transformations, especially if they are riskier and limited in scope. This mostly leaves disruptive companies to explore the potential gaps left by market leaders and drive market change (Ebert & Duarte, 2018; Hess et al., 2016). Hess et al. (2016) stress that this market environment causes sometimes fast and potentially fatal environmental change effects for the relatively stagnant companies that are affected by disruptive initiatives.

2.1.3 Digital Transformation: Managing Change

Matt et al. (2015) point out that digital transformations' organization-wide effect may cause resistance from different areas within organizations. Waddell and Sohal (1998) note that change resistance is not directly related to change itself but the uncertainties and risks related to it. Managers must communicate and consult regularly with their employees to solve change-related problems. At the same time, resistance should be managed by providing employees with sufficient resources so the focus is not on potentially irrelevant issues (Waddell & Sohal, 1998).

The concept of strategic alignment is relevant to IT ambidexterity, change resistance and digital transformation's holistic effects. Strategic alignment, according to Henderson and Venkatraman (1990), is the level of fit and integration among business strategy, IT strategy, business infrastructure, and IT infrastructure. Achieving this alignment is crucial in transforming organizations with IT (Henderson & Venkatraman, 1990). From another perspective, Avison et al. (2004, p. 299) view strategic alignment as an evolving state with long periods of constancy and shorter periods of revolutionary change, guided by senior management.

Lee et al. (2015) find that strategic alignment and flexible IT infrastructure are crucial in ensuring organizational agility. To make sure that this happens, effective change management is required. This is because change, by definition, requires the development of a new system which necessitates capable management (Kotter, 1995). The necessary points of focus in change management can be identified in Kotter's (1995) eight stages of successful change: establishing a sense of urgency, creating a guiding coalition, developing a vision and strategy, communicating the change vision, empowering broad-based action, generating

short-term wins, consolidating gains and producing more change, and anchoring new approaches in organizational culture.

Organizational culture is often separately emphasized in digital transformation literature as successful implementation may require deep cultural change (Nadkarni & Prüggl, 2021; Parviainen et al., 2022). Most significantly, employees usually need to learn and adapt to new skills to enable the capabilities provided by digital change (Hess et al., 2016; Nadkarni & Prüggl, 2021; Petruzzelli et al., 2020). According to Kotter (1995) changing organizational culture can take five to ten years causing changes to be fragile and subject to potential regression. Making sure change is internalized can be seen as a strong factor for successful digital transformation translating to change managements continued focality for senior management.

Literature on disruptive innovation highlights how actively involved senior management is essential in anti-disruptive change projects (Karimi & Walter, 2015). Between 66% to 84% of digital transformation projects fail due to issues in strategic planning and implementation (Petruzzelli et al., 2020). Traditionally, senior executives and governing bodies have been able to disregard or avoid making decisions related to IT but its growing weight in modern businesses has made it too costly to ignore (De Haes & Van Grembergen, 2009). Matt et al. (2015) find that organizations that fail in their digital transformation projects are highly susceptible to being replaced by successful competitors. This requires agility from senior management who should have structures to manage IT and incentivize digital transformation in the areas where it is needed (Fitzgerald et al., 2013; Matt et al., 2015).

2.2 IT Governance

This section will define governance related concepts including corporate governance, IT governance and enterprise governance of IT. It will provide an overview of relevant literature and build towards the contingency analysis findings in IT governance research.

2.2.1 IT Governance: A Subset of Corporate Governance

IT governance tenets and policies are a subset of corporate governance (De Haes & Van Grembergen, 2009; Weill & Ross, 2004). Cheffins (2011) explains that in the 1970s, corporate governance was used to characterise the connection between managers, directors, and shareholders of publicly traded corporations in the United States. In the 1990s, corporate governance gained prevalence globally with numerous countries developing their own codes and standards for nationally guided implementations (Cheffins, 2011).

In its modern context, Monks and Minow (2011) describe corporate governance as the system of policies, standards and processes that regulate how an organisation is controlled. It includes the allocation of duties, incentives and

benefits among stakeholders and the processes to manage their occasionally differing interests based on their roles, responsibilities, and privileges (Monks & Minow, 2011; Shleifer & Vishny, 1997). In other words, it entails the oversight, control, and communication processes that act as a system of governing rules for an organization, usually influenced by a board of directors (Monks & Minow, 2011).

Holt (2013) points out that The Organization for Economic Co-operation and Development (OECD) consisting of 38 member countries created corporate governance principles as a standard for effective corporate governance. The first principle is the basis for an effective corporate governance framework. Organizations should follow legislation and promote efficient and transparent markets. Second, corporate governance should protect and ensure shareholder rights. Third, minority and foreign shareholders should be treated equitably. Fourth, the corporate governance framework must acknowledge the rights of stakeholders in agreements and legislation and encourage co-operation towards common goals. Fifth, the corporate governance framework should facilitate transparent, timely and honest reporting on the company's financials, ownership, operations, and governance. Sixth, the board should strategically guide the organization and evaluate managements performance while being accountable to the organization and its shareholders (Holt, 2013, pp. 8-9).

The second and sixth governance principles can be seen as pre-emptive measures towards the agency problem. In the agency problem conflict of interest results between senior managers and shareholders because the former has greater knowledge and influence over the company, and may prioritize their own interests (Beatty & Zajac, 1990; Rutherford et al., 2007; Shleifer & Vishny, 1997). The board of directors, incentives, takeovers, monitoring, and shareholder activism are among proposed solutions for the agency problem (Shleifer & Vishny, 1997).

Corporate governance has also been discussed from the perspective of its connection to Corporate Social Responsibility (CSR) through how corporations serve people, communities, and the environment in ways that go beyond what is legally required (Jo & Harjoto, 2012). Zaman et al. (2022) cover different integrated reporting frameworks between CSR and corporate governance such as Environmental, Social and Governance (ESG) and the Global Reporting Initiative (GRI), that have seen social, internal and institutional pressure towards being widely incorporated in companies.

2.2.2 IT Governance: A Growing Criticality of IT within Business

The innings of IT governance can be linked to prior information systems research done as early as in the 1960s. Garrity (1963) researched how the responsibilities, structures, and metrics in IT can affect business performance (Brown & Grant, 2005; Jacobson, 2009). Zmud et al. (1986) noted that cross department IT was making concentrated information systems management ineffective, and that new strategic activities were needed. This included enterprise-wide IT decisions and management activities that focused on realizing IT potential across

the organization (Zmud et al., 1986). In the 1990s, Loh & Venkatraman (1992) and later Henderson & Venkatraman (1993) would use the term “IT governance” to describe the system of processes organizations could utilize to attain desired IT capabilities (Brown & Grant, 2005), which can be considered as a basis for its modern applications.

Another major influence on modern IT governance is the Sarbanes-Oxley act. Brown and Grant (2005) explain that in 2002 the United States passed the Sarbanes-Oxley Act to improve the accountability of corporations to shareholders and stakeholders. Firms were forced to re-evaluate their corporate governance systems due to increased transparency requirements (Brown & Grant, 2005). The increased focus on overall governance frameworks prompted reassessment of underlying governance, especially towards governance of IT and control of IT (Brown & Grant, 2005; Jacobson, 2009).

Holt (2013) identifies numerous reasons to focus governance resources on IT compared to other disciplines such as human resources (HR) and finance. IT has complex, specialized and quickly evolving terminology. It also has as recently as in the 1970s been an isolated domain within organizations. In comparison governing bodies have focused on managing their people and assessing finances for much longer even if they have had no direct or academic experiences in the area. Furthermore, Finance and HR professionals have become accustomed to communicating their reports in understandable and established language while a vast amount IT terminology continues to evolve and is not generalized (Holt, 2013).

2.2.3 IT Governance: Concept, Terminology and COBIT

Alreemy et al. (2016) describe IT governance as the assigned policies, practises, duties, and responsibilities that guide IT investments towards an organizations strategic goals. Weill & Ross (2004) specify that IT governance is about assigning decision rights, input rights and responsibilities whilst IT management is focused on implementing the specific decisions related to IT. The IT governance framework, COBIT 2019 similarly refers to IT governance and IT management as two different bodies. ISACA’s (2018) COBIT 2019 guidelines explain that the governing body (board of directors) assigns corporate objectives and directs senior management (executive leadership). In contrast, senior management plans, constructs, operates, and monitors the organizations operations (ISACA, 2018).

De Haes et al. (2013) point out that IT governance practitioners and researchers have evaluated the costs and benefits of IT due to its rapid growth. This has led to a need for solutions that can manage risks and create value (De Haes et al., 2013). However, this direction has been seen as limited by researchers. Jacobson (2009) notes that IT governance is complex, dynamic and evolving by nature. He asserts that despite the importance of investment return evaluation there are numerous other essential areas it oversees. He asserts that focus should be placed on how IT governance is implemented in practice, and how that process links to business performance (Jacobson, 2009).

Peterson (2004) who similarly discusses IT governance as complex and dynamic, emphasizes its connection to the coordination of multiple value drivers such as efficiency, flexibility, and innovation (Peterson, 2004). Peterson (2004) describes its structure as "structural (formal) devices and mechanisms for connecting and enabling horizontal, or liaison, contacts between business and IT management (decision-making) functions".

The relationality of business and IT in IT governance's structure relates to Siregar and Harahap's (2021) view where IT governance focuses on the relationship, integration and alignment of business and IT within organizations. Moreover, these conclusions can be directly linked to strategic alignment which De Haes and Van Grembergen (2009) find to be in conjunction with effective IT governance. Hanelt et al. (2021) discuss this "integration" as a post innovation mechanism under digital transformation. In integration the digital transformation strategy pivots to focus on aligning existing resources, processes, and capabilities after the implementation of a new technology (Hanelt et al., 2021).

De Haes and Van Grembergen (2009) contend that the term of "IT governance" itself is flawed due to it moving the discussion away from the business elements of governing IT. According to them the concept is seeing increased use under the term Enterprise Governance of IT (EGIT) which they categorize as a set of structures, processes, and relational mechanisms that support IT decision-making and strategic alignment to create value from IT. COBIT 2019 also outlines EGIT as a vehicle for delivering value from digital transformation whilst mitigating its business risks (ISACA, 2018).

Despite mainly using EGIT, COBIT 2019 also uses governance of enterprise information and technology, governance of IT and IT governance as interconvertible terms for it (ISACA, 2018). Due to its prevalence in the COBIT framework but limited use in literature as a term, this thesis uses the concept of EGIT under the term IT governance, which is more prevalently used in literature.

2.2.4 IT Governance: Contingency Analysis

Brown and Grant (2005) assess bipolarity in traditional IT governance as centralized governance and decentralized governance. Centralized governance has one concentrated body providing and managing IT for an entire organization. Decentralized governance involves multiple IT departments managing their IT and providing IT to their specified business unit (Brown & Grant, 2005). Weill and Ross (2004) divert from bipolarity and classify IT governance into six more specific archetypes where IT decisions are assigned more specifically, providing a scale against the two extremes. Furthermore, the Peterson (2004) case conglomerate Johnson & Johnson saw numerous business units continuously resisting centralized decision-making for IT. A federal governance model where the Chief Information Officer (CIO) had to actively balance between business autonomy and corporate control was forced in place to realize sought after IT changes and benefits (Peterson, 2004). This relates to Brown and Grant's (2005) conclusion that there is no universal IT governance solution, and that it is con-

tingent on various factors specific to an organization. This includes its size, structure, culture, strategy, and external environment (Brown & Grant, 2005).

3 COBIT 2019

COBIT is generally viewed as the most recognized, used and accepted IT governance framework in IT governance literature (Priyadarsini & Kumar, 2022). The COBIT 2019 framework is used in this thesis to assess externally measurable IT governance contingencies in large Finnish banks. This chapter focuses on breaking down what COBIT 2019 is and defining a tool for contingency assessment in the framework, design factors.

3.1 COBIT 2019: Historical Foundation

COBIT was first released in 1996 when ISACA published a framework for financial professionals auditing IT (De Haes et al., 2013). Two years later the second version of COBIT expanded the framework towards a comprehensive system of “control objectives for IT” (De Haes et al., 2013). Recognizing the organizational need for governance of IT, ISACA would also create the IT Governance Institute (ITGI) to connect discussion and research of IT governance (De Haes et al., 2020)

De Haes et al. (2013) explain that the third version of COBIT released in 2000 added a set of management guidelines such as critical success factors and measures for IT processes. In 2005 COBIT 4 solidified itself as a generally accepted framework for IT governance by defining several new management and governance tools, including alignment of IT with business, assigning IT responsibilities within IT processes, and evaluating guidelines for the relations of different IT processes (De Haes et al., 2013).

De Haes et al. (2013) write that ISACA released the Val IT and Risk IT frameworks in 2009 and 2010, respectively. They focused on IT-processes and responsibilities related to value generation (Val IT) and risk management (Risk IT) (De Haes et al., 2013). In 2013, COBIT 5 merged Val IT, Risk IT and COBIT to create a single integrated framework for IT Governance and IT management and strengthened its ties to other standards and frameworks such as ISO 38500,

ITIL and TOGAF (De Haes et al., 2020). For example, COBIT 5's distinction between IT governance and management processes is derivative of the ISO 38500, an international standard for corporate governance of IT (De Haes et al., 2013; ISACA, 2018).

3.2 COBIT 2019: Fundamentals

COBIT 2019, released in November 2018 is the latest version of the COBIT framework (ISACA, 2018). It aims to enable more widely applicable implementation of IT Governance and assists enterprises in understanding, designing, and implementing IT governance whilst tailoring it towards their specific needs (De Haes et al., 2020; ISACA, 2018). Specifically, COBIT 2019 updates its core principles, redraws its goals cascade, introduces three new processes, introduces focus areas to offer concentrated guidance on specific situations and introduces design factors to tailor IT governance to an organization (Steuperaert, 2019).

COBIT 2019 does not make decisions for an organization but outlines governance components that specify which choices should be made, how they should be made and by whom (De Haes et al., 2020; ISACA, 2018). Component types are processes, organizational structures, information flows, culture and behaviours, and skills (De Haes et al., 2020; ISACA, 2018; Steuperaert, 2019). The overarching goals built by components are more comprehensively discussed under each separate objective for governance and management (ISACA, 2018).

The core of COBIT is consistent with the three IT Governance Horizontal Integration Capabilities (HICs): structural capability (connection), process capability (coordination) and relational capability (collaboration) identified by Peterson (2004). Peterson (2004) explains how HICs should be the emphasis in IT Governance as they characterise the capacity to coordinate and integrate formal and informal IT decision-making authority across business and IT groups. COBIT's components offer a foundation to run this type of a governance system but the framework also offers touch points to assessing and implementing it through design factors (ISACA, 2018).

3.3 COBIT 2019: Core Principles

COBIT 2019 is divided into two sets of principles: governance system principles and governance framework principles. Governance system principles (Figure 1) are the core requirements for an IT governance system whilst governance framework principles (Figure 2) cover focus points for building an IT governance system (De Haes et al., 2020; ISACA, 2018; Steuperaert, 2019).

COBIT 2019s principal governance system model adds one new principal to COBIT 5s: “Tailoring to enterprise needs” (ISACA, 2018). The addition enables organizations to more effectively design, operate and develop a governance system that is focused towards their contextual needs and is tied to the addition of design factors in the framework (De Haes et al., 2020; Steuperaert, 2019).

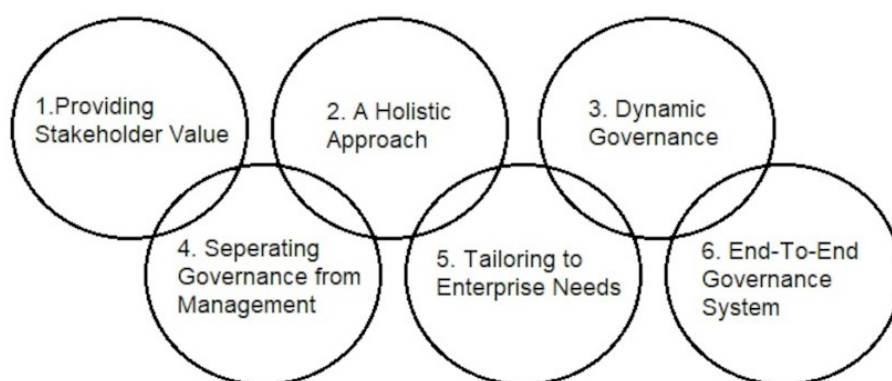


FIGURE 1 Governance Management System

1. Providing stakeholder value: Corporate governance must ensure that the organization provides value to stakeholders through the IT they utilize (ISACA, 2018, p. 17). It must guarantee that the needs, conditions, and options of all stakeholders are assessed in IT governance (De Haes et al., 2020; ISACA, 2018). In the context of digital transformation it requires the revamping of the processes and procedures used to generate value (Petruzzelli et al., 2020).
2. Enabling a holistic approach: IT governance should have a holistic approach and take into account all aspects of the organization (De Haes et al., 2020; ISACA, 2018).
3. Dynamic governance: As discussed by Jacobson (2009) and Peterson (2004) IT governance requires dynamicity. In COBIT the governance system needs to be flexible and able to meet the changing needs and requirements of the enterprise (ISACA, 2018).
4. Separating governance from management: Dividing governance and management enables the governing body to assess managements performance, offer oversight towards goals and general guidance (De Haes et al., 2020).
5. Tailoring to enterprise needs: An enterprises needs are based on external and internal factors specified as design factors in COBIT (De Haes et al., 2020; ISACA, 2018; Steuperaert, 2019). Design factors like compliance re-

quirements and enterprise goals influence what an organization should prioritize in their governance system (De Haes et al., 2020) .

6. End-To-End governance system: Governance shouldn't prioritize certain IT-related processes but address it from the perspective of the whole enterprise (ISACA, 2018).

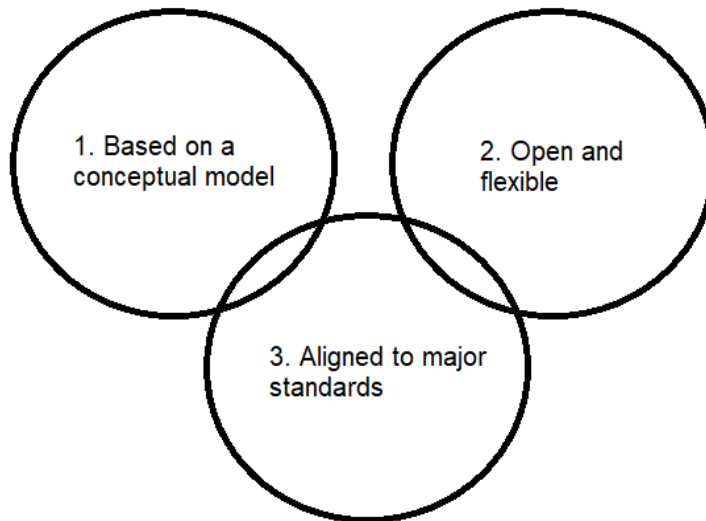


FIGURE 2 Governance Framework Model

1. To achieve consistency and facilitate automation, a governance framework should be built on a conceptual model that identifies major components and the interactions between them (De Haes et al., 2020; ISACA, 2018).
2. The governance framework should be flexible enough to allow for the inclusion of new contents and enable the capacity to address new concerns whilst maintaining transparency, integrity and consistency (ISACA, 2018).
3. The governance framework should be in line with relevant standards, frameworks and regulations (ISACA, 2018).

3.4 COBIT 2019: Contingency Tools

COBIT 2019 offers different tools to both assess and act in IT governance, such as design factors and governance and management objectives (ISACA, 2018). Next, this thesis covers these two tools and how they are utilized within the framework, to apply IT governance to an organization's contingencies.

3.4.1 Contingency Tools: Design Factors

Aligning with the 5th core principle to tailor a governance system, COBIT 2019 specifies external and internal contingencies referred to as design factors, which can be used to evaluate an organizations different contexts (De Haes et al., 2020; Steuperaert, 2019). Through their assessment the components that form an IT governance system are formed to adapt COBIT to an organizations specific setting (De Haes et al., 2020; Rafeq, 2019). There is a total of 10 design factors in COBIT 2019. Enterprise strategy, enterprise goals and risk profile can be utilized to construct the foundation of an organizations IT governance and enterprise size, threat landscape, compliance requirements, role of IT, sourcing model for IT, IT implementation methods and technology adoption strategy can be used to refine it to specific contingencies (ISACA, 2018; Rafeq, 2019). Not all design factors are necessary for evaluating an organizations IT governance and should be chosen based on an organizations specific needs (Rafeq, 2019).

De Haes et al. (2020) emphasize that COBIT's utilization of design factors is in line with prior research on contingency analysis in IT governance. As Brown and Grant (2005) conclude the process of analysing IT governance contingencies entails a thorough examination of the various factors that play a role in determining the most suitable approach to IT governance. This enables an organization to make an informed decision when choosing an IT governance strategy that aligns with its goals and objectives (Brown & Grant, 2005).

COBIT 2019's approach to design factors has also received criticism. Fernandes (2020) argues that COBIT 2019's evaluation metrics and design factors are rigid as they do not discuss the possibilities to delete, add or modify within the framework. This limitation can be considered to contradict the asserted necessity to tailor governance with an organization's needs. There is also a lack of mathematical formulas explaining the decision making behind different metrics COBIT 2019 offers as potential evaluation measures in its design factor toolkit (Fernandes, 2020).

3.4.2 Contingency Tools: Objectives and Focus Areas

The Governance objectives in COBIT 2019 are under the Evaluate, Direct and Monitor (EDM) domain (De Haes et al., 2020; ISACA, 2018; Steuperaert, 2019). They assign the governing body to assess strategic options, evaluate strategic progression and direct management based on the businesses needs (De Haes et al., 2020; ISACA, 2018). Management objectives are part of four domains and are concentrated towards operating IT in an organization: Align, Plan and Organize (APO) Build, Acquire and Implement (BAI), Deliver, Service and Support (DSS) and Monitor, Evaluate and Assess (MEA) (ISACA, 2018).

In total there are 5 governance objectives and 35 management objectives which are defined by an objective, description, purpose, and a specific goals cascade. (ISACA, 2018). A goals cascade defines how an objective benefits enterprise goals and includes measures, descriptions and purposes to fit its application (De Haes et al., 2020).

To provide attention to differing scenarios while upholding the COBIT 2019 core model and its governance and management objectives, focus areas are introduced in COBIT 2019 (De Haes et al., 2020; ISACA, 2018). A focus area is a subset of governance and management objectives and their constituent parts that pertains to a particular topic or issue such as digital transformation or information security (De Haes et al., 2020). The conclusions drawn from design factors can specify which focus areas are needed for which organization (ISACA, 2018).

4 IT GOVERNANCE AND DESIGN FACTORS IN LARGE FINNISH BANKS

In this chapter, an overview is provided on IT governance literature in the banking industry. Furthermore, cohesion is constructed between the business and IT dimensions of large Finnish banks. Finally, there is categorical comparison of the following refinement stage design factors and large Finnish banks: threat landscape, compliance requirements, role of IT, IT sourcing model and technology adoption strategy.

4.1 IT Governance and the Banking Sector

Panetta et al. (2019) note that the European Banking Association's (EBA) guidelines provide supervisory bodies guidance for assessing banks' IT risk, emphasising the centrality of IT risk management in banking, and regulations focality in forming banks' IT governance (Panetta et al., 2019; Suša Vugec et al., 2017). However, Panetta et al. (2019) also point out that IT governance disclosures in the EU are largely voluntary and non-standardized leaving national authorities to oversee practical implementation. This differing supervision leaves banks to have varying attentions for IT governance between EU countries (Panetta et al., 2019). Moreover, banks do not communicate IT governance related disclosures in a centralized channel which forces stakeholders to gather IT governance related information through numerous sources at differing transparency levels (Joshi et al., 2013).

In EU banks, IT governance disclosures are generally more transparent than in the USA (Joshi et al., 2013). This suggests that they uphold higher efficacy in the areas guided by their IT governance practices (Joshi et al., 2013; Panetta et al., 2019). This conclusion can be identified in Eastburn and Bolands (2015) sample banks poor information systems' data collection, assessment and utilization, which impeded upon its ability to keep up with the changing environment of the banking sector (Eastburn & Boland, 2015).

In addition to regulatory drivers, European banks have implemented IT governance to align IT with business objectives and to commit senior management to IT (Suša Vugec et al., 2017). Gregory et al. (2015) point out that successful alignment between business and IT requires IT managers to accommodate both dimensions and guide them toward common interests, with integrative and sometimes blended solutions. They find that banks tend to gravitate towards short-term IT exploitation and neglect IT-based value creation, mainly due to IT groups prioritizing their isolated needs (Gregory et al., 2015). Similarly, in assessing the IT governance of banks and insurance companies in Germany, Zolper et al. (2013) found that employees would deviate from the management's guidance for implementing and running IT change projects. Effective IT control has been proposed as a solution for managing this missing alignment. Gregory et al. (2015) discuss a cross-project IT control unit mainly working towards balancing the level of autonomy in IT project groups. This is discussed as balancing at the project level (local) and at the IT program level (global) (Gregory et al., 2015).

Eastburn and Boland (2015) see that senior managers of banks have lacked the capabilities needed to react to market surprises. They conclude that this is due to routinized decision making, inefficient use of business intelligence from information systems, an inability to identify emerging threats and a lack of accountability (Eastburn & Boland, 2015). Joshi et al. (2013) establish that the banks with high corporate governance ratings (CGQ) tend to disclose IT performance measurements, namely IT budgets and investments. Nonetheless, most banks, including those with high CGQ ratings usually ignore IT value delivery and IT risk management disclosures (Joshi et al., 2013). Emphasizing a correction in these practices, Eastburn and Boland (2015) argue that modern banking's effective decision making requires IT and measurement reporting systems that track operational performance. This is to enable the guiding of management's attention to identifying and eliminating potential unreliability's across the organizations operations, and providing stakeholders measures for their efficacy (Eastburn & Boland, 2015).

Nolan and McFarlan (2005) point out that IT is generally considered a central part of modern corporate governance, but organizations struggle to identify how it should be implemented. Numerous IT conscious corporations, including financial organizations have incorporated separate board-level IT committee's dedicated towards IT governance processes including assessing IT performance and guiding executives, such as Chief Technology Officers and Chief Information Officers (Nolan & McFarlan, 2005). However, numerous factors such as enterprise size, business goals and IT sourcing dictate what applies to different organizations (Nolan & McFarlan, 2005; Weigelt & Sarkar, 2012), and can nullify the necessity for generalized solutions such as an IT committee (Nolan & McFarlan, 2005). These areas could be evaluated and identified by assessing different factors in a banks IT governance.

4.2 Large Finnish Banks

The present section explains how large Finnish banks have become encompassing financial service providers that offer ancillary products and services outside of traditional practices. Furthermore, it discusses the platform like mechanics in their business strategies, and how they drive their underlying IT operations.

In Finland, the market share of both loans and deposits excluding monetary fund institutions (MFI) is heavily concentrated to four enterprises (Table 1). In the latest credit institution statistics by the Bank of Finland (2023a), OP controlled over a third in both categories with Nordea trailing with 10 percentage points less in non-MFI loans market share and 9 percentage points less in non-MFI deposits market share. Danske Bank came in 3rd with 10% in both loans and deposits to non-MFIs. Municipal Finance was 4th with 11% of loans to non-MFIs with no deposit activity. All remaining banks held 5% or less market share in both categories (Bank of Finland, 2023a).

TABLE 1 Finnish Credit Institutions with Double Digit Market Share

	Loans to non-MFIs	Deposits to non-MFIs
	Market share %	Market share %
OP Financial Group	34	38
Nordea	24	29
Danske Bank	10	10
Municipal Finance	11	0

Out of the four enterprises three are traditional banks: OP, Nordea, and Danske Bank. These banks create the cohort group “large Finnish banks” in this thesis, due to their size, control over the market and similar service offerings.

4.2.1 Large Finnish Banks: Multi-channelled Financial Conglomerates

In a study conducted by Hryckiewicz and Kozłowski (2017), they analyzed 458 banks and classified four utilized business models: specialized, investment, diversified, and trader. Based on the structure of the assets and liabilities of the banks sampled, they concluded that Finnish banks mostly adopt the investment model (Hryckiewicz & Kozłowski, 2017). In the investment model, banks participate in untraditional business activities with derivatives, securities, and securitization while also relying on more traditional interest-bearing liabilities (Hryckiewicz & Kozłowski, 2017). As per the findings of Nätti and Lähteenmäki (2016), Finnish banks have been facing greater demand for financial services than before. This has led to their transformation into full-service financial conglomerates, offering traditional retail banking solutions with insurance, investment, and other financial services (Nätti & Lähteenmäki, 2016).

Finnish and other Nordic banks are amongst the most technologically advanced banks in Europe (Manninen et al., 2018). This can be exemplified

through the personal banking segment of Nordea (n.d.), which provides a range of services that cater to customers' everyday banking needs in integrated net-bank and mobile bank portals. Their solutions include account services, payment services, loans, credit facilities, insurance, and investing services (Nordea, n.d.).

The continuing shift from physical to digital operations in banks automates numerous business processes to be more efficient and reduce costs (Cziesla, 2014; Yip & Bocken, 2018). In addition, Nordic banks are relatively more cost efficient than their less digitalized counterparts in the rest of Europe (Manninen et al., 2018). At the same time, Nordic banks spend substantially more on IT investments than other European banks (Manninen & Koskinen, 2019). However, digitalization has improved the efficiency of banks widely be it at different scales. In EU-15 countries the ratio of bank employees to the population has decreased by a third in the past 20 years due to digitalization (Boot et al., 2021).

4.2.2 Large Finnish Banks: Encompassing Banking Platforms

Finnish banks' comprehensive array of digital financial services align with Gomber et al.'s (2017) six key business functions in digital finance. These functions are digital financing, digital investments, digital money, digital payments, digital insurances, and digital financial advice. Moreover, Vives (2019) sees banking moving towards digital financial service platforms owned by large technology companies or platform-transformed incumbents.

Finnish bank's encompassing structure can already be likened to platforms with a wide array of services and external integrations. As pointed out by Alstyne (2016), platforms that offer higher value opportunities for customers tend to foster greater customer loyalty. In banking platforms cross-buying and additional services are a customer-centric tool to introduce and entice them to using other provided services and products (Bauer et al., 2005; Cziesla, 2014). For example, Finnish bank identification services have been expanded to enable strong identification in systems provided by the public sector (Digital and Population Data Services Agency, n.d.). The concentrated benefits of utilizing Finnish banks as one-stop-shops for financial, identification and other services can be viewed as the core business operation for consumer facing operations.

Platform openness can also be controlled to increase positive network externalities and attract new customers (Alstyne et al., 2016), which in the context of traditional banking ties into overlooking competition locks and strategically co-operating with specialized fintech companies through partnerships and investments (Gomber et al., 2017). OP (2023) offers OP-World Index as a passive investment fund for its customers. It follows the performance of a basket of securities curated by the MSCI World ESG Screened Index (OP Financial Group, 2023). By partnering with MSCI, OP has been able to outsource ESG compliancy with pre-defined rules and replaced active securities management to passive mirroring of securities in the index.

4.3 Design Factors and Large Finnish Banks

This section applies the following refinement stage design factors with large Finnish banks: threat landscape, compliance requirements, role of IT, sourcing model for IT and technology adoption strategy. It compares them to the cohort point out considerations that drive and affect their IT governance.

4.3.1 Design Factors: Threat Landscape

In “threat landscape” an enterprise is in a normal or high-threat IT-security environment based on its geopolitical position, industry, and specific profile (ISACA, 2018). Banks’ high prioritization of security has naturally evolved to also include a heavy focus on information security. Information security has mainly been managed by a Chief Information Security Officer (CISO), who is responsible for maintaining the security of a banks IT while keeping it in line with the banks strategic trajectory (Hooper & McKissack, 2016).

Information security threats for banks include data corruption, digital disruption of systems, credential theft, cash theft, espionage, leaks, fraudulent transfers and payment system disruption (Maurer & Nelson, 2021). Despite implementing information security policies and strategies, these threats have collectively cost banks hundreds of billions of dollars (Uddin et al., 2020). Maurer and Nelson (2021) categorize three threat actors for banks: nation-states and their sponsored groups, cybercriminals and terrorist groups, hacktivists and insider threats. Conclusively, the threat landscape of banks is high due to their central position in the economy, multiple potential attack angles and the subsequent threats and threat actors they face.

4.3.2 Design Factors: Compliance Requirements

In “compliance requirements” an organization with comparatively elevated effects from areas such as their industry or geopolitical conditions has high compliance requirements (ISACA, 2018). Definitely, large Finnish banks have high compliance requirements. Banking is one of the most heavily regulated industries in the world (Eastburn & Boland, 2015; Murinde et al., 2022). Banks face numerous elevated regulations and supervisory bodies that affect their efficiency (Barth et al., 2013; Danisman & Demirel, 2019). In governance, this creates a unique additional layer of managerial oversight that goes beyond the board of directors, mainly to ensure confidence and stability in the financial system banks serve (Eastburn & Boland, 2015).

In Finland three main bodies encompass the regulation of banks. The EBA places numerous enforced guidelines that regulate banks, and different stress tests to assess resilience in adverse economic scenarios across (Cappiello, 2015). The Bank of Finland concentrates on stabilizing the money supply and upholding stability and trust in the Finnish monetary system (Bank of Finland, 2023b).

The Financial Supervisory Authority regulates and monitors financial, insurance, and pension activities in Finland (Finanssivalvonta, n.d.).

There are different regulatory tools authorities utilize. One regulatory tool, capital regulation affects bank performance by directly specifying the required amount of liquid capital banks need to increase held risks (Barth et al., 2013; Danisman & Demirel, 2019). Another, activity restrictions limits what non-traditional business activities banks can participate in (Danisman & Demirel, 2019). These regulations affect both the traditional and innovative aspects of banking and can be said to function as external enablers and disablers of IT ambidexterity in banks.

In a report by the Bank of Finland, information technology is identified as a new source of risks and challenges for regulators who must balance the promotion of innovation, competition, and consumer protection (Manninen et al., 2018). Application programming interfaces (API) have become the standard for data sharing, enabling faster payments and easier unbundling of services in banking (Vives, 2019). Recently in Finland The Second Payment Services Directive (PSD2) by the EU was amended through the Payment Services Act and the Payment Institutions Act (Finanssivalvonta, 2023). An impact of the directive is that it enables consumers to choose a service for payments from their bank account without the banks limitation to what providers connected by APIs can be used (Manninen et al., 2018). PSD2 is a timely link to the conclusion of Suša Vugec et al. (2017) where regulation usually acts as the initiator and a guiding force for IT governance of banks (Suša Vugec et al., 2017).

4.3.3 Design Factors: Role of IT

IT is a core business function for banks. The widespread deployment of IT among banks has made it a critical enabler of banks' core operations (Eastburn & Boland, 2015; Panetta et al., 2019). Evidently the maturation of global data networks has made IT the backbone of payments and transfer services in financial markets (Eastburn & Boland, 2015). In addition, IT has grown as a support tool for strategic decision making and automating the control environment related to core banking data (Panetta et al., 2019). IT can drastically affect the consumer facing operations of banks, as downtime in digital banking services affect customer satisfaction, trust and buying behaviour (Omoge et al., 2022). These points reflect a sample of 15 European countries including the 73 largest banks by market capitalization where 91% of constituents viewed IT as an operational risk for their organization (Joshi et al., 2013).

IT is also a tool banks use to stay competitive and innovate in the sector with new services, products and distribution channels (Panetta et al., 2019). Liu et al. (2011) view digital transformation in banks as continuously making organizational adjustments in organizational structure, processes, and information systems to adapt to environmental change. In Finnish banks environmental changes are numerous. As discussed, Finnish banks face disruption from FinTechs and other banks. In addition, banks must react with technological change mandated by regulations (Beck et al., 2016), such as the PSD2 directive.

IT in banking being both the means to run business operations and innovate links to the role of IT being “strategic” in COBIT 2019. Strategic combines the values “factory” and “turnaround” and goes against “support” by specifying that IT is a critical business factor and the way an organization innovates its processes and services (ISACA, 2018).

4.3.4 Design Factors: Sourcing Model for IT

Liu et al. (2011) note that banks must strategically assess when to use internal or external IT capabilities and resources (Liu et al., 2011). In the sourcing model for IT design factor, an enterprise uses external parties to provide IT services, heavily utilizes the cloud to offer IT services, insources both IT and IT staff, or has a hybrid model which incorporates external parties, the cloud and insourced IT to varying extents.

Manninen et al. (2018) note how all Nordic banks are increasingly partnering with external parties to incorporate new technologies. This requires close monitoring from Finnish banks. Each externality in IT needs to be closely assessed, as they are likely to cause higher cybersecurity risks (Murinde et al., 2022). Weigelt and Sarkar (2012) also note that outsourcing for banks is a trade-off between efficiency and adaptability, especially if internal knowledge about system interdependencies are low. At the same time, partnering with FinTechs can provide new solutions to customers and enrich the existing offerings of a bank with complementary benefits to both parties (Murinde et al., 2022). This requires strategically weighing enterprise goals with the absorptive capacity in an enterprise (Weigelt & Sarkar, 2012).

Internal capabilities are extensive in the target group with Nordea (2021) having 8000 employees within its technology units, OP (n.d.) having 1100 internal ICT employees and 4500 ICT professionals in total and Danske Bank employing 3900 IT professionals (Danske Bank, n.d.). In relation to the cloud, the multiple digital delivery channels of banks are interdependent and connected to the same back-end systems to access and update customer data (Weigelt & Sarkar, 2012). This is to ensure the correct customer information is available on all channels and to enable stability and trust across the customer base (Cziesla, 2014; Weigelt & Sarkar, 2012).

Definitively, large Finnish banks incorporate the hybrid model in their IT sourcing by utilizing all three sourcing types. Despite this, the utilization rates likely vary between the cohort banks as Weigelt and Sarkar (2012) see that the levels of outsourcing in banks are largely driven by endogeneity biases affecting IT control assessments – weak internal capabilities drive higher amounts of outsourcing and strong internal capabilities reduce the amount of outsourcing (Weigelt & Sarkar, 2012).

4.3.5 Design Factors: Technology Adoption Strategy

Banks are central to financial systems due to their controlling positions in the infrastructure for clearing and settling secure transactions (Murinde et al., 2022).

Because the competitive and regulatory backdrop of banks is constantly changing, banks must make decisive changes in how they keep up with new systems and processes (Campanella et al., 2017). Beck et al. (2016) see financial innovation aiding economies to grow faster by assisting countries in taking advantage of exogenously provided economic opportunities. On the other hand, increased risk-taking greatly increases the volatility of bank profitability (Beck et al., 2016), which was directly linked to banks' poor governance and risk management practices that initiated the Great Financial Crisis (Eastburn & Bolland, 2015).

Security and trust is the most important requirement of digital banking and thus is at the core of each new service (Bauer et al., 2005; Broby, 2021). Subsequently, highly regulated banks are unlikely to initiate digital transformations with uncertain technologies. Niemand et al. (2021) point out that banks don't see first-mover advantages with digital services, and that trailing technology adoption with a focus on differentiation is more key to their success in digitalization. Furthermore, Gomber et al. (2017) note that the concentrated solutions enabling FinTech companies are opportunities where traditional banks adopt proven technologies and digital channels to innovate for their own contexts (Gomber et al., 2017). Large Finnish Banks can be primarily seen as "followers" who selectively incorporate new technologies when they are proven and have organizational fit. In contrast a "first mover" adopts new technologies as early as possible and tries to gain first-mover advantage and a "slow adopter" is very late in incorporating new technologies (ISACA, 2018).

5 CONCLUSIONS AND DISCUSSION

This chapter explains the results and conclusions of this thesis. In addition, it discusses interpretations, limitations and potential future research areas based on the findings in this thesis.

5.1 Conclusions

This thesis explains how contingency analysis is strongly linked to effective IT governance. Foundationally, Brown and Grant (2005) find that effective IT governance requires the assessment of internal and external factors that take into account the different contingencies of an organization. This correlates with Nolan and McFarlan's (2005) conclusions that specific factors determine which IT governance solutions and processes apply to an individual bank. Contingency analysis is covered further in relation to the IT governance framework COBIT 2019. The latest version of COBIT, COBIT 2019 offers tools that can coordinate, prioritize, and tailor governance to an organizations contingencies in a systematic framework with design factors (De Haes et al., 2020). These design factors are based on the new governance system core principle in the framework "Tailoring to Enterprise Needs" (ISACA, 2018).

As per the second research question of this thesis it lists externally formulated contingencies of IT governance in large Finnish banks using COBIT 2019 design factors from the refinement stage of the design process.

TABLE 2 Contingency Factors in Large Finnish Banks

Design Factor	Value	Description
Threat Landscape	High	The cohort is operating in a high-threat environment.
Compliance Requirements	High	The cohort is subject to higher-than-normal regulatory requirements.
Role of IT	Strategic	IT is critical in running and innovating cohort businesses.
Sourcing Model of IT	Hybrid	The cohort utilizes both internal and external resources for its IT.

Technology Adoption Strategy	Follower	The cohort typically waits to adopt a proven technology.
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These results build on the existing evidence pointed out by Murinde et al. (2022) that the banking sector has elevated regulatory and security requirements which drive banks' business models. Furthermore, they indicate which specific contingencies are relevant for the main goals for banks' IT governance outside of regulatory requirements, committing executives to IT and aligning IT with business objectives (Suša Vugec et al., 2017). By contributing a clear understanding of the specific factors of large Finnish banks this thesis provides a clearer understanding into the specifics of their IT governance contingencies. These results also offer insight into the IT governance of banks on a general level which Panetta et al. (2019) highlight as needing substantially more research due to a sparse focus in literature.

5.2 Discussion

This thesis is limited due to it not accounting for all design factors in COBIT 2019, especially enterprise strategy, enterprise goals and risk profile which are used to initiate IT governance in the framework. As stated in COBIT 2019, the refinement stages design factors can provide conflicting guidance between their conclusions which requires case by case assessment for concise decision making (ISACA, 2018). This suggests that future research should focus on applying COBIT 2019 towards a single bank in the focus group with all or most design factors to outline their potential conflicts. Furthermore, research could utilize the measurement examples in the frameworks design toolkit to draw conclusions on their efficacy and applicability.

This thesis was focused solely on large Finnish banks. Niemand et al. (2021) note that small banks may have differing opportunities and are affected by larger budget constraints when initiating new digital technologies. Additionally, Omoge et al. (2022) point out that a banks IT is affected by contexts such as local consumer behavior and local IT capabilities and opportunities. This points out the limited scope of this thesis and why research on small to medium sized banks and banks in other countries and regions is necessary for applicable contingency assessment.

Future research could construct what management processes in COBIT 2019 are applicable with the banking contingencies discussed in this thesis. At the same time, COBIT 2019 has limitations which affect its applicability and fit to different contexts requiring closer evaluation of its use cases (Fernandes, 2020). Formulating new methods to analyze and tailor IT governance specifically to banks could provide new evaluation methods and more specified contingency areas that are not generalized to all organizations.

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