LUND UNIVERSITY
School of Economics and Management

Department of Informatics

Structuring Success

The Role of Organizational Culture, Structure, and Processes in IT Governance of SMEs

Master thesis 15 HEC, course INFM10 in Information Systems

Authors: Pontus Green
Maxx Tiger

Supervisor: Avijit Chowdhury

Grading Teachers: Osama Mansour
Gemza Ademaj

Structuring Success: The Role of Organizational Culture, Structure, and Processes in IT Governance of SMEs

AUTHORS: Pontus Green and Maxx Tiger

PUBLISHER: Department of Informatics, Lund School of Economics and Management, Lund University

PRESENTED: May, 2024

DOCUMENT TYPE: Master Thesis

FORMAL EXAMINER: Osama Mansour, Associate professor

NUMBER OF PAGES: 70

KEY WORDS: IT Governance (ITG), Small and Medium-Sized Enterprises (SMEs), Organizational Culture, Organizational Structure, Agile Governance, COBIT 5 Framework, Strategic Alignment, Value Delivery, Performance Measurement, Resource Management, Risk Management, Digital Transformation, Trust Theory, Agency Theory, Strategic IT/Business Alignment

ABSTRACT (MAX. 200 WORDS):
This thesis investigates the role of organizational culture, structure, and processes in the implementation of IT governance (ITG) within small and medium-sized enterprises (SMEs). In the context of rapidly evolving technological landscapes and regulatory environments, effective ITG is crucial for enhancing organizational capabilities and performance. The research addresses the gap in understanding how SMEs, often constrained by limited resources and different operational dynamics, can adapt ITG frameworks primarily designed for larger organizations. Through a comprehensive literature review and a case study involving semi-structured interviews with a range of stakeholders, the study identifies the critical success factors and barriers in ITG implementation in SMEs. Findings reveal that a synergistic combination of agile and traditional ITG capabilities fosters a dynamic and responsive organizational environment. Empowering individuals and fostering a culture of trust are pivotal for successful ITG adoption. The study contributes to the theoretical understanding of ITG in SMEs and

offers practical insights for improving ITG practices, thereby enhancing adaptability, innovation, and overall competitiveness in the contemporary business landscape.

Content

Figures

Tables

1 Introduction

This chapter provides an overview of our study by introducing the concept of IT governance (ITG) and its critical impact on small and medium-sized enterprises (SMEs). The chapter begins with the background of the increasing complexity and importance of ITG within the context of rapid technological advances and regulatory changes. Following this, the purpose of our research, the research question, and specific delimitations related to the thesis are presented to define the focus and scope of our investigation.

1.1 Background

In the contemporary business landscape, digital technology and the push toward digital transformation are evolving at an unprecedented pace. The ability to stay adaptive to swiftly changing business and Information Technology (IT) environments is now more crucial than ever. As innovation by competitors and shifts in customer behaviours continue to redefine the market, incumbent firms find themselves at risk of losing significant market share if they fail to adapt to these digital dynamics (Warner & Wäger, 2019). In this context, IT Governance (ITG) has emerged as a critical factor for ensuring the successful enhancement of organizational capabilities and performance (Benaroch & Chernobai, 2017; Mulyana et al., 2021; Warner & Wäger, 2019; Wilkin & Chenhall, 2020; De Haes & Van Grembergen, 2015). Research indicates that businesses with robust ITG practices can achieve up to a 20 percent increase in profits compared to those with inadequate governance structures (Weill & Ross, 2004).

The scope of ITG is not only expanding but also growing more complex, especially with the advent of stringent data privacy laws and the rapid development of Artificial Intelligence (AI) technologies. These advancements have necessitated a broadening in the perception of what ITG encompasses, now including specialized areas such as data governance and AI governance (Abraham et al., 2019; Alhassan et al., 2016; Mäntymäki et al., 2022). Yet, at the heart of these governance discussions remain the foundational elements of Corporate Governance (CG) and ITG, which are crucial for aligning IT strategies with business objectives and regulatory demands.

As organizations navigate this complex digital and regulatory environment, the role of ITG has become integral not just in managing IT resources but in shaping business strategies and operations. The emerging technologies and the data they generate offer tremendous opportunities for value creation and competitive advantage (Fast et al., 2023; Weill & Ross, 2004; Wilkin & Chenhall, 2020), demanding a governance framework that can handle the intricacies of modern IT ecosystems effectively. This need is accentuated in environments where digital transformation initiatives are extensive, requiring a sophisticated understanding of how to integrate new technologies such as cloud computing, big data, and IoT into existing business and ITG frameworks (Alhassan et al., 2016; Fast et al., 2023; Mäntymäki et al., 2022).

The challenges in modern ITG extend beyond the mere implementation of technology. They involve crafting governance structures that are flexible enough to evolve with technological advancements while robust enough to ensure compliance and alignment with business goals. The increasing reliance on data and AI also brings forward ethical considerations and

compliance issues, which must be addressed through comprehensive governance frameworks (Mäntymäki et al., 2022; Warner & Wäger, 2019).

In light of this consideration, the significance of this research lies in its potential to contribute to the strategic integration of ITG within the broader corporate governance agenda, particularly for SMEs. By exploring how organizational culture, processes and structures can facilitate the success of ITG practices in SMEs, this study aims to offer valuable insights that can guide SMEs in enhancing their governance practices to meet contemporary challenges.

1.2 Problem

There is a compelling need for SMEs to adapt and refine their governance mechanisms to ensure effective risk management, value creation, and the maintenance of a competitive advantage (Fast et al., 2023; Wilkin & Chenhall, 2020; Wu et al., 2015). Organizational processes, structures, and culture play a critical role in the effective implementation of IT Governance (ITG) mechanisms (Wilkin & Chenhall, 2020). Moreover, SMEs face additional external pressures such as regulatory requirements and market dynamics, necessitating agility to quickly adapt to changing market landscapes (Luna et al., 2015; Vejseli et al., 2022; Wilkin & Chenhall, 2020). Despite the central role of ITG in addressing these elements within Information Systems (IS) research and practice, existing ITG frameworks are predominantly designed with large organizations in mind, which complicates their adoption and implementation by SMEs that operate under different circumstances (Bergeron et al, 2015).

To address the unique needs of SMEs, there are lighter frameworks and standards specifically designed for these entities (Othman & Chan, 2013). However, barriers such as complexity, resistance to change, organizational politics, and notably a scarcity of human resources—including the expertise of stakeholders, managers, and employees—persist, making the implementation challenging (Othman & Chan, 2013; Wu et al., 2015). This situation underscores the necessity for a thorough assessment of an organization's culture, structure, and processes to determine the likelihood of successful ITG implementation.

The success factors of ITG implementation, as studied by Alreemy et al. (2016), present a structured overview that guides in the understanding of the multifaceted nature of ITG success. They identify critical success factors across five categories—Strategic Alignment, Environmental Effect, Organizational Effect, Performance Management, and Resource Management—which collectively encapsulate the essential elements required for effective ITG implementation. The insights derived from these success factors can illuminate key areas requiring attention to ensure ITG frameworks are successfully implemented and managed within SMEs.

Devos et al. (2012) critique the adoption of conventional ITG frameworks in SMEs, arguing that the control mechanisms often included may not be ideally suited for smaller enterprises. Instead, they advocate for a focus on people and processes, suggesting that research should prioritize SME orientation with careful consideration of control perspectives. The balance between implementing control mechanisms and maintaining agility is delicate. Previous research suggests there are benefits to governing ability via the introduction of control mechanisms (Vejseli et al., 2022), particularly in the context of high market turbulence, such as technological disruptions, where organizations need to be innovative and rapidly adapt their business operations (Elazhary et al., 2023).

Agile governance theory, which adapts principles of agility from software development to broader governance and IT governance contexts, offers a potential framework (Luna et al., 2015). However, this theory has not been extensively researched or tested within the SME context. The implementation of ITG, with its focus on risk management, strategic alignment, and value delivery, has been shown to be beneficial in existing research (Wu et al., 2015). This study seeks to explore how these principles can be effectively applied to SMEs, balancing the need for control with the imperative for agility.

1.3 Motivation

While the significance of ITG in aligning IT strategies with business goals is well-established within large organizations, SMEs often operate under different constraints that could make strict adoption of formal ITG frameworks impractical. This study explores how SMEs navigate ITG within these constraints, focusing on their unique processes, structures, and cultural dynamics. By examining the efficacy of existing informal governance practices, this research aims to uncover how less stringent control mechanisms might either benefit or hinder SMEs. This exploratory approach seeks to generate insights into the complexities of ITG in SMEs, contributing to a nuanced discussion on achieving a balance between governance controls assessing direct business needs, and a culture that prioritizes people and their development.

1.4 Research Question & Aim

How does organizational culture, structure and existing processes influence the implementation of IT governance practices in SMEs?

1.5 Delimitation

The delimitations of this study are defined to ensure a focused and manageable scope, allowing for an in-depth exploration of ITG practices within an SME. Geographically, the research is limited to one medium-sized enterprise located within Sweden. The study further narrows its focus to a particular industry sector within building automation, offering detailed insights relevant to that context, while acknowledging that the findings may not be fully applicable to other sectors.

The data collection methods primarily involve qualitative approaches, including semi-structured interviews. The research is conducted within one academic quarter, capturing only a snapshot of IT governance practices at a particular moment, which may not reflect longer-term trends and changes. The theoretical framework adopted in this study is deductive, based on predefined coding schemes and existing models and theories of IT governance. While this structured approach facilitates systematic analysis, it may limit the exploration of emergent themes not covered by the existing frameworks.

The scope of IT governance examined in this research includes strategic alignment, risk management, and performance measurement, but does not delve deeply into technical implementation details or broader organizational impacts.

2 Literature Review

This chapter presents a comprehensive review of existing literature on ITG with a focus on its implementation within SMEs. The section begins by outlining the theoretical frameworks and models that inform ITG practices, followed by an exploration of how these frameworks have been applied in various organizational settings, particularly in SMEs. The literature review aims to establish a solid foundation for understanding the complexities of ITG, its interaction with organizational culture, structure, and processes, and its impact on business performance and adaptability in SMEs. The chapter concludes by identifying gaps in the current research that our study aims to address, setting the stage for the subsequent methodology and analysis sections.

2.1 Corporate Governance, Related Models, and Theories

Corporate governance is essential for aligning business practices with stakeholder interests. It involves a set of processes, policies, laws, and institutions that control how a corporation is directed and administered. The main goal is to balance the interests of various stakeholders, including shareholders, management, customers, suppliers, financiers, government, and the community.

The Organisation for Economic Co-operation and Development (OECD) outlines principles that emphasize the need for a strong legal and regulatory framework to promote transparent and efficient markets, uphold the rule of law, and clearly define responsibilities among authorities. Key aspects include protecting shareholder rights, equitable treatment of all shareholders, stakeholder roles in governance, disclosure and transparency, and board responsibilities (Brunninge et al., 2007).

In SMEs, corporate governance presents unique challenges due to their smaller scale and less formalized structures. Effective governance in these enterprises often involves balancing formal controls and informal trust-based systems. The literature highlights the importance of board composition, ownership structures, and top management teams in influencing strategic decisions within SMEs (Brunninge et al., 2007).

Additionally, the integration of IT governance into the corporate governance framework has become increasingly significant. As Rubino and Vitolla (2014) highlight, IT governance frameworks, such as COBIT, support enterprise risk management (ERM) by providing structured approaches to align IT resources with organizational goals and ensure effective internal control systems. This integration helps SMEs in managing risks and improving decision-making processes, thereby enhancing overall governance quality (Rubino & Vitolla, 2014).

Understanding corporate governance principles is crucial for developing effective IT governance frameworks in SMEs. By ensuring transparency, accountability, and strategic alignment, corporate governance can enhance the performance and sustainability of these enterprises.

The following sections will delve into specific theories and models related to corporate governance, such as Agency Theory, Strategic Management, and Dynamic Capabilities, and their relevance to IT governance practices in SMEs (Bebchuk et al., 2009; Brunninge et al., 2007; Rubino & Vitolla, 2014).

2.1.1 Corporate Governance Overview

To create a holistic view of IT governance it is important to first understand the role of Corporate Governance within organizations. The Organisation for Economic Co-operation and Development (OECD) Principles of Corporate Governance serve as internationally recognised benchmarks guiding the legal, institutional, and regulatory frameworks for corporate governance across both OECD and non-OECD countries (OECD, 2023).

Ensuring the Basis for an Effective Corporate Governance Framework
This principle emphasizes the need for a robust legal, regulatory, and institutional foundation that promotes transparent and efficient markets, adheres to the rule of law, and clearly delineates the responsibilities among various supervisory, regulatory, and enforcement authorities. It highlights the essential nature of an adaptable governance framework that can evolve in response to economic and technological changes (OECD, 2023).

The Rights of Shareholders and Key Ownership Functions
Fundamental to corporate governance is the protection and facilitation of shareholders' rights. This principle ensures that shareholders have the ability to secure methods of ownership registration, convey or transfer shares, and obtain timely and relevant company information. It advocates for shareholder participation in significant corporate decisions, such as the election of board members and amendments to corporate policies (OECD, 2023).

The Equitable Treatment of Shareholders
Ensuring the equitable treatment of all shareholders, including minority and foreign shareholders, is vital. This principle requires mechanisms for all shareholders to obtain effective redress for violations of their rights, promoting fairness and preventing discriminatory practices (OECD, 2023).

The Role of Stakeholders in Corporate Governance
Acknowledging that corporations have an impact on various stakeholder groups beyond shareholders, this principle encourages active cooperation between corporations and their stakeholders in wealth and job creation, and in the sustainability of financially sound enterprises. It underscores the importance of respecting the rights of stakeholders as defined by law or mutual agreements (OECD, 2023).

Disclosure and Transparency
Transparency and disclosure are critical for functioning markets. This principle mandates that timely and accurate information be disclosed on all material aspects of the company, including the financial situation, performance, ownership, and governance of the company. It supports an informed and active shareholder base and public confidence in corporations (OECD, 2023).

The Responsibilities of the Board
The board's responsibilities are central to effective governance. This principle focuses on the board's need to provide strategic guidance for the company, ensure the monitoring of management, and account for the company's governance to shareholders. It

details functions such as setting corporate strategy, risk management, ethical standards, and the integrity of financial controls (OECD, 2023).

Sustainability and Resilience

This principle addresses the importance of sustainability and resilience in corporate governance. It incorporates aspects such as sustainability reporting, the integration of environmental, social, and governance (ESG) factors into corporate strategy, and the board's role in overseeing sustainability issues. This principle emphasizes the importance of long-term value creation and the need for companies to adapt and respond to evolving economic, environmental, and social expectations (OECD, 2023).

The implementation of the OECD guiding principles intends to foster greater economic stability, market integrity, and investor trust. Effective governance is seen as a fundamental capacity for organizations attempting to achieve high levels of economic efficiency, growth, and longevity in the marketplace. Serving as a baseline for detailing relationships between company stakeholders, the OECD principles for corporate governance provide a structured framework to enhance corporate governance in the global marketplace. These principles assist organizations in good practice while effectively governing organizations (OECD, 2023).

2.1.2 Agency Theory

Agency theory is rooted in economics where one party (managers) acts on behalf of another (business owners), with focus on how principals can ensure agents act in the principal's best interest despite potential conflicts. This theory covers a broad spectrum of disciplines including business, law, and sociology, each critiquing Agency theories' foundational concepts (Shapiro, 2005).

As written in Dong et al. (2021) In the context of IT governance, Agency Theory focuses on potential conflicts to misalignment of business objectives. Such as overinvestment or underinvestment in IT initiatives. This theory integrates behavioural aspects to better comprehend the motivations behind IT investment decisions, suggesting that performance deficiencies relative to objectives drive firms to make strategic IT investments, which should lead to enhanced organizational innovation capabilities, ultimately leading to greater business longevity (Dong et al., 2021).

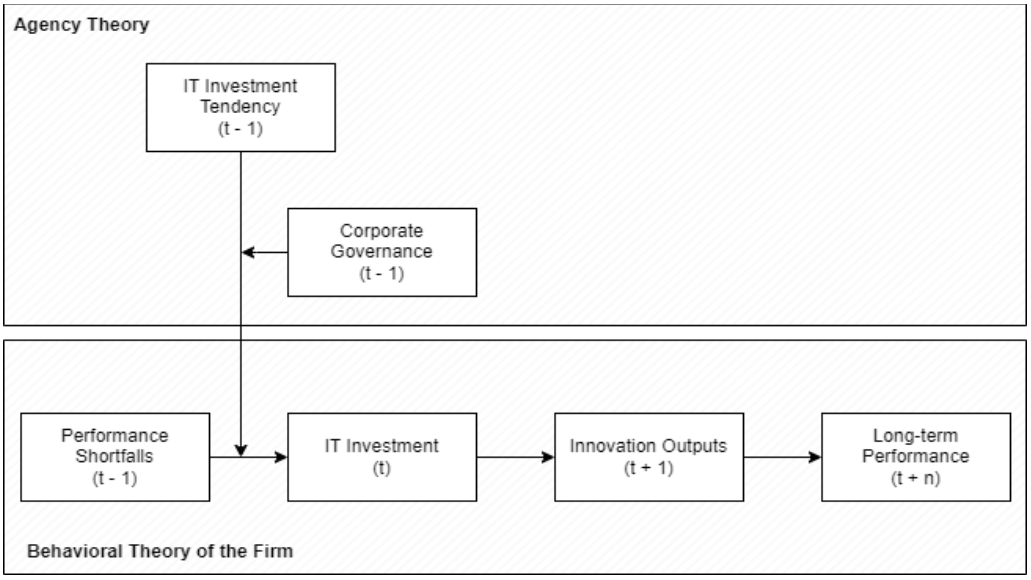

Figure 2.1: Integrated Behavioural Agency Model, adapted from Dong et al. (2021)

The behavioural agency model (see Figure 2.1) emphasizes the role of corporate governance in mitigating the risks associated with agent behaviour in IT investments. Strong governance structures ensure that IT investments align with the organization's broader strategic goals and are not merely influenced by agents' personal incentives. These mechanisms are essential for reviewing and guiding IT investment, closely monitoring outcomes against a set of expectations. Corporate governance as elaborated by Dong et al. (2021) plays a crucial role in IT governance by addressing the principal-agent dilemma ensuring that IT investments align with shareholder interests.

2.1.3 Trust in SME IT Governance

In their 2012 study, Devos et al. (2012) challenge the traditional reliance on structured controls through Agency Theory in SME IT governance, advocating for a nuanced approach that prioritizes trust and social-psychological processes. They argue that in SMEs, the effectiveness of IT governance may not hinge solely on stringent control mechanisms, such as outcome-based contracts or strict governance structures, which are often emphasized in Agency Theory. Instead, the authors highlight the importance of trust, fairness, intuition, and empathy—elements that are crucial yet often underappreciated in smaller, less bureaucratically structured environments.

The findings of Devos et al. (2012) suggest that SMEs frequently rely more on the trust established in interpersonal relationships within projects rather than on formalized control systems. This reliance is not just a byproduct of their operational scale but could be a necessary adaptation to their agile and interpersonally connected work cultures. In such settings, trust can serve as a more effective mechanism for managing IT projects than the traditional controls advocated by Agency Theory.

This pivot towards trust does not eliminate the need for control but suggests a balance where control mechanisms are designed to support, rather than replace, the trust-based governance. For instance, while structured controls are essential for clarifying expectations and

responsibilities, their rigidity must be tempered with flexibility to accommodate the trust-based interactions that drive SME operations. Thus, IT governance in SMEs should consider integrating social-psychological processes at its core, creating governance structures that are not only efficient but also empathetic and responsive to the human elements of the organization.

2.1.4 Strategic Management

Strategic management involves defining a company's mission, setting policies, determining business scope, and establishing objectives. It is about understanding the company's strengths and weaknesses, allowing for the recognition of opportunities and threats in the market landscape. With the ultimate goal to make key decisions sustaining competitive advantage (Sadler & Craig, 2003).

The core elements of Strategic Management are as follows:

Mission and Purpose
The rationale for the company's existence, which may focus on shareholder value, stakeholder expectations, and/or broader business objectives (Sadler & Craig, 2003).

Strategic Decisions
Choices about the business domain and the organizational culture which are critical for shaping the company's future (Sadler & Craig, 2003).

Objectives and Goals
Generally these pertain to long-term targets, including financial and non-financial goals, guiding the company's strategic directions (Sadler & Craig, 2003).

Capabilities and Competences
The unique abilities allow a company to outperform its competitors, often highlighted by core competencies that are difficult for competitors to imitate (Sadler & Craig, 2003).

<table>
<tr><th>Corporate Strategy</th><th>Competitive Strategy</th></tr>
<tr><td>Purpose or Mission

Shareholder value?
Stakeholder Interestes?
Aspirational?</td><td rowspan="2">Achieve sustainable competitive advantage by:

Leveraging Resources
Developing Capabilities
and
Competing on cost, or differentiating,
or occupying a niche</td></tr>
<tr><td>Means:

Good Parent
Select Portfoio
Guard Reputation</td></tr>
</table>

Figure 2.2: Strategic Management in a nutshell, adapted from Sadler and Craig (2003)

The process of Strategic management is not only about how an organization plans but also how an organization implements and continuously assesses progress. With regards to the context of analysing the importance of strategic management with regards to the introduction and impact of new technologies and the relationship of innovation and regulation in the field of Information Technology (Sadler & Craig, 2003).

2.1.5 Dynamic Capabilities

Dynamic capabilities represents a firm's ability to integrate, build. and reconfigure internal and external competencies in agile environments. Teece (2014) emphasizes the role of dynamic capabilities in achieving and sustaining competitive advantage in volatile market landscapes.

The Dynamic Capabilities Framework is as follows:

> **Sensing:** Sensing capabilities involve the firm's processes to identify and assess technological opportunities and threats, consumer and market trends, and internal and external changes that affect the business landscape. Teece discusses that sensing is more than mere environmental scanning; it requires deep analytical capabilities and an intuitive understanding of market forces and technological potentials (Teece, 2014).
>
> **Seizing:** Seizing capabilities refer to the firm's ability to mobilize resources to capture and capitalize on opportunities identified during the sensing phase. This involves investment decisions, new product development, strategic pivots, and aligning organizational structures and processes to support the strategic direction. Teece elaborates that seizing is crucial for transforming sensed opportunities into profitable ventures through strategic decisions and resource reconfiguration (Teece, 2014).
>
> **Transforming:** Transforming capabilities are related to the firm's ability to continuously renew and reconfigure its asset base to meet market demands and internal strategic shifts. This includes overcoming organizational inertia and embedding flexibility within operational processes to facilitate rapid adaptation and change. Teece emphasizes that transforming is essential for maintaining the agility required in dynamic competitive landscapes, ensuring that the firm remains aligned with its strategic objectives despite external fluctuations (Teece, 2014).

Dynamic capabilities are not standalone attributes but deeply integrated capacities for a firm's strategic management processes. They enable firms to execute strategies that require adaptation and change. Teece (2014) discusses how dynamic capabilities helps craft strategies that are not only reactive but stress proactivity, allowing organizations to shape their competitive standing (Teece, 2014).

Teece's (2014) article on the dynamic capabilities framework provides insights into how firms adapt to changing environments to sustain competitive advantage. It emphasizes the integration of sensing, seizing, and transforming capabilities with strategic management, driven by entrepreneurial leadership, as key to long-term enterprise success.

2.2 IT Governance, Related Models and Theories

Wilkin and Chenhall's (2020) study on the literature concerning ITG reveals that recent studies in the field have taken a broader, holistic organizational perspective compared to traditional ITG approaches. An early definition adopted in research was "specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT" (Weill & Ross, 2004, p. 2). This traditional view (see Figure 2.3), focuses on the various assets related to IT governance, including human, financial, physical, intellectual property, and IT assets.

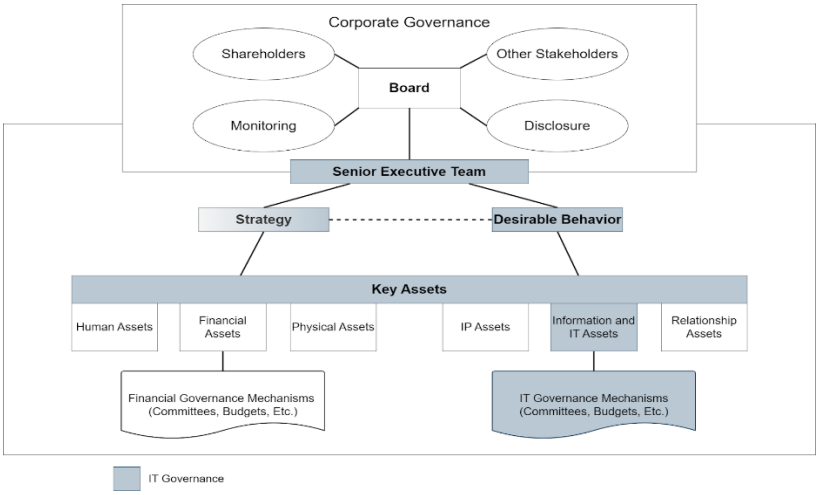

Figure 2.3: Governance and IT governance overview, adapted from Weill and Ross (2004)

However, more recent research frames IT governance as a method to ensure that IT supports and advances the strategies and goals of the organization, emphasizing IT as a tool for value creation, risk management, and strategic alignment (Wilkin & Chenhall, 2020). Wilkin and Chenhall (2020) articulate that regarding ITG, "the essence remains people, product, processes, and performance, as well as controlling and monitoring outcomes" (Wilkin & Chenhall, 2020, p. 257). Our working definition of ITG follows this contemporary perspective, directing attention towards strategic alignment, and revolving around its essence: people, product, and processes.

Wilkin and Chenhall's (2020) holistic view of IT governance (see Figure 2.4), encompasses a more comprehensive perspective of the components constituting IT governance today.

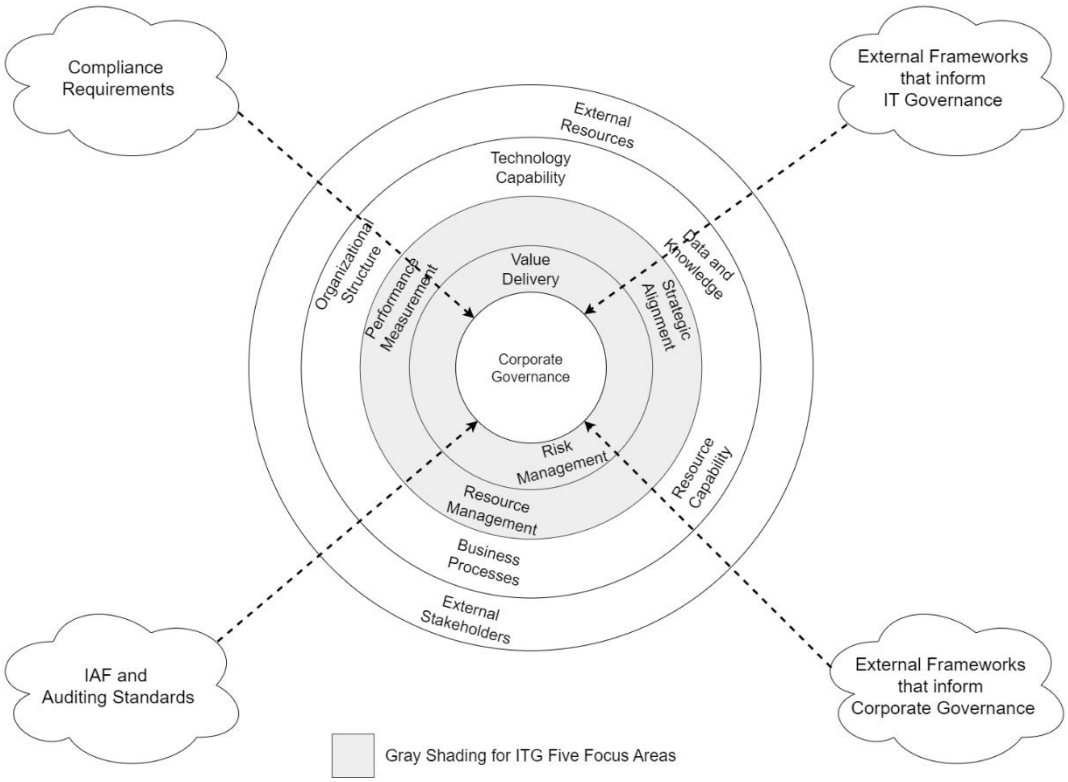

Figure 2.4: Organizational Perspective of the Components of ITG, adapted from Wilkin and Chenhall (2020)

Thus, it can be said that contemporary ITG has broadened and increased in complexity, necessitating the creation and utilization of capabilities within the organization to enable effective governance.

2.2.1 Emerging Challenges in IT Governance

ITG is fundamentally about managing and controlling IT systems to align IT investments with business objectives. Within this ITG framework, AI and Data Governance are increasingly recognized as crucial elements (Mäntymäki et al., 2022; Otto, 2011). Although our primary focus lies on foundational concepts of ITG, acknowledging AI and Data Governance is important as they extend the principles of ITG into more specialized areas. Mäntymäki et al. (2022) noted that AI governance has received growing attention, focusing on how AI technologies can align with organizational strategies, objectives, and values while fulfilling legal requirements and adhering to ethical principles (Mäntymäki et al., 2022). Similarly, Data Governance is described as a company-wide framework that manages data as a strategic asset, crucial for informed decision-making and operational efficiency (Otto, 2011).

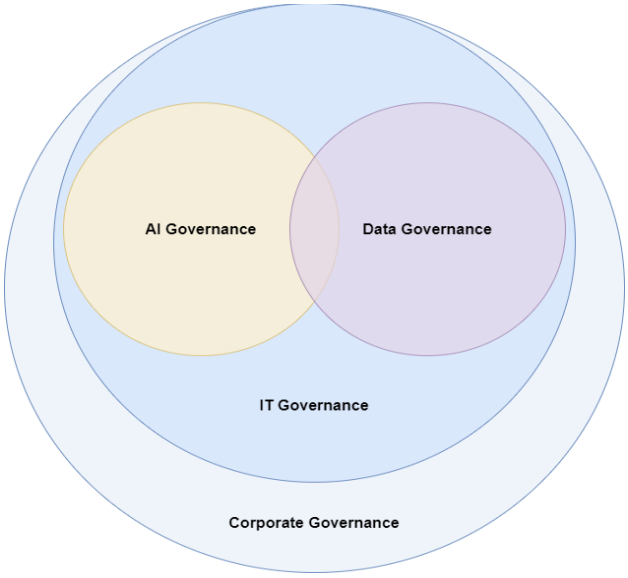

Figure 2.5: Governance Structure, adapted from Mäntymäki et al. (2022)

These subsets of IT governance (see Figure 2.5), reflect a broader trend towards specialized governance frameworks that complement traditional ITG by addressing specific technological challenges and opportunities. They are particularly relevant as digital technologies become pervasive, emphasizing the need for structures that ensure responsible and effective technology use.

2.2.2 Core Focus Areas of IT Governance

The five core focus areas of ITG are essential for ensuring that IT supports and advances organizational goals. These areas are (Wilkin & Chenhall, 2020):

- Value delivery
- Strategic IT/Business alignment
- Resource management
- Risk management
- Performance measurement

Each of these focus areas plays a critical role in creating robust IT governance practices. Effective ITG ensures that IT investments deliver value, align with business objectives, manage resources efficiently, mitigate risks, and measure performance accurately.

Buchwald et al. (2014) define ITG success as:

> the extent to which a clearly defined and transparent set of structures, processes, and standards exists, is accepted across the organization, and integrated into daily work routines (Buchwald et al., 2014, p. 139).

This definition underscores the importance of implementing ITG through the integration of structure, processes, and standards, facilitating widespread adoption within the organization. Moreover, De Haes & Van Grembergen (2009) highlight that the elements of ITG include the

deployment of structures, processes, and relational mechanisms, further emphasizing the comprehensive approach required for successful ITG.

De Haes and Van Grembergen (2015) and Wu et al. (2015) argue that ITG serves foundational mechanisms that enable alignment between business and IT, which is crucial for facilitating value creation through IT investments. The model developed by Wu et al. (2015) (see Figure 2.6), was empirically validated in their studies to confirm this chain of enablement, showing how effective ITG structures and mechanisms act as antecedents to support business and IT alignment, leading to enhanced value generation.

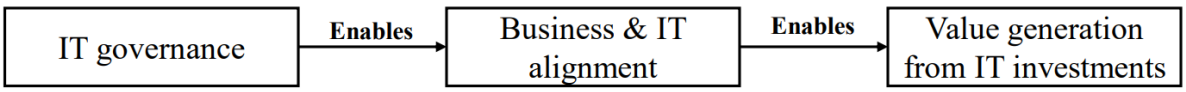

Figure 2.6: Enterprise Governance of IT, adapted from Wu et al. (2015)

The implementation of ITG is essential for organizations, aiming in guiding enhancements across the five central focus areas within ITG. It plays an essential role in establishing and executing frameworks, mechanisms, and communicative strategies that enable IT and business professionals to effectively perform their duties. This, in turn, aims at aligning IT with business goals and maximizing the value derived from IT-enabled business investments.

The forthcoming sections will provide a concise overview of the five key domains of ITG, with detailed emphasis placed on the business and IT alignment aspect, covering the Strategic Alignment Model (SAM).

2.2.3 Strategic IT and Business Alignment

Strategic IT/Business alignment is crucial for SMEs aiming to leverage technology for competitive advantage and agile response to market changes. Central to this is the Strategic Alignment Model (SAM) introduced by Henderson and Venkatraman (1999), illustrating how IT capabilities can be aligned with business strategies to drive organizational goals.

Research indicates that ITG mechanisms should polish strategic alignment efforts by delineating corporate and business unit needs and establishing boundaries and capabilities within these areas (Wilkin & Chenhall, 2020). Chan and Reich (2007) states that alignment can be seen as an ongoing process that requires specific reactions and actions. They mention that strategic alignment of IT and Business ensures that IT actively supports and advances business goals. Moreover, it underscores the importance of an approach that synchronizes rather than isolates the organization's IT and business strategies.

One of the first models to clearly describe the interrelationship between business and IT is the Strategic Alignment Model (SAM) introduced by Henderson and Venkatraman (1999) (see Figure 2.7). It is argued to be the most widely adopted model in alignment research (Hiekkanen et al., 2013). Moreover, Coltman et al. (2015) mentioned that:

> ... the Strategic Alignment Model was never intended as a way to measure IT alignment but rather as a way to think about IT strategy and whether the business strategy informed the IT strategy or vice versa … (Coltman et al., 2015, pp. 92–93).

Therefore, it is a useful model to utilize in understanding the cause and effect of IT and business strategies on organization and IT infrastructure in an organizational setting.

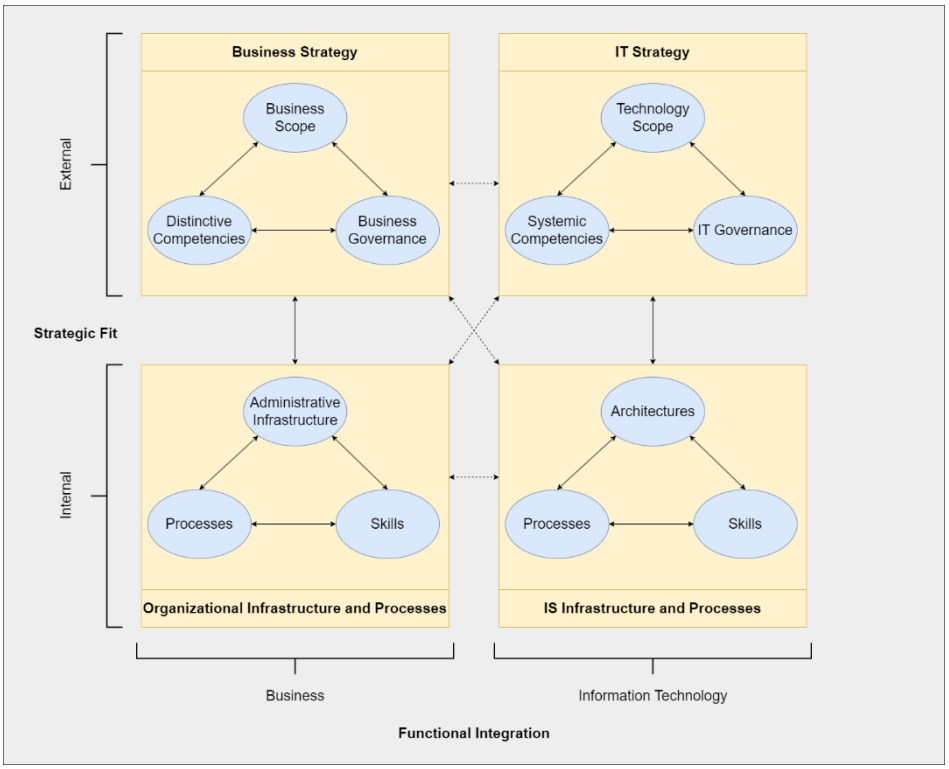

Figure 2.7: Strategic Alignment Model, adapted from Henderson and Venkatraman (1999)

The SAM outlines two foundational elements (Henderson & Venkatraman, 1999):

> **Strategic fit:** This aspect evaluates the impact of strategic decisions on both the organization's external market positioning and internal IT management (Henderson & Venkatraman, 1999).
> **Functional Integration:** This includes strategic integration, which links business and IT strategies to support external competitive advantages, and operational integration, which aligns internal structures and processes with IT infrastructure (Henderson & Venkatraman, 1999).

Henderson and Venkatraman stress that both external and internal domains are critical and caution against a focus solely on external factors like business and IT strategies without addressing internal operational needs. They highlight the risks of underestimating the need for internal adjustments, such as the redesign of key business processes. The model promotes recognizing a multivariate relationship, integrating at least three of its main components: business strategy, IT strategy, organizational infrastructure, and IT processes. Alongside with this they proposed four perspective to assess and guide strategic alignment initiatives (see Figure 2.8) (Henderson & Venkatraman, 1999):

> **Strategy Execution:** Focuses on management's role in aligning business strategies with organizational infrastructure and IT infrastructure (Henderson & Venkatraman, 1999).

Technology Transformation: Assesses how Business strategy can support and enhance IT strategy and IT infrastructure for a competitive edge (Henderson & Venkatraman, 1999).
Competitive Potential: Aims to leverage IT strategy to influence business strategies and foster new organizational infrastructures (Henderson & Venkatraman, 1999).
Service Level: Emphasizes an IT-first organization approach. In other words, aligning IT strategy and infrastructure to drive organizational infrastructure changes (Henderson & Venkatraman, 1999).

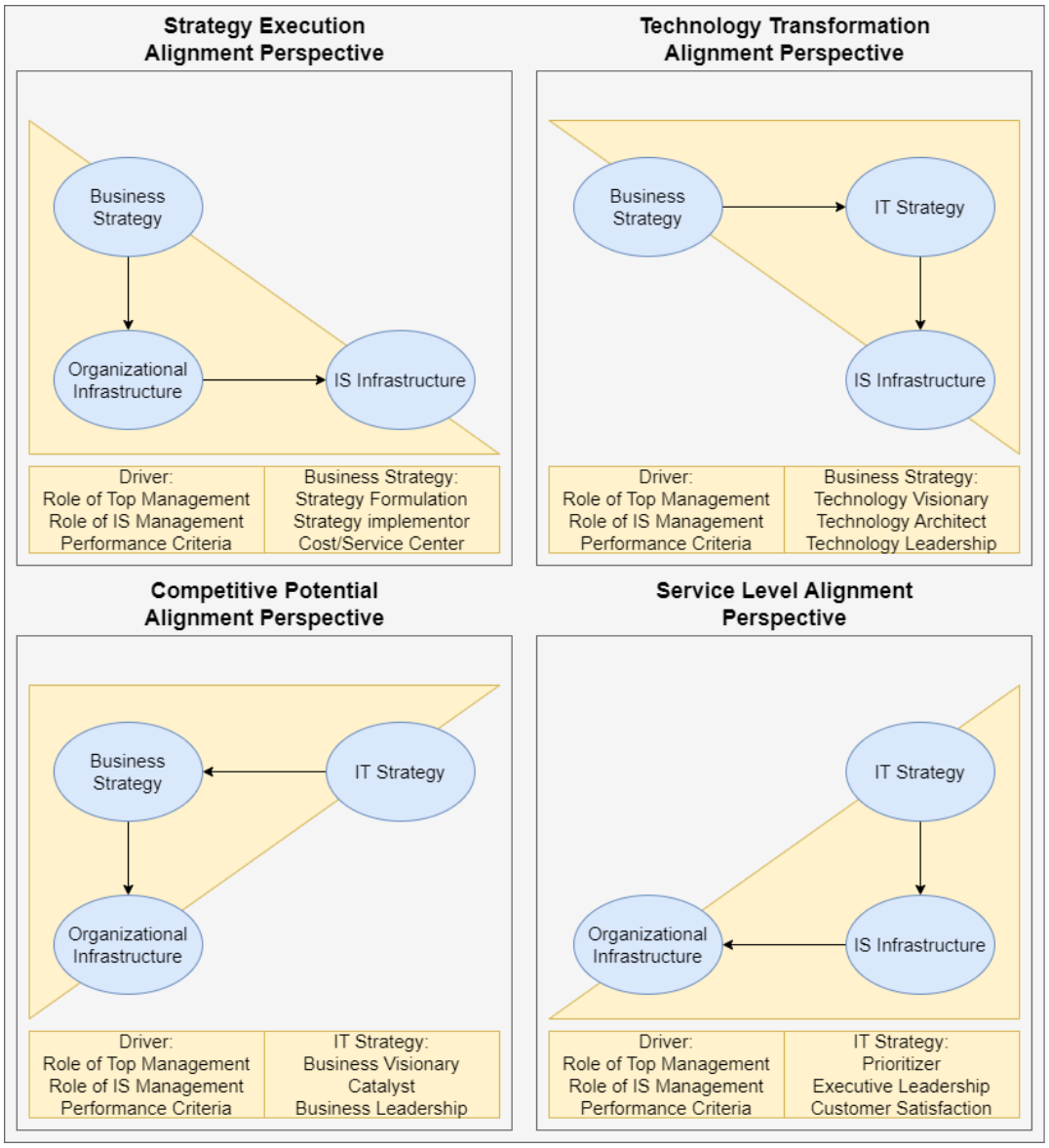

Figure 2.8: Alignment Perspectives, adapted from Henderson and Venkatraman (1999)

2.2.4 Value Delivery

There is no question that IT is a tool for organizations to create value (Kohli & Grover, 2008). Moreover, Kohli and Grover identify the mediating factors of IT in creating value as:

- IT and organizational resources
- Organizational (IT-based) capabilities
- Strategic IT/business alignment

They contend that business capabilities are the main driver behind value creation and emphasize the need to better understand how IT can be exploited to create the necessary business capabilities.

ITG's contribution to value delivery can be viewed through multiple lenses. Wilkin and Chenhall (2020) explain that the core delivery of value through ITG involves various effective mechanisms, such as the involvement of senior management in IT investment decision-making processes and the cultivation of IT expertise at the board level. Other strategic approaches include centralizing or decentralizing decision-making to align with the level of business environment uncertainty.

ITG plays a crucial role in establishing practices that allow SMEs to enhance their market-sensing abilities and transformation capabilities (Neirotti & Raguseo, 2017). Research suggests that IT managers' capabilities should be emphasized in enabling IT adaptability (Heart et al., 2010). This involves quick responses to changes in costs and market demands, as well as flexibility in strategic decision-making regarding IT investments, which should be based on their value-delivering potential (Wilkin & Chenhall, 2020).

2.2.5 Performance Measurement

Performance measurement of ITG initiatives remains challenging, specifically due to the complexity of blending tangible and intangible benefits (Wilkin & Chenhall, 2020). De Haes and Van Grembergen (2015) state that when both costs and benefits are quantifiable, it allows for traditional performance measurement methods such as return on investment (ROI) and net present value. However, intangible values such as "better decision-making" and "increased customer satisfaction" do not fit into the traditional way of measuring performance. Moreover, they highlight the importance of recognizing that different levels of management and people perceive the value of IT differently across the organization.

In the context of ITG and linking the organizational structure with the processes and the communication approaches, the Balanced Scorecard (BSC) has been a common tool for practitioners in the field to utilize when measuring and managing the value of IT. Recognized by Gartner (2010) as an effective framework in performance management. The BSC was introduced by Kaplan and Norton (Kaplan, 2009) with the premise of creating a framework to account for both intangible and tangible assets, assisting managers in monitoring the execution of planned strategies (Awadallah & Allam, 2015). The BSC considers the traditional measurements of evaluating financial performance but supplements it with the cause and link to three other perspectives (Kaplan, 2009):

- The customer
- Internal business processes
- Learning and growth

For each of the four perspectives, objectives are articulated and measured, a target is set if possible, and the initiatives that will achieve these objectives are formulated.

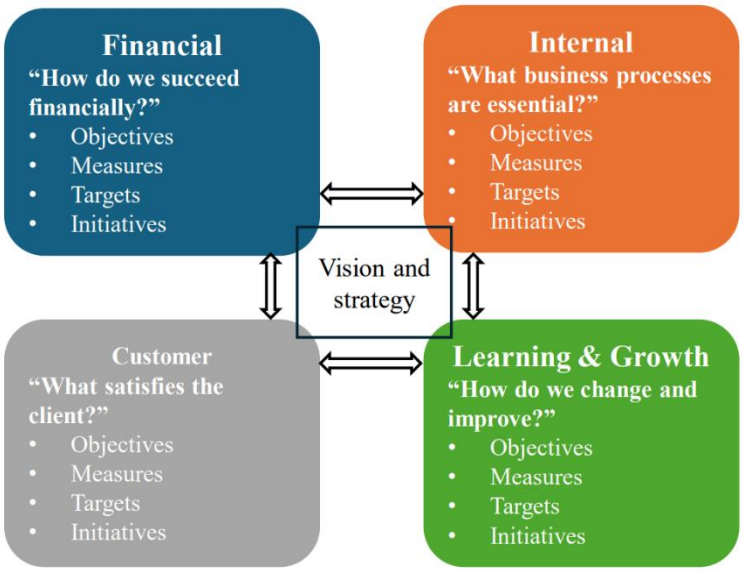

Figure 2.9: Balanced Scorecard, adapted from Kaplan (2009)

While the BSC has been widely adopted and recognized for its comprehensive approach, it has also been criticized. Critics argue that the BSC could introduce rigidity by forcing performance measures into predefined categories, which might not be relevant for all types of organizations (Awadallah & Allam, 2015).

Moreover, the BSC lacks a clear framework for defining Key Performance Indicators (KPIs) to support managers. Instead, the BSC emphasizes more subjective measures for evaluating and monitoring the performance of strategies, which can limit its effectiveness (Awadallah & Allam, 2015). Additionally, implementing the BSC is resource-intensive and could create significant workloads and shifts in power dynamics, potentially leading to employee and managerial resistance (Antonsen, 2010; Awadallah & Allam, 2015).

2.2.6 Resource Management

In examining the realm of IT Governance, particularly concerning resource management, the systematic literature review by Wilkin and Chenhall (2020) elucidates three pivotal components: the expertise of people, data and technology management, and the optimization of investments for effective resource management. Wilkin and Chenhall mentions that there is an increasing emphasis on shared understanding and fostering trust within organizational IT practices, underlining the importance of collective engagement and clear communication regarding IT's mutual value. The review further discusses the strategic importance of building consensus through shared visions and social capital, essential for empowering stakeholders and fostering a collaborative culture instrumental to achieving IT governance objectives. Furthermore, there is an important aspect in exploring ITG's role to achieve agility (Luna et al., 2015; Vejseli et al., 2020; Wilkin & Chenhall, 2020).

2.2.7 Risk Management

Risk management is critical in IT, enabling organizations to assess the risks they face and balance investments in security to mitigate these risks. As specified by NIST:

> "Risk management is the process that allows IT managers to balance the operational and economic costs of protective measures and achieve gains in mission capability by protecting the IT systems and data that support their organizations' missions." (Stoneburner et al., 2002, p.4)

This balance ensures the capabilities needed to fulfil these missions exist, underscoring the importance of comprehensive risk management methods.

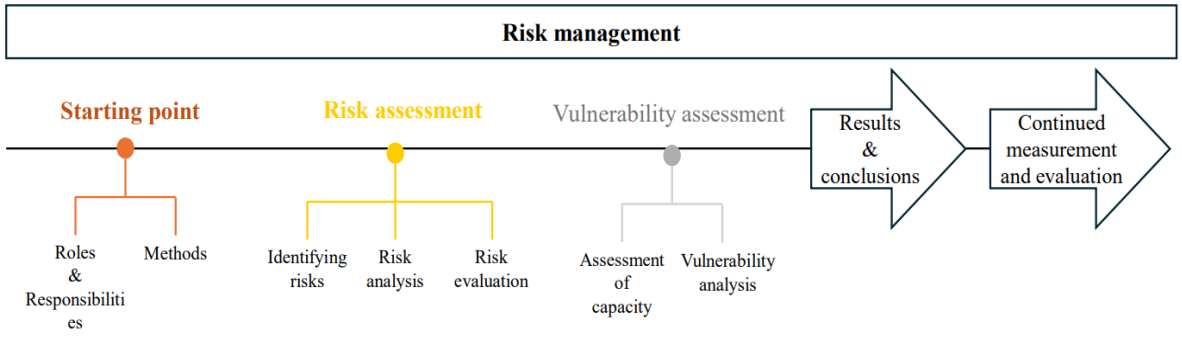

Figure 2.10: Risk Management Process, adapted from (Eriksson & Anna-Karin, 2012)

According to the MSB, the risk management process encompasses several stages: a starting point, risk assessment, vulnerability assessment, and handling risks (see Figure 2.10) (Eriksson & Anna-Karin, 2012). With the rise of big data in technology solutions and decision-making, organizations bear the responsibility of managing associated risks. Effective risk management offers several benefits, including protecting assets, ensuring legal compliance, maintaining trust and reputation, and supporting strategic decisions (Wilkin & Chenhall, 2020). This requires organizations to adeptly identify, analyze, evaluate, and decide on the acceptable level of risk in pursuit of value creation.

For straightforward risk evaluation, the risk matrix approach, particularly the 2x2 model suggested by Ni et al. (2010), is useful for qualitative assessments, though it has limitations in quantifying risks. This model plots the severity of risks against their likelihood, guiding decisions on control measures: tolerating low-severity, low-probability risks; transferring high-severity, low-probability risks (e.g., through insurance); treating low-severity, high-probability risks; and terminating high-severity, high-probability risks (see Figure 2.11).

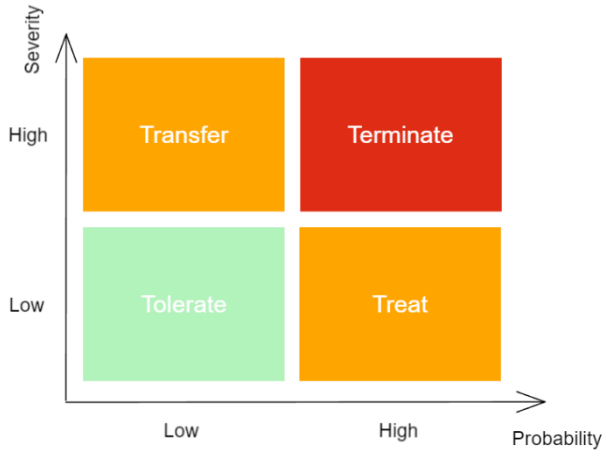

Figure 2.11: 2x2 Risk Matrix Approach, adapted from Ni et al. (2010)

The risk matrix approach emerges as a valuable tool. While not exhaustive in its ability to quantify risks or directly balance regulatory compliance with strategic initiatives, the simplicity of the 2x2 risk matrix model offers a practical method for SMEs to commence their risk assessment process. This approach allows for a preliminary qualitative analysis of risks, which is a crucial step in understanding how risks can impact both compliance and strategic objectives. Therefore, within the scope of our study, we argue that using the risk matrix as a foundational concept can offer guidance in understanding risk management of SMEs.

2.3 IT Governance Frameworks and Enablers

Research indicates a significant relationship between ITG practices and business/IT alignment (Alreemy et al., 2016; De Haes & Van Grembergen, 2009; Huygh et al., 2022; Weill & Ross, 2004; Wu et al., 2015) Additionally, studies demonstrate that effective ITG mechanisms can serve as catalysts for digital transformation—a process defined by Vial (2019) as:

> a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies (Vial, 2019, p.118).

Furthermore, Jewer and Van Der Meulen (2022) and Mulyana et al. (2021) highlight how ITG mechanisms facilitate this transformation. Therefore, ITG not only encompasses the five main focus areas previously described but also extends to digitalization, particularly in creating competitive advantages through innovative IT use (Fast et al., 2023; Warner & Wäger, 2019).

2.3.1 Triggers for ITG Implementation

Buchwald et al. (2014) identified two primary triggers for ITG implementation within organizations: internal and external. Internal triggers focus on enhancing organizational efficiency through comprehensive coverage and alignment between business and IT. External triggers, however, stem from market pressures, changes, and notably, regulatory and legal requirements. Alreemy et al. (2016) suggest that these external regulations significantly impact IT operations and should be addressed prior to implementing ITG practices.

Further exploring this dynamic, Huygh et al. (2022) examined the relationship between compliance demands and the implementation of IT governance. Their research indicates that as regulatory pressures increase, so does the level of ITG implementation. This correlation suggests that to meet compliance effectively, organizations must develop mature ITG and management processes. Moreover, compliance not only requires these processes to be robust but also well-documented and demonstrable. The study also highlights that the significance of ITG mechanisms escalates with increasing regulatory pressure, underscoring the need for adaptive governance frameworks capable of evolving in response to external demands.

SMEs face a diverse range of regulatory pressures that span across accounting, cybersecurity, data, market, and industry-specific regulations (Butler et al., 2023). Notable among these is the EU's General Data Protection Regulation (GDPR), aiming to protect users with regards to the processing of personal data (Regulation 679/2016). The increasing reliance on data within organizational processes, such as decision support systems and performance measurement

methods, underscores the necessity for stringent compliance to maintain competitive advantages (Abraham et al., 2019).

According to the context of the proposal of cybersecurity requirements regulation, cyberattacks globally caused 5.5€ Trillion in costs during 2021, and the two main objectives of the proposed regulation are:

- To ensure security during the products life-cycle (Regulation 1020/2019).
- Allow customers to assess a product's security capabilities (Regulation 1020/2019).

This regulation aims to protect and increase customer awareness while simultaneously adding pressure on organizations to comply. Additionally, the recently revised NIS2 Directive (Directive 2555/2022) notably expands the scope of entities required to implement enhanced cybersecurity measures. As stated in the directive, the goal is to improve cybersecurity risk-management measures and increase reporting obligations for enterprises. This broadening includes sectors such as digital infrastructure and could significantly impact SMEs across various industries. The directive mandates that companies adopt robust, state-of-the-art cybersecurity practices and frameworks, which could profoundly affect how SMEs manage their IT governance.

The impact of regulatory compliance on organizations includes the costs of adapting IT systems to meet regulatory standards. Effective compliance relies on the ITG maturity of the organization, enabling the necessary transformations to meet these standards (Buchwald et al., 2014; De Haes & Van Grembergen, 2009; Fast et al., 2023).

2.3.2 COBIT 5 Framework

A central framework in ITG implementation is COBIT 5 (Control Objectives for Information and Related Technology), which strives to set up a comprehensive set of practices to enhance IT governance and management within an organization (De Haes et al., 2013). According to ITGovernanceUK (2024), COBIT 5 is based on five core principles:

- Meeting stakeholder needs,
- Covering the enterprise end-to-end,
- Applying a single integrated framework,
- Enabling a holistic approach,
- Separating governance from management.

The COBIT 5 framework identifies 37 IT processes divided into governance and management areas (see Figure 2.12) (ISACA, 2012). Governance tasks generally fall under the purview of stakeholders and owners, covering aspects like investment criteria, risk appetite, and resource optimization, all aimed at providing stakeholder transparency (ISACA, 2012; De Haes et al., 2013). De Haes et al. (2013) state that clear identification and delegation of these processes support the framework's principle of applying a single integrated framework. Strategic alignment plays a crucial role in meeting stakeholder needs (Wu et al., 2015), and end-to-end enterprise coverage relies on integrating IT with business functionalities, treating IT technologies as valuable assets (De Haes et al., 2013).

The components of COBIT 5 are categorized into five subdomains (De Haes et al., 2013; Huygh et al., 2022; ISACA, 2012):

- Align, Plan, and Organize (APO),
- Build, Acquire, and Implement (BAI),
- Deliver, Service, and Support (DSS),
- Monitor, Evaluate, and Assess (MEA),
- Evaluate, Direct and Monitor (EDM)

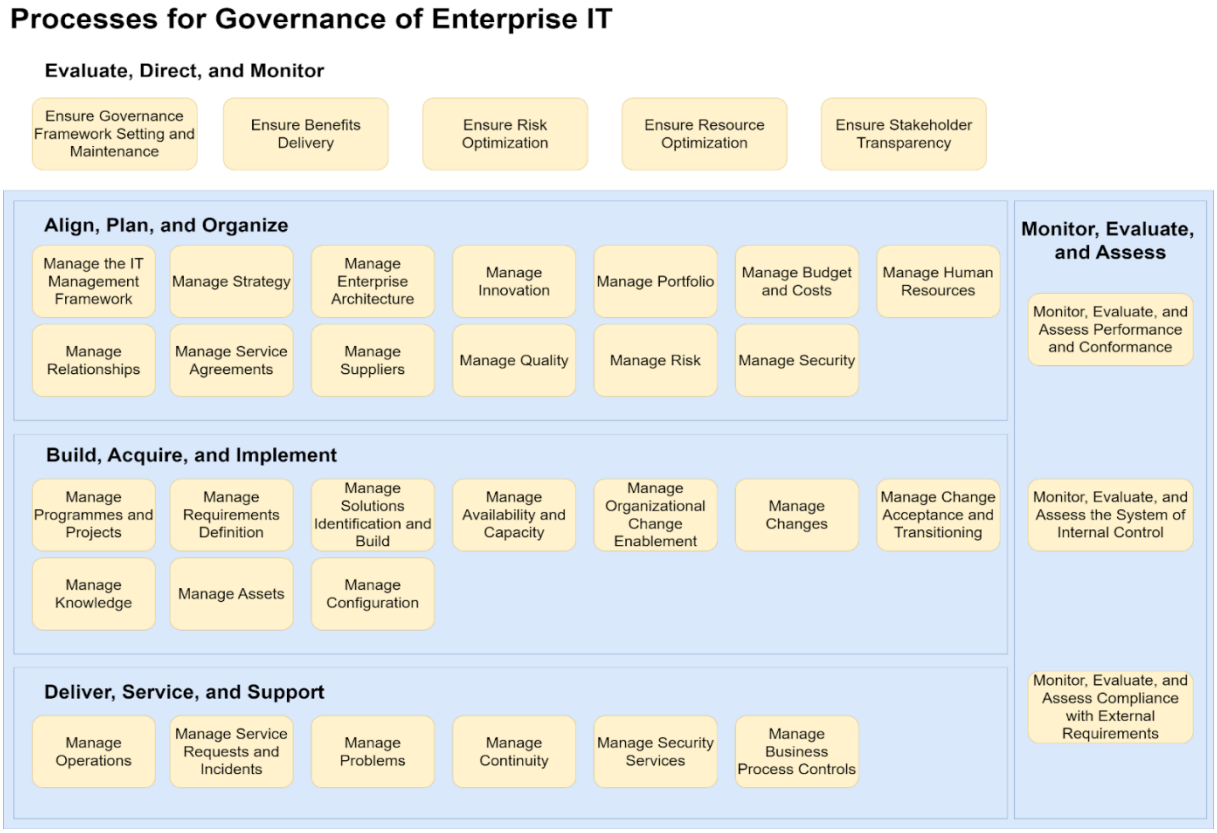

Figure 2.12: COBIT 5 process reference model, adapted from ISACA (2012)

2.3.3 Key Success Factors and Barriers

As shown in the reference model, numerous elements are interrelated within this framework. The challenge of ITG lies in designing processes and structures that enable effective value creation and business/IT alignment (Bartens et al., 2015). The complexity of designing these processes has been verified in a study by Othman and Chan (2013), which also identified other perceived barriers to ITG implementation, such as resistance to change, organizational politics, and lack of middle management support. Organizational politics, in particular, can shift decision rights and power, leading to behaviors that prioritize self-interest over the business's immediate needs (Othman & Chan, 2013). Additionally, there is a challenge in acquiring and retaining the required IT staff (Othman & Chan, 2013).

Wu et al. (2015) described IT governance as the capacity of board members, executives, and IT managers to oversee IT strategy implementation and manage key assets through mechanisms that facilitate the development of aligned policies and procedures. These mechanisms,

acting as human IT resources, should promote exceptional coordination between IT and business functions to optimize core resource utilization. Our research primarily focuses on the fourth principle of COBIT 5—enabling a holistic approach. This principle addresses the structures, processes, and relational mechanisms established to allow organizational members to collaborate effectively, thereby creating value and gaining a competitive advantage. Within the COBIT framework, these facilitators are recognized as "enablers" (see Figure 2.13), which include organizational structures, processes, people, skills and competencies, culture, ethics and behaviour, services, applications, and infrastructures, each playing a vital role in the successful implementation of ITG (ITGovernanceUK, 2024; ISACA, 2012).

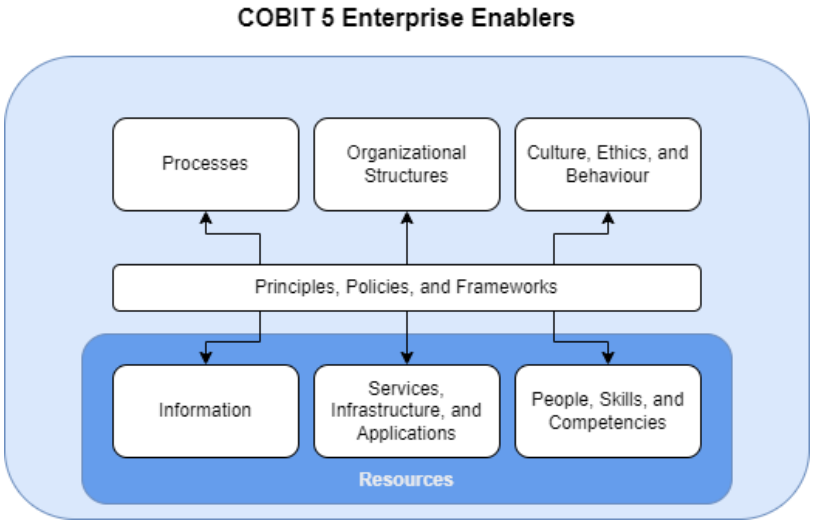

Figure 2.13: COBIT 5 Enterprise Enablers, adapted from ISACA (2012)

Additionally, Alreemy et al. (2016) study pinpointed critical success factors for implementation of ITG practices, drawing from sources such as COBIT, VAL IT, ISO 38500, and existing research (see Table 2.1). They organized these factors into five main categories, providing a structured overview of the elements critical to the success of IT governance frameworks. This categorization helps in understanding the multifaceted nature of the factors that enable implementation of ITG practices.

Category	CSF no	CSFs
Strategic alignment	1	Adequate stakeholder involvement
	2	Adequate management support and ownership
	3	Effective alignment and communication between IT and business strategy
	4	Effective communication between IT and business

Environmental effect (external)	1	Regulatory environment & requirements compliance
Organizational effect (internal)	1	Clear ITG policies, principles & responsibilities
	2	Effective current enterprise governance
	3	Appropriate organizational culture
	4	Clear IT strategy, principles & policies
	5	Good organization change strategy
Performance management	1	Adequate analysis, evaluation of the current and future use of IT
	2	Good project management methodology
	3	Effective performance management strategy
Resource management	1	Sufficient financial support
	2	Adequate IT skills & staff

Table 2.1: Success Factors for ITG Framework from Alreemy et al. (2016)

2.4 Agile Governance, Related Models, and Theories

Agile governance has emerged in response to the rapid changes in technology and business, integrating agile methodologies within organizational functions to enhance flexibility, adaptability, and responsiveness (Luna et al., 2015). The necessity for agile governance arises from the need for organizations to quickly adapt to maintain competitiveness. Agile governance bridges the gap between agile practices and traditional governance, facilitating a dynamic approach to managing strategic objectives while maintaining robust governance mechanisms that positively affects firm outcome (Luna et al., 2014; Vejseli et al., 2022). On a high level agility is defined as:

> ... the ability to respond operationally and strategically to changes in the external environment through IT. The response has to be quick and effective for the organization to be considered agile (Fink & Neumann, 2007, p.444).

Recent studies have shown that agility plays a key role in influencing higher-level organizational governance frameworks, shifting from frameworks that rely on hierarchy and standardized mechanisms to mechanisms that include agility (Vejseli et al., 2022). This evolution reflects a broader application of agile methodologies, aimed at enhancing responsiveness and decision-making processes at various organizational levels (Luna et al., 2014). Agile

governance involves embedding agile principles into the governance frameworks that guide strategic direction and operational execution, essential for leveraging information technologies to achieve business goals (Luna et al., 2014; Vejseli et al., 2020). This dual approach addresses the tensions between traditional and agile practices, allowing for operational effectiveness while fostering innovation and positively impacting business IT/alignment and value delivery (Luna et al., 2014; Mohammed & Taborda, 2023; Vejseli et al., 2022).

2.4.1 Agile Governance Theoretical Foundations

Figure 2.14: Theory of Agile Governance, A Conceptual Framework, adapted from Luna et al. (2015)

A conceptual development of agile governance theory (Luna et al., 2015), presents a structured approach to integrating agility into governance frameworks, aimed at enhancing organizational responsiveness and adaptability in the face of rapidly changing environments. Luna et al. (2014) defines agile governance broadly as:

> Agile governance is the ability of human societies to sense, adapt and respond rapidly and sustainably to changes in its environment, by means of the coordinated combination of agile and lean capabilities with governance capabilities, in order to deliver value faster, better, and cheaper to their core business (Luna et al., 2015, p.8).

The theory identifies critical constructs such as agile capabilities and governance capabilities, alongside the dynamics between environmental and moderating factors that influence business operations. It suggests that the synergistic combination of agile and governance capabilities leads to improved business operations and value delivery, suggesting the benefits of incorporating agile methodologies within governance capabilities to foster a more dynamic and responsive organizational environment (Luna et al., 2015).

2.4.2 Agile Governance Laws of Interaction

Agile governance is a transformative approach that integrates the responsiveness and flexibility of agile methodologies with the structured control mechanisms of traditional governance. This section explores the laws of interaction or synergy between the main units of the theory as proposed by (Luna et al., 2015):

1st Law (of agile governance): This law states that agile governance emerges when agile capabilities are effectively combined with governance capabilities. The synergy between these capabilities enhances business operations, leading to improved value delivery. This highlights the critical interaction between agility and structured governance in fostering an effective governance environment. (Luna et al., 2015)

2nd Law (of specific agile approach): This law points out that applying agile capabilities in various organizational contexts, beyond traditional governance roles, boosts business operations and thus, value delivery. It emphasizes the versatility and impact of agile practices across different areas of an organization. (Luna et al., 2015)

3rd Law (of moderator factors effects): According to this law, internal moderator factors can negatively impact both agile and governance capabilities, potentially reducing business operations and value delivery. This law underlines the importance of managing internal constraints that can hinder the effectiveness of agile governance. (Luna et al., 2015)

4th Law (of environmental factors effects): This law focuses on the role of external environmental factors and their potential to disrupt organizational contexts. These disruptions affect moderator factors, agile and governance capabilities, and business operations, which in turn can impact value delivery. It emphasizes the need for an agile governance framework that can respond adaptively to external pressures and changes. (Luna et al., 2015)

5th Law (of sustainability and competitiveness): This law suggests that a well-coordinated interaction between agile and governance capabilities can mitigate the adverse effects of both environmental and moderator factors. By reducing these negative impacts, the organization can sustain and enhance its operations and competitiveness over time, leading to better value delivery. (Luna et al., 2015)

6th Law (of value delivery): This final law asserts that enhancements in business operations directly lead to improvements in value delivery. It focuses on the causal relationship between effective business practices and the resultant benefits to the organization. (Luna et al., 2015)

These laws of interaction provide a structured way to understand the dynamics within an agile governance framework, demonstrating how different elements within the organization influence each other and contribute to overall effectiveness and adaptability. They serve as critical linkages that explain the behaviour and outcomes of agile governance practices.

2.4.3 Differentiating ITG and Agile Governance

IT governance focuses on structured control, risk management, and performance measurement of IT resources to support business objectives and manage risks associated with IT assets. It employs frameworks such as COBIT and ITIL that provide structured management of IT processes, aligned with business strategies through defined policies and metrics (Luna et

al., 2015). On the other hand, agile governance extends beyond traditional IT governance by promoting flexibility and responsiveness within organizational frameworks. A significant aspect highlighted in recent studies, such as by Vejseli et al. (2019), is the importance of fast decision-making processes. These processes not only facilitate self-organization and stimulate continuous learning but also are critical for fostering innovation within organizations. Key relational mechanisms critical to agile governance mentioned by Vejseli et al. (2019) include:

Open Communication and Participation: Emphasizing transparency and employee involvement, this mechanism is essential for achieving strategic goals and rated highly effective (Vejseli et al. 2019).

Continuous Employee Training: Cross-functional training on agile practices helps develop critical and strategic thinking skills, crucial for overcoming organizational silos (Vejseli et al. 2019).

Transformational Leadership: Leaders are encouraged to engage, coach, and develop employees, moving beyond transactional management styles to foster a proactive and dynamic workforce (Vejseli et al. 2019).

Empowerment of Employees: Allowing employees to make strategic decisions enhances organizational responsiveness and agility, reflecting a shift towards a more participative governance style (Vejseli et al. 2019).

Collaboration with External Partners: Engaging with startups and research partners enhances innovation and agility, with significant mentions of its effectiveness in adapting to new challenges (Vejseli et al. 2019).

IT governance and agile governance serve distinct yet complementary organizational needs, with IT governance providing structure for IT management and agile governance enhancing overall agility. The selection between these approaches depends on the organization's priorities, industry requirements, and specific challenges. This differentiation facilitates tailored governance to support strategic goals effectively. Table 2.2 demonstrates the meta values that Luna et al. (2015) proposed to be used to guide the actions teams take. Additionally, it illustrates the principles that differentiate the aspects of agile and traditional governance.

Governance Principles and Meta-values	
Agile governance	**Traditional Governance**
Focuses on **behavior** and **practice**	Focuses on **process** and **procedures**
Aims to achieve **sustainability** and **competitiveness**	Aims to fulfil **auditing** and **complying**
Directs attention to **transparency** and **people's engagement** to the business	Directs attention to **monitoring** and **controlling** mechanisms
More dynamic, focusing on **sensing**, **adopting** and **responding**	Follows formulated **planning**

Table 2.2: Agile vs Traditional Governance, adapted from Luna et al. (2015)

2.4.4 Integration of Agile Governance and IT Governance

Research by Elazhary et al. (2023) highlights the critical role of IT governance in environments disrupted by new technologies, emphasizing its importance in aligning IT with business objectives, enhancing IT capabilities, and fostering innovation. This alignment not only stabilizes but also enables organizations to introduce new IT capabilities effectively, supporting organizational agility during transitions. The study points out that IT governance frameworks provide necessary assurance and management controls, essential for achieving innovation goals and maintaining agility in dynamic business environments.

Vejseli et al. (2022) propose that organizations should integrate traditional ITG mechanisms with agile practices to merge business and IT knowledge, enhancing strategic alignment and overall performance. Key agile practices, such as forming interdisciplinary teams, managing self-organized projects, and establishing innovation labs, cultivate a culture of flat communication and continuous co-creation with customers. This integration not only supports business objectives but also equips organizations to adapt quickly to new challenges and opportunities in rapidly changing markets.

By allowing for the separate measurement of ITG effectiveness in both agile and traditional contexts, this blended approach provides a comprehensive model for assessing and optimizing ITG's impact on business alignment and performance (see Figure 2.15). Such strategic integration is vital for organizations striving to remain competitive and agile in fast-evolving industries.

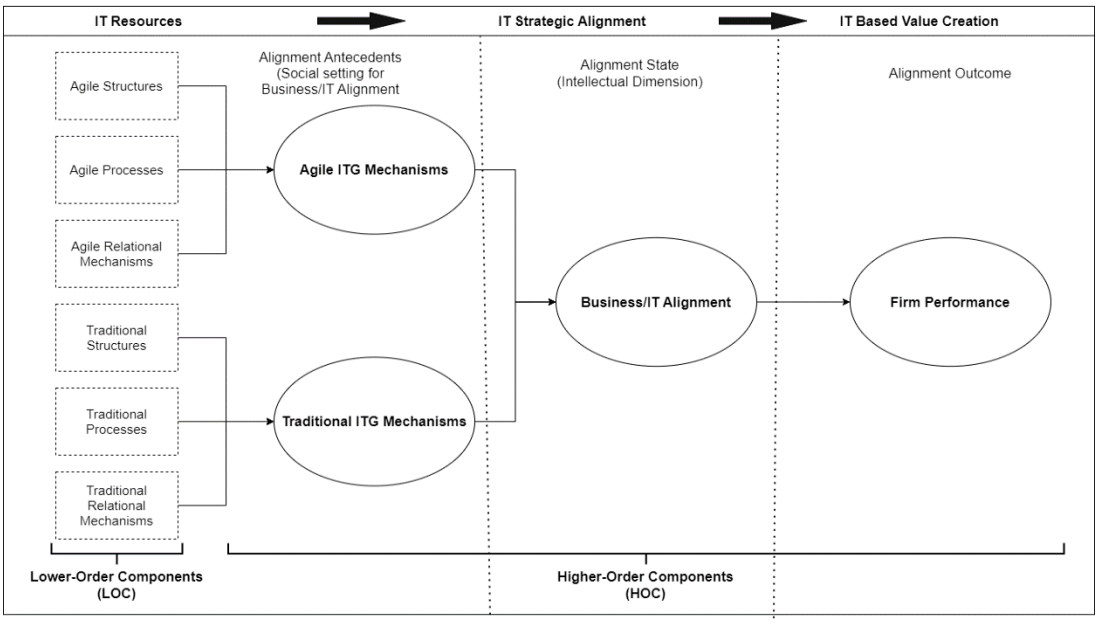

Figure 2.15: Traditional and ITG Mechanisms Alignment Model, adapted from Vejseli et al. (2022)

2.5 Literature Review Summary

The literature review chapter aims to provide a comprehensive overview of the current research and knowledge of IT Governance (ITG) and the factors that influence its implementation. By examining existing literature, this chapter seeks to establish foundational concepts and theories related to ITG, highlighting key models and practical frameworks.

The chapter begins by discussing Corporate Governance, emphasizing the OECD Principles of Corporate Governance. These principles serve as benchmarks for legal, institutional, and regulatory frameworks, covering effective governance structures, shareholder rights, equitable treatment, stakeholder roles, transparency, and board responsibilities. This section sets the stage for understanding how robust governance structures support organizational goals. Next, the review explores Agency Theory, focusing on the principal-agent problem and how principals can ensure agents act in their best interest. It integrates behavioral aspects to better understand IT investment decisions and the importance of aligning these investments with strategic goals. The discussion includes challenges to Agency Theory, particularly in the context of SMEs, where trust and social-psychological processes play a crucial role. Strategic Management is another key theme, involving the definition of a company's mission, strategic decisions, objectives, and leveraging capabilities to sustain competitive advantage. Lastly, the Dynamic Capabilities Theory was introduced, emphasizing the need to sense opportunities, seize them, and transform resources, which are highlighted as essential capabilities for maintaining organizational agility in volatile markets.

IT Governance itself is examined through its five core focus areas: strategic IT/business alignment, value delivery, performance measurement, resource management, and risk management. Effective ITG ensures that IT initiatives support organizational strategies and goals, promoting value creation and risk mitigation. This section also discusses upcoming challenges of ITG, such as AI and Data Governance. The chapter then delves into practical models used in ITG, including the Strategic Alignment Model (SAM) for aligning IT and business strategies, the 2x2 Risk Matrix for risk assessment, and the Balanced Scorecard (BSC) for measuring both tangible and intangible IT benefits. These models provide foundational understanding of the concepts within ITG.

The COBIT 5 framework is presented as a comprehensive framework for ITG, emphasizing stakeholder needs, end-to-end enterprise coverage, and a holistic approach. The discussion includes the impact of regulations such as GDPR and NIS2, which necessitate robust ITG frameworks in ensuring compliance and protection of organizational assets.

Agile Governance is introduced as a response to the rapid changes in technology and business environments. This section explores how agile methodologies can be integrated within governance frameworks to enhance flexibility, adaptability, and responsiveness. Agile governance emphasizes the synergy between agile capabilities and structured governance to foster dynamic decision-making and value delivery. Finally, the literature review highlights the evolving nature of ITG, emphasizing the need for integrating traditional governance mechanisms with agile practices to support digital transformation and maintain competitive advantage. This integration is essential for organizations to remain competitive and agile in fast-evolving industries.

Theme	Sub-Theme	Reference

Corporate Governance	• Principles and frameworks • Stakeholder and board responsibilities • Disclosure and transparency	Bebchuk et al. (2004); Brunninge et al. (2007); Rubino & Vitolla (2014); OECD (2023)
Agency Theory	• Principal-Agent Problem • Behavioral Aspects and IT Investment • Trust Theory in SME IT governance	Shapiro (2005); Dong et al. (2021); Devos et al. (2012)
Strategic Management	• Mission and Purpose • Strategic Decisions • Objectives and Goals • Capabilities and Competences	Sadler & Craig (2003)
Dynamic Capabilities	• Sensing (Opportunities and Threats) • Seizing (Capturing Opportunities) • Transforming (Reconfiguring Resources)	Teece (2014)

ITG Background	• The five focus domain areas
	  ○ Strategic IT/Business alignment
	  ○ Value delivery
	  ○ Performance measurement
	  ○ Resource management
	  ○ Risk management
	• Role of IT governance
		Buchwald et al. (2014); Chan & Reich (2007); De Haes & Van Grembergen (2009); De Haes & Van Grembergen (2015); Eriksson & Anna-Karin (2012); Heart et al. (2010); Kohli & Groever (2008); Neirotti & Ragueso (2017); Ni et al. (2010); Sharma et al. (2014); Stoneburner et al. (2002); Weill & Ross (2004); Wilkin & Chenhall (2020); Wu et al. (2015)

ITG extensions	• AI and Data governance	Mäntymäki et al. (2022); Otto (2011)
Research and practical models	• Strategic alignment model (SAM) • 2x2 Risk matrix model • The balanced scorecard (BSC)	Antonsen (2010); Awadallah & Allam (2015); Coltman et al. (2015); Gartner (2010); Henderson & Venkatraman (1999); Hiekkanen et al. (2013); Kaplan (2009); Ni et al. (2010)

ITG in practice and regulatory landscape	• COBIT 5
	• Internal and external triggers for ITG
	• Regulatory pressure
	  ○ EU regulations
	  ○ EU directives
	• Perceived implementation barriers
	• ITG enablers and CSFs
		Abraham et al. (2019); Alreemy et al. (2016); Bartens et al. (2015); Buchwald et al. (2014); Butler et al. (2023); De Haes & Van Grembergen (2009); De Haes et al. (2013); Fast et al. (2023); General EU documentation, specific directives (Regulation 679/2016, Regulation 1020/2019, Directive 2555/2022); Huygh et al. (2022); ISACA (2012); ITGovernanceUK (2024); Jewer & Van Der Meulen (2022); Mulyana et al.

		(2021); Othman & Chan (2013); Vial (2019); Warner & Wäger, 2019; Weill & Ross (2004); Wu et al. (2015)
Agile Governance	• Agile governance Theory & conceptual framework • Effects on agility in ITG	Elazhary et al. (2023); Fink & Neumann (2007); Luna et al. (2014); Luna et al. (2015); Mohammed & Taborda (2023); Vejseli et al. (2019); Vejseli et al. (2020); Vejseli et al. (2022)

Table 2.3: Literature Review Summary Table

Our literature review identifies key themes in governance and ITG, particularly highlighting Agency Theory and Trust Theory. Agency Theory focuses on control mechanisms to align agents' actions with business objectives, ensuring they act in the principals' best interests. However, in SMEs, Trust is more relevant, stressing trust-based systems over formal controls. SMEs typically depend on interpersonal relationships and flexibility rather than rigid governance structures. Thus, a central theme is finding the balance between control mechanisms and fostering trust and autonomy.

Our review highlights five core focus areas of ITG, along with associated models:

- Strategic Alignment: Ensuring that IT initiatives support and advance business strategies. This is exemplified by the Strategic Alignment Model (SAM), which illustrates how IT capabilities can be aligned with business strategies to drive organizational goals.
- Value Delivery: Maximizing the value derived from IT investments.
- Resource Management: Efficient management of IT resources.
- Risk Management: Identifying and mitigating risks associated with IT. The 2x2 Risk Matrix model is useful for qualitative assessments of risks, guiding decisions on control measures to balance risk and opportunity effectively.
- Performance Measurement: Accurately assessing the impact of IT initiatives. Balanced Scorecard

These areas are essential for creating robust IT governance practices that align IT efforts with business goals, thereby enhancing organizational performance and adaptability.

A core theme is Agile Governance theory, which has emerged as a potential complement to traditional ITG frameworks, especially suited for the dynamic nature of SMEs. Agile governance emphasizes a balanced approach where agile practices complement structured governance mechanisms, allowing for both operational effectiveness and innovation.

By combining agile governance with ITG frameworks, SMEs can achieve strategic IT/business alignment, enhance value delivery, and manage resources and risks more effectively. This integrative model supports the dynamic and often unpredictable nature of SMEs, providing a comprehensive governance strategy that is both effective and adaptable. Additionally, it could emphasize the importance of culture and people, fostering trust, continuous learning, and organizational growth, which are crucial for the sustained success and innovation within SMEs.

To further explore these themes, this research conducts a qualitative study to gain a subjective understanding of stakeholders' perspectives. By gathering personal insights about the phenomena of agile governance and formal IT governance practices, we aim to uncover deeper insights and practical implications for SMEs.

3 Methodology

This chapter outlines the research methodology employed in our study to investigate the implementation of ITG within SMEs. It begins by discussing the philosophical underpinnings and theoretical approach that guide the research, providing a framework for understanding the choice of methods. The section then details the specific research methods used, including the design of the study, data collection techniques, and the rationale for choosing a qualitative approach. This is followed by an explanation of the data analysis procedures and the steps taken to ensure the validity and reliability of the research findings. By articulating the methodology clearly, this chapter aims to provide transparency and allow for the reproducibility of the study, while also setting the foundation for interpreting the results in the context of ITG in SMEs.

3.1 Research Philosophy

Philosophical questions are essential for defining the knowledge we aim to generate with our research (Hassan et al., 2018). They strengthen reasoning and build a foundation for the inferences made in the study (Recker, 2021). Following Hassan et al. (2018), we adopt an ontological stance that acknowledges the objective facts of IT governance mechanisms within SMEs. This involves addressing what exists, what properties these elements have, and how they are interrelated. Recognizing objective facts about IT governance, such as established frameworks and practices, allows us to ground our research in the existing realities of SMEs. However, it is important to consider researcher bias, as personal experiences and perspectives influence the research process (Corbin & Strauss, 2015).

This ontological view is coupled with an interpretivist epistemology, focusing on the subjective interpretations and experiences of individuals within these organizations (Goldkuhl, 2012). This approach is particularly relevant for understanding how different stakeholders perceive and enact IT governance. By exploring these subjective experiences, we can gain insights into how IT governance practices are implemented and perceived on the ground. As Corbin and Strauss (2015) highlight, the meaning given to events is crucial, shaped by cultural, political, religious, and professional backgrounds. For example, an IT manager's approach to governance may be influenced by their professional training, organizational culture, and personal values.

Integrating these perspectives allows us to capture both the concrete IT landscape and the nuanced personal and collective experiences of adapting to it. This dual approach helps us understand the "what" and "how" of IT governance while also illuminating the "why" behind organizational actions and strategies in response to evolving technological landscapes. For instance, understanding why certain IT governance practices are adopted in SMEs can reveal insights into the challenges and opportunities faced by these organizations.

Recker (2021) notes that interpretivism is effective for studying social realities within sociotechnical contexts. This aligns with our methodological choice to use qualitative methods to explore IT governance in SMEs. The interpretivist approach enables us to gather rich, detailed data that can reveal new insights and deepen our understanding of the research topic. By

adopting this ontological and epistemological stance, the study aims to provide a balanced and holistic view of IT governance in SMEs, ensuring that both empirical data and human experiences are adequately represented in the research findings.

3.2 Research Approach

The goal of this research is to answer the question: "How do organizational culture, structure, and existing processes influence the implementation of IT governance practices in SMEs?" To address this, rich, detailed data is necessary, making a qualitative method the most appropriate choice. Qualitative methods are ideal for exploring complex topics and obtaining comprehensive insights (Recker, 2021).

A qualitative approach has been selected for this study. This method is suitable for exploring the intricate interactions between organizational culture, structure, processes, and IT governance practices in SMEs. It allows for a deep understanding of these dynamics by focusing on the experiences and perspectives of individuals within these organizations.

Justification for Qualitative Methods:

> **Exploring Complexity:** IT governance involves complex processes and interactions best understood through detailed qualitative data. This approach enables the researcher to capture the richness and complexity of ITG practices in SMEs (Recker, 2021).
>
> **Contextual Insights:** SMEs operate in diverse contexts with unique challenges and governance structures. A qualitative approach provides the flexibility to explore these contexts in-depth, understanding how specific factors influence ITG implementation and outcomes. This contextual understanding is crucial for drawing meaningful conclusions and offering relevant recommendations (Saunders, Lewis, & Thornhill, 2009).
>
> **Capturing Perspectives:** Understanding the perspectives of individuals involved in ITG is essential for grasping how governance practices are perceived, implemented, and managed. Semi-structured interviews and document analysis allow participants to share their views and experiences, providing critical insights for a comprehensive analysis of ITG practices (Patton, 2015).

Qualitative methods align with the study's philosophical foundation, which combines an ontological focus on objective realities with an interpretivist focus on subjective experiences. This dual approach integrates objective facts and participant experiences, generating practical insights for ITG in SMEs.

This study primarily employs a deductive approach to investigate ITG practices in SMEs. The deductive approach begins with established theories and models related to IT governance, guiding the formulation of research questions and the development of the interview protocol. This approach enables systematic exploration and verification of theoretical constructs within the SME context (Saunders, Lewis, & Thornhill, 2009).

3.3 Data Collection Methods

The method for data collection chosen is a case study, as it allows for intensive research of ITG concerns in its real-world environment. A case study is a suitable choice for research questions that inquire about the “how” and “why”, particularly when the topic of inquiry is contemporary (Yin, 2018). Patton (2015) mentions that a case study can provide a detailed story about a person, organization, or program. Moreover, the case study primarily focuses on what is happening to individuals in a setting and how it affects them.

Case studies come with a set of challenges. A significant challenge is finding the right environment and choosing the case (Recker, 2021; Yin, 2018). We find that a medium-sized enterprise partaking in digitalization projects is a relevant environment to study. Mutual trust is vital to gather data from the participants effectively in a case study approach (Patton, 2015). Therefore, the researchers will be on site in the organization over a period of time, allowing them to build the required trust. A case study allows flexibility in the data collection methods of observing and conducting interviews, as it allows researchers to form these methods as they gain more contextual information from the organization (Patton, 2015; Recker, 2021).

To design a successful case study, one should define the unit of analysis and develop research procedures and protocols to demonstrate the validity of the data and findings (Recker, 2021). The unit of analysis in our research proposal is a single case study that involves a singular medium sized organization. Our rationale behind this unit of analysis is that it offers an in-depth analysis of ITG concerns in one medium-sized enterprise, involving crucial IT decisions, which we argue could be representative of similar medium-sized enterprises in the field. Furthermore, it allows examination of existing practices and how they impact the real-world context. However, this is a trade-off between depth and breadth (Patton, 2015). The main drawback in choosing this unit of analysis is that we cannot generalize the findings, which would require a multiple case study across organizations.

3.3.1 Semi-Structured Interviews

In conducting our case study, we embrace an approach to data collection that supports both confirmatory and exploratory investigations, allowing for comprehensive theory-testing. Guided by Recker's (2021) recommendations, our data collection involves the use of semi-structured interviews. This technique is designed to capture dynamics within the organizational setting, affording the flexibility to probe deeper into individual experiences and perspectives, thereby enriching our understanding of the phenomena. By employing this method, we aim to explore ITG mechanisms impact on SME’s competitive advantage.

Additionally, semi-structured interviews help build rapport between the interviewer and participants, fostering an environment where respondents feel comfortable sharing detailed and honest responses. This rapport is essential for gaining access to the in-depth information needed to understand the intricate workings of IT governance. Schultze and Avital (2011) highlight the importance of creating a conversational atmosphere in interviews to generate rich, informative data.

The flexibility of semi-structured interviews also allows for the inclusion of new questions that arise during the research process, ensuring that the data collected remains relevant and comprehensive. This adaptability is crucial for understanding the dynamic and multifaceted

nature of IT governance in SMEs. As Saunders et al. (2009) suggest, this approach is particularly suited for exploratory research where the aim is to understand complex processes and interactions in detail.

Semi-structured interviews are chosen as the primary data collection method for this study due to their ability to provide flexibility and depth in exploring complex phenomena such as IT governance in SMEs. Semi-structured interviews allow researchers to prepare a set of guiding questions while still offering the freedom to explore new topics as they emerge during the conversation. This approach facilitates a deeper understanding of respondents' perspectives, experiences, and the contextual factors influencing IT governance.

3.3.2 Pilot Study

In our research, we conducted a pilot study that proved instrumental in refining our data collection methods and research questions. As emphasized by Yin, a pilot study is crucial not just for pretesting data collection strategies but for enhancing the research design through practical engagement (Yin, 2018). Our pilot study involved a preliminary interview with R1. The pilot interview allowed assessment of the themes we had chosen for our interview guide and codebook. Specifically, it highlighted the need for an additional question focused on risk management, a topic we had not fully considered initially in our interview guide.

3.3.3 Respondent Selection

Respondent selection is one of the most important aspects of a successful research project conducting qualitative research. Shultze and Avital (2011), highlight the importance of carefully selecting respondents to generate rich, informative, and contextually deep accounts of lived experiences. Respondent selection should be driven by the research questions and the conceptual framework of the study. Shultze and Avital (2011) recommend the selection of individuals who have directly experienced the phenomenon under investigation, as this contributes to the richness and authenticity of the data collected.

With regards to the interviews for the case study individuals were selected from the target organisation hosting the research. Respondents were carefully selected to ensure a wide variety of backgrounds and roles allowing for a diverse range of data collection. Respondents are listed in the table below.

Respondent	Role	Duration	Date (YYYY,MM,DD)	Type
R1	Software Developer	30 Minutes	2024-05-03	In Person Interview
R2	VP Development	30 Minutes	2024-05-06	In Person Interview
R3	Scrum Master	30 Minutes	2024-05-06	In Person Interview

R4	Product Owner	21 Minutes	2024-05-06	In Person Interview
R5	Change Manager	50 Minutes	2024-05-08	Google Meet Interview

Table 3.1: Respondent Selection Information

3.3.4 Design of the Case Study Protocol

The chosen case study for our research is on a wide range of stakeholders and their perception of ITG as governing and alignment mechanisms. We want to investigate and observe the current dynamic of the organization and the employees' understanding of perceived ITG mechanisms that have been utilized throughout digitalization and agile initiatives. In structuring the protocol, we follow Yin's (2018) guideline of a case study protocol containing four sections (background, data collection method(s), interview questions and a tentative outline). For the full protocol see Appendix 1.

The source of data collection are semi-structured interviews, the questioning starts with basic inquiry about the participants' work. The interview continues in five different themes (see Table 3.2). The themes follow the critical success factor(s) of ITG framework implementation as presented by Alreemy et al. (2016), targeting questions toward the main theme and the underlying CSFs for ITG implementation. The reason for choosing this framework as the initial theming of our interview guide, was that it provided a holistic view of the critical foundational elements required to implement ITG. Moreover, the categories provided the researchers with core contextual evidence to support flexibility in questioning within the case study approach.

Category	**Critical Success Factors (CSFs)**	**Reflects in question**	**Observations**
Strategic Alignment	Adequate stakeholders involvement; Adequate management support and ownership	QSA1, QSA2	O2 (Organizational Culture)

	Effective alignment and communication between IT and business; Effective communication between IT and business	QSA3	O1 (Organizational Structure), O3 (Decision Making Process)
Environmental Effect (External)	Regulatory environment & requirements compliance	QEE1	O3 (Decision Making Process)
Organizational Effect (Internal)	Clear ITG policies, principles & responsibilities	QOE1	O1 (Organizational Structure)
	Effective current enterprise governance; Good organization change strategy	QOE2, QOE3	
	Appropriate organizational culture; Clear IT strategy, principles & policies	QOE4, QOE5	O2 (Organizational Culture), O1 (Organizational Structure)
Performance Management	Adequate analysis, evaluation of the current and future use of IT	QPM1	
Resource management	Sufficient financial support; Adequate IT skills & staff	QRM1	

Table 3.2: Critical Success Factors Table

3.3.5 Transcription

Transcription is a critical step in qualitative data analysis, especially in research contexts where detailed and accurate textual representations of audio or video is required. As Bailey (2008) outlines transcription is not just a mechanical task but involves significant interpretive and judgemental decisions that affect research outcomes. The transcription was recorded and initially transcribed utilizing AI technologies and later manually transcribed to enhance the quality of the transcription.

Transcription involves converting spoken language into a written format. This process is crucial for researchers to systematically analyse content. However, it's more than just writing down what is heard. Researchers are required to decide the level of detail necessary for analysis. Which might include in the transcription respondents pauses, intonations, laughter, and other paralinguistic features that could influence the interpretation of the data (Bailey, 2008).

One of the primary challenges in transcription is maintaining the nuances of the spoken word in written format (Patton, 2015). Decisions must be made about how to represent verbal tics, overlaps in speech, and nonverbal cues like gestures and facial expressions. The transcription process itself can influence data interpretation, making it inherently subjective (Bailey, 2008).

Transcribers must handle the data ethically, ensuring confidentiality and respecting the privacy of the participants. This includes decisions about anonymizing data and how much contextual detail to include in the public or published documentation. Transcription is a foundational element of qualitative research requiring careful consideration and execution. It is not merely about transferring audio into text but capturing the complexity of human interaction in a way that is both accurate and meaningful for analysis (Bailey, 2008).

3.4 Data Analysis

Analysing and interpreting interview data is essential for deriving meaningful insights from qualitative research. In our study, we employed a thematic analysis approach to identify and examine recurring themes from the collected interview data (Guest et al., 2012), utilizing both deductive and inductive coding procedures.

Deductive coding involves using a predefined set of themes and codes, allowing the researchers to systematically classify the collected data (McKibben et al., 2022). Our deductive approach began with a predefined coding scheme based on existing models, frameworks, and theories (Patton, 2015). This technique helped us to systematically organize the interview data, validate or refute our assumptions derived from the literature review, and support or challenge existing theories (Recker, 2021), facilitating a confirmatory analysis of the data (Guest et al., 2012).

Inductive coding, on the other hand, involves analysing the text to identify patterns and themes that emerge from the data itself. These emergent themes are then used to develop codes, which are subsequently applied in a more deductive manner (McKibben et al., 2022).

The coding process involved applying a predefined set of codes to the data, as detailed in our codebook (see Table 3.3). This structured approach ensured that each piece of data was analysed within the framework of established ITG success factors. By thoroughly examining the data, we identified patterns and themes, resulting in further codes and guided the interpretation and discussion of the findings. Overall, the combination of deductive and inductive coding methods enabled us to conduct a comprehensive and theory-driven examination of the case study, ensuring a robust analysis of the interview data.

Code	Code Description	Theme

SA1	Adequate stakeholders' involvement	Strategic Alignment
SA2	Adequate management support and ownership	
SA3	Effective alignment and communication between IT and business	
SA4	Strategic alignment model perspectives	
EE1	Regulatory environment and requirements compliance	Environmental Effect (External)
OE1	Clear IT governance policies, processes, principles, and responsibilities	Organizational Effect (Internal)
OE2	Effective current enterprise governance	
OE3	Good organization change strategy	
OE4	Appropriate organizational culture	
OE5	Clear IT strategy, principles, and policies	
OE6	Risk management	
PM1	Adequate analysis and evaluation of the current and future use of IT	Performance Management
RM1	Sufficient financial support for IT initiatives	Resource management

RM2	Adequate IT skills and staff	
DC1	Sensing opportunities for IT initiatives	Dynamic Capabilities
DC2	Seizing opportunities for IT initiatives	
DC3	Transforming IT infrastructure to meet organizational needs	

Table 3.3: Code Table

3.5 Ethical Considerations

Our research gathers data through various means and is closely connected to people who are subject to our investigation. Therefore, ethical considerations are necessary for us to address so as not to harm participants or perform acts that can be deemed unethical in any way. We must protect the participants' privacy, confidentiality, and anonymity in our research (Recker, 2021). To act ethically, we are going to be completely transparent and honest with the participants by clearly stating our methods and the goal of our research objective (Patton, 2015).

Chief ethical considerations for the data collection when interviewing and analysing enterprise information include informed consent and communicating the purpose of the intended research. Discussion with the applicable interviewees and stakeholders participating in the research study should inform them of all facets of the research protocol and that all research conducted is voluntary. Without consent, interviews and analysis cannot take place. Confidentiality of recorded data is required throughout the research process, and stakeholders will be notified that no sensitive or identifiable data will be published. By utilizing pseudonyms in the research output, anonymity can be accomplished when distributing research findings. Interviewer bias is an important aspect to remember; interviewers will ensure that they play a neutral role while collecting data. The participants also have the right to withdraw from the study; thus, we are responsible for deleting all data collection and writing related to the withdrawing participant (Patton, 2015).

Upon completion of data collection and analysis, ethical approval will take place. Since our research is contextualized to a medium-sized enterprise. We will ensure that no intellectual property of the studied enterprise will be disclosed without consent. Stakeholders in the relevant organization and interviewees will be allowed to inspect the output, ensuring that they are comfortable with the final work.

3.6 Scientific Quality

Ensuring the scientific quality of research is fundamental to generating reliable and valid results contributing to the Information Systems field. This study employs rigorous methods to ensure credibility, transferability, dependability, and confirmability of research findings. As well as focusing on the data quality and collection as noted by Bhattacherjee (2012) and Recker (2021).

To establish credibility, the research utilises multiple data sources, including interviews, document analysis, and observations. This approach of triangulation helps to verify the accuracy of the collected data enhancing the trustworthiness of the findings. Prolonged engagement with participants, along with validation of data through respondent validation, ensures that the findings accurately reflect the participants' experiences (Bhattacherjee, 2012; Recker, 2021).

Transferability is addressed through detailed documentation of the research process and context, allowing other researchers to evaluate the applicability of the findings in different settings. Comprehensive descriptions of the settings, methods, and participant characteristics enhance the potential for findings to be applicable in other contexts (Bhattacherjee, 2012; Recker, 2021). Although Priya (2021) notes that generalizability in qualitative case studies is often criticized, the significance of such studies lies in their ability to generate hypotheses that can be tested in comparable cases, thus contributing to broader generalization.

Confirmability is achieved through measures that ensure the findings are the result of experiences and ideas rather than research bias. Practising introspection throughout the research process helps reflect upon potential influences of researcher biases. Data triangulation, involving multiple data sources, allows for multiple perspectives ensuring corroborations across the research (Bhattacherjee, 2012; Recker, 2021).

When exploring more subjective or complex phenomena, detailed qualitative descriptions capture the depth and complexity of participants' experiences. Validity is rigorously addressed by ensuring that research instruments comprehensively represent the underlying constructs they are intended to measure, aligning closely with the theoretical frameworks guiding the study (Golafshani, 2015; Bhattacherjee, 2012). To ensure reliability, there is a need to clearly document the case study procedures, because without documentation you would not even be able to repeat your own research (Yin, 2018). Collectively, these strategies ensure that the research adheres to high standards of scientific quality, making a robust and valuable contribution to the existing body of knowledge.

4 Results

This chapter presents the findings of our study on the implementation of ITG within SMEs. The section systematically presents the results, organized according to the main themes and patterns that emerged from the data. This chapter aims to provide a detailed and nuanced understanding of the current state of ITG in SMEs, setting the stage for the subsequent discussion and conclusion chapters.

4.1 Strategic Alignment

The identified subthemes in the category of strategic alignment were delineated towards the Strategic Alignment Model (SAM) and its perspectives and aligning processes that were identified at the organization.

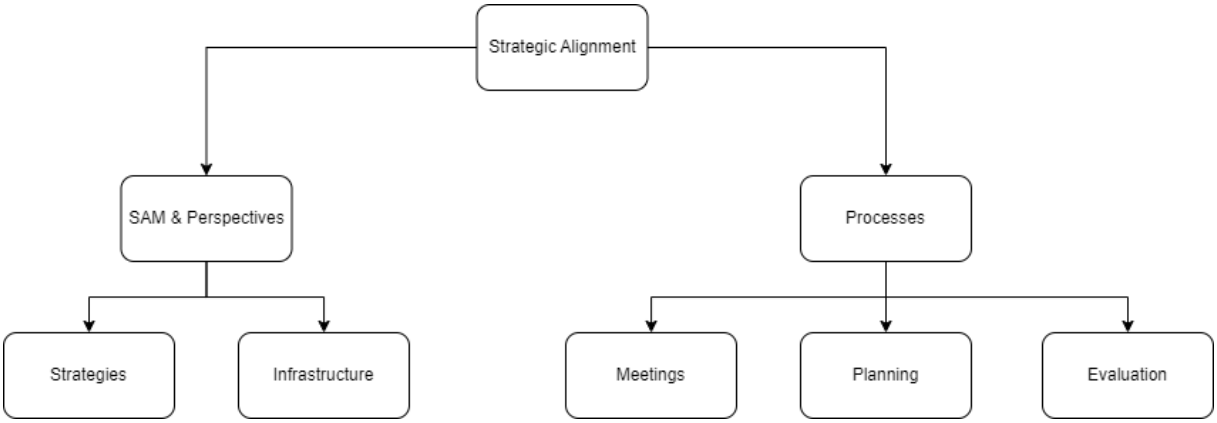

Figure 4.1: Strategic Alignment Themes and Subthemes

4.1.1 Strategic Alignment Perspective

When discussing the strategic alignment of IT and business initiatives with the respondents, it became clear that the concept of alignment varied based on their positions within the organization. According to the strategic alignment model and its perspectives, some respondents viewed strategic alignment as a technological transformation (R1). Others indicated it was a mix of competitive potential and service-level perspectives, depending on the project (R2, R3). This suggests a complex, multivariate relationship between IT and business strategies and infrastructures. However, these relationships and strategies were not consistently communicated throughout the organization (R5).

The findings revealed that effective dialogue between stakeholders, managers, the project team, and customers was essential for moving the project forward and successfully aligning business and IT initiatives. This process relied heavily on trust between the involved actors (R4). Sensing mechanisms are necessary throughout the organization to enable this success. Respondent 2 highlighted that the IT strategy and surrounding IT infrastructure would likely lead to changes in the organizational structure due to a project in its early stages:

"Yes, it's leading to that. Of course, I mean, the first starting point was actually here, I think. The history is that the cloud product was introduced to the market as a cloud solution quite some years ago, without considering any organizational effects or anything. So basically, we had a product on the market that we didn't sell, or at least didn't charge anyone for it, or at least very few worked with it. And yeah, so that was kind of a maturity, but it was made as a test and that grew. I mean, it would have been good to make it a little more conscious, I think. But then, actually, a couple of years ago, we started to clarify the IT offer or the software offer to customers." (R2:2.14)

This quote underscores the evolving nature of IT's role within the organization, transitioning from an experimental phase to a more structured and integrated component of the business strategy. It highlights the initial lack of organizational alignment and the subsequent efforts to bring clarity and purpose to the IT offerings.

When asked, "What role would you say IT objectives have to achieve business objectives within the organization?", Respondent 5 provided insights that broadened the scope and considered the holistic view of alignment between IT and business for the organization. The response suggested that the general view of IT is as a support structure to realize business objectives:

"This clear relationship, I would say, is not clear in the organization. However, to fulfill those goals, especially the goals where we collect and analyse data, we need sufficient IT support. An IT infrastructure is needed to manage data collection and to build the necessary systems, including various cloud services. Additionally, we need the knowledge to guide our customers on how to install and maintain server service solutions for these systems. So that isn't an obvious connection. Then, of course, there are many other IT connections. We need sufficient IT support to produce the hardware and physical products that we sell. We also need sufficient IT support to communicate, store data, store documentation, and so on, to be able to develop, as well as IT support to maintain and have development suites and development solutions." (R5:5.6)

This quote from Respondent 5 illustrates the multifaceted role of IT within the organization, emphasizing its critical support functions across various domains. It highlights the dependency on IT for data management, customer guidance, production support, and development activities. Despite this essential role, the relationship between IT and business objectives remains not fully transparent or well-communicated within the organization, indicating a need for better integration and alignment.

In conclusion, the findings suggest that while there is recognition of the importance of IT in achieving business objectives, there is a disparity in how this alignment is perceived and communicated across different levels of the organization. Effective communication, trust, and comprehensive sensing mechanisms are crucial for aligning IT and business strategies and ensuring that these strategies are understood and implemented throughout the organization.

4.1.2 Aligning Processes

In aligning individuals within the organization, planning meetings play a crucial role. There is a clear consensus among the respondents that aligning people and processes with the overall business and IT objectives is necessary. Respondent 2 mentioned that there is a process that includes articulating product requirement specifications before starting any projects.

"We actually use projects and tasks, and targets to try to align that. For me, everything comes from the way we work with our planning, which is actually based on product management and what we call the business owner vision. In that process, every step should be described: what are the long-term targets with the things we do, and for the nearer term, what do we want to achieve next?" (R2:2.24)

This quote highlights the structured approach to planning and aligning initiatives within the organization. It underscores the importance of clearly defining both long-term and short-term targets to ensure that everyone is working towards the same objectives.

Respondent 2 further elaborated on the planning process:

"Yeah, I think one ambition here is to involve everyone in this PI planning and business owner vision communication. That's one thing, and you can do more than that, of course, but going back to that, I think that's the best approach. Also, we have a process where we say that we shouldn't start any projects without what we call the market requirements specification and PRS. You can debate things like that, and the merits of waterfall versus agile methodologies, and I'm happy to have that discussion with anyone, but I think some kind of direction is necessary." (R2:2.26)

This quote emphasizes the inclusive nature of the planning process, involving everyone in PI planning and business owner vision communication. It also highlights the importance of having clear market requirements and PRS before starting projects, acknowledging the ongoing debate between waterfall and agile methodologies but stressing the need for direction.

Respondent 4 noted the importance of collaboration and agreement in these meetings:

"Yeah, but more like one to one meetings, perhaps discussing technology with them … So if we decide jointly to go down that road, they need to be on board. I think it's a good idea to or otherwise, it's just a doomed thing to fight" (R4:4.18)

This quote illustrates the importance of individual and direct communication to ensure alignment and buy-in from all team members, which is crucial for successful project implementation.

Respondent 1 described the quarterly PI planning process:

"We have the PI planning, which is the umbrella under which we plan on a quarterly basis. It covers three months, or three sprints, plus some additional gap time. So, about three months in total. During this time, we plan what every single team will do."(R1:1.22)

This quote provides an overview of the PI planning process, explaining that it is a quarterly event that involves detailed planning for each team over a three-month period, ensuring that all teams are aligned and working towards the same goals.

In summary, the findings indicate that planning meetings and processes are essential for aligning individuals within the organization. These processes involve clearly defining targets and requirements, inclusive communication, and structured planning cycles. This alignment ensures that business and IT objectives are met collaboratively and effectively throughout the organization.

4.2 Organizational Effect (Internal)

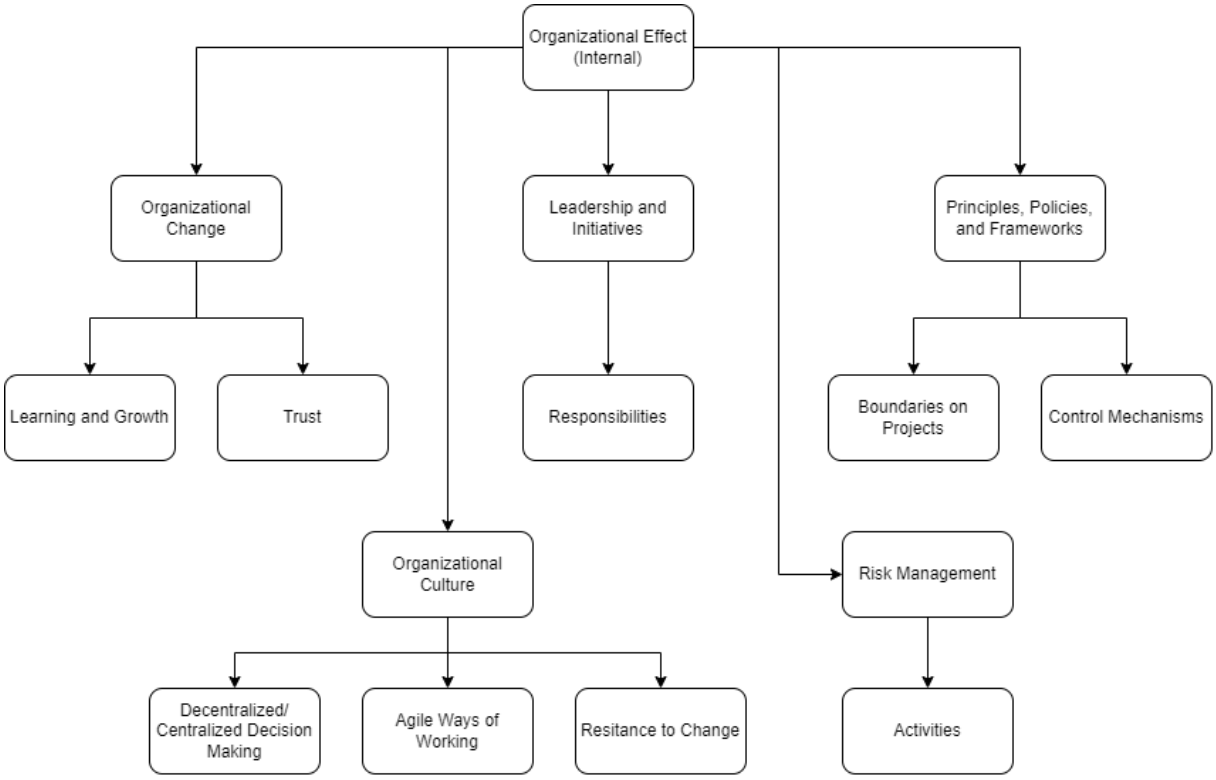

Figure 4.2: Organizational Effect Theme and Subthemes

4.2.1 Organizational Culture

The use of IT-based tools to define processes and set boundaries on projects was also discussed (R5). However, implementing these tools can be challenging as it requires individuals throughout the organization to adapt to them. One apparent challenge mentioned by Respondent 5 was that if an individual had a concern about how they should work, and given that there are multiple perspectives on how work should be done, it could lead to endless debates. Furthermore, a resistance to change is noticeable. Introducing tools to govern and control the way work should be done could be perceived as painful to individuals accustomed to traditional working methods (R5). Additionally, if middle management support is lacking, it becomes nearly impossible to incorporate any formal processes on how to work. These findings validate three of the perceived barriers to ITG implementation: organizational politics, lack of middle management support, and resistance to change.

"And then you can choose a system where the boundaries are very narrow and there is a lot of configuration in the system. The benefit of this is that you have to live with those rules, and that is what you get. You either choose this tool and go by those rules, or you don't use it at all.

In the case of Target Process, it is a tool where you can configure almost everything to match your own process and way of working. The benefit of this is that you don't have to change your way of working. However, the drawback is that if you have any uncertainty about how you should work, and different parts of the organization have slightly different views, you end up with endless debates on how you actually should work because the system allows multiple approaches.

The benefit of a configurable tool is clear if you already have well-documented processes, as it can be configured to cover 90% of those processes perfectly. However, if you have no written processes and everything is done by tradition, then freely configurable tools can be a real pain. There are too many options, and it can take a long time to use the tool proficiently.“ (R5:5.10)

This quote illustrates the complexity of implementing IT-based tools within an organization, highlighting the trade-offs between rigid systems with narrow boundaries and configurable tools that accommodate various processes but can lead to debates and inefficiencies if processes are not well-documented.

The notion of working agile to ensure that individuals with the right knowledge make sound decisions was a consistent theme among the respondents (R1; R3; R5). Respondent 5 envisioned this as a collaborative project between the teams in person, but since the development teams were distributed, they had to change their approach. The following findings illustrate a top-to-bottom implementation of the agile working method:

“We needed a system when we started the Agile way of working projects or the Agile evolution project. Initially, we wanted to use physical boards because they are more intuitive and do not require much introduction or configuration. You simply draw a square pattern on the board, label the fields with different states, and then add names. This type of setup was our first approach. However, as we have distributed teams and several offices in different parts of Europe, we needed a solution to show the boards, display the cards, and share information across the entire organization.”(R5:5.10)

This quote highlights the initial preference for physical boards due to their simplicity and intuitive nature. However, the need for a digital solution became apparent due to the distributed nature of the teams, necessitating tools that could share information across different locations.

Respondent 4 emphasized the importance of effective communication with the product manager:

“Yes, the product manager needs to know that we are building something towards the goal. However, when unexpected issues arise, we need to be able to communicate with him effectively.”(R4:4.30)

This underscores the necessity of clear and effective communication to address unforeseen challenges and ensure that the project remains aligned with its goals.

Respondent 1 pointed out the critical role of identifying dependencies between teams:

“In my head, the main goal of that is to figure out dependencies, what does the Cloud team need from system software? What does system software need from our team and so on?”(R1:1.22)

Understanding and managing these dependencies is crucial for coordinating efforts and ensuring smooth project execution.

Additionally, the shift to agile working methods triggered changes in how the organization evaluates and plans projects (R5):

“The implementation has triggered changes in many areas, including how teams work and how we discuss projects and products. It becomes clearer when you use an IT-based tool because it automatically introduces boundaries in a way that is not as obvious when using a whiteboard or just keeping it in the team's minds. When everything is done manually, everyone kind of knows how things have worked and how they move along in the organization.”(R5:5.10)

This quote highlights the impact of IT-based tools on organizational processes, making boundaries and workflows more explicit and structured compared to manual methods.

In summary, the findings indicate that while IT-based tools and agile methodologies offer significant benefits, their successful implementation requires overcoming challenges such as resistance to change, the need for clear documentation, and strong middle management support. These tools can facilitate better communication, dependency management, and process clarity, contributing to the overall alignment of business and IT objectives.

4.2.2 Leadership and Initiatives

In having this self-organized way of working, there is pressure on the teams to take steps into areas and create initiatives that align the IT strategy and structure with the business objectives (R3). This is recognized by Respondent 1 as well, who mostly mentions developer-centric processes that are necessary to increase operational efficiency. When asked if there was a leader driving these initiatives, Respondent 1 answered that there was a need for a central figure in the company to help push the initiatives forward. This need for delineation of responsibilities was further emphasized by Respondent 3.

"We actually need a central figure in the company who would push for these initiatives and advocate for product management, emphasizing the need to implement these changes to get things up and running faster. This would enable us to move more quickly in the future. However, we currently lack such a figure. So, I don't believe anyone is really pushing for it. I think everyone in management recognizes the importance of testing and wants more of it, but nobody is actively advocating for it. Management has hired someone for this role, though."(R1:1.44)

This quote highlights the necessity for a central leadership figure to champion and drive key initiatives within the organization, particularly those related to improving efficiency and aligning IT with business objectives.

Respondent 3 acknowledged the team's recognition of the need for clear responsibilities and mechanisms to create a scope of work:

"So, I mean, the team has acknowledged that we should do this as soon as possible. On top of this, it's quite open. I mean, it is open now, but you can see that the team has called for some sort of delineation or mechanism to create a scope of responsibilities and the like. However, so far, I haven't seen any specifics."(R3:3.20)

This highlights the team's awareness of the need for structured responsibilities and clear mechanisms to guide their initiatives, although specific details and plans have yet to be established.

In dealing with the issues of creating and sustaining initiatives to increase internal efficiency of IT within teams, Respondent 3 mentioned that having a lead figure could be beneficial, but it does not necessarily imply an immediate need for one in the organization:

"Then there is the question, if it's not the problem, maybe you don't need it."(R3:3.20)

This perspective introduces a nuanced view on leadership, suggesting that while a lead figure can be advantageous, the necessity depends on the specific challenges and context within the organization.

A surprising finding in the area of planning and execution was the resistance to adopting plans created by external consultants (R1):

> "But we will see once we have a plan will it be acted upon or not? Because this has happened before where we have had a consultant perform their duties and come up with a plan and then no action was taken." (R1:1.46)

This quote highlights a significant barrier to effective planning and execution: the reluctance or failure to implement externally developed plans. This resistance can undermine efforts to improve organizational efficiency and align IT strategies with business goals.

In summary, the findings indicate a clear need for leadership to drive IT and business alignment initiatives. While teams are aware of the importance of clear responsibilities and structured processes, the absence of a central figure to champion these efforts presents a challenge. Additionally, there is notable resistance to adopting external consultants' plans, which further complicates the execution of strategic initiatives. Effective leadership and a willingness to embrace external guidance are crucial for overcoming these obstacles and achieving organizational alignment.

4.2.3 Risk Management

Effective management activities, particularly in relation to risk management, are crucial for organizational stability and resilience. It starts with defining roles, responsibilities, and methods, then transitions into a thorough risk and vulnerability assessment. The conclusions and results from this assessment should be translated into actionable activities within the organization that are continuously measured and evaluated. This approach is essential for prioritizing and adequately addressing risks.

Respondent 3 emphasized the importance of actualizing these activities based on their professional experience:

> "I would also claim, or at least expect, that area-specific activities that come out of the risk assessment should transform into real activities, like any other development activity. These should be put into the backlog as well. I think it is good practice to have a single backlog for all work. I have also seen situations where development is fully planned with 100% capacity, then a risk assessment is done, and there is no time or priority to actually address the risks. It's not like that here, I would say."(R3:3.32)

This quote underscores the necessity of integrating risk management activities into the regular workflow by placing them in the same backlog as other development tasks. It highlights a common pitfall where risk assessments are conducted, but due to full development schedules, there is no time or priority to address the identified risks. Ensuring that risk-related tasks are part of the main backlog ensures they receive the necessary attention and resources.

In summary, the findings indicate that a structured approach to risk management is essential. This involves clearly defining roles and responsibilities, conducting thorough risk assessments, and translating the results into actionable tasks. These tasks should be integrated into the overall workflow to ensure they are prioritized and addressed adequately. Continuous measurement and evaluation of these activities are crucial for maintaining an effective risk management strategy within the organization.

4.2.4 Organizational Change

Learning and growth are the most important challenges to tackle in improving the factors of organizational effectiveness. When discussing control mechanisms, particularly in guiding workers on tasks with stringent IT and business objectives, Respondent 5 highlighted the need to balance control mechanisms with individual freedom:

> "It's a collaboration, it's a thin line." (R5:5.24)

Having too many restrictions can negatively impact growth and learning. It is essential to establish trust in the decisions made by both developers and management. However, the authoritative position of the manager's decisions must also be accepted by the developers.

> "Yeah, exactly. You essentially stunt growth. You make people feel small and take decisions away from them. This removes empowerment and sends a signal that they cannot make decisions on their own. As a result, you build an organization that will not take its own decisions and will wait for new directions if they get stuck, instead of trying to find a suitable path forward.
>
> When you talk about agile, you talk about putting decisions at the lowest possible level. The right people with the right knowledge and prerequisites should be the ones making decisions. You can have opinions from both sides, of course. But if a developer makes a decision, you should trust that decision. Conversely, if product management makes a strategic decision or decides on functionality or other parameters for the product, developers should trust that decision and not make changes just because they think it's better. Trust should go both ways." (R5:5.26)

This quote underscores the importance of empowerment and trust within an agile framework, where decisions are made at the lowest possible level by those with the relevant knowledge. It highlights the necessity of mutual trust between developers and management to foster a productive and autonomous working environment.

The underlying factor of learning and growth boils down to the people. Collaboration and knowledge sharing within and between teams are crucial for enabling learning and growth. This helps avoid silos and creates an environment where everyone wants to improve collaboratively (R1; R4; R5). Such an environment also fosters innovation, allowing people and teams to form and tackle new challenges (R2:2.18).

In summary, the findings indicate that organizational change should focus on fostering a culture of learning and growth. This involves balancing control mechanisms with individual freedom, establishing mutual trust between developers and management, and promoting collaboration and knowledge sharing. These elements are essential for creating an environment that encourages continuous improvement and innovation, aligning with both IT and business objectives.

4.2.5 Principles, Policies, and Frameworks

In relation to principles, policies, and frameworks utilized in the company, there was no clear evidence concerning IT Governance (ITG). However, agile principles are used and are spreading throughout the organization (R1; R2).

Agile governance focuses on behaviour and practice rather than processes and procedures. It requires transparency, trust, and people's engagement with the business rather than monitoring and controlling them. Agile governance includes the capability to sense, adapt, and

respond rather than strictly following a plan. The organization aims to sense, adapt, and respond quickly (R2) and relies on trust from stakeholders (R3; R5).

Respondent 5 acknowledged that policies and principles would be beneficial and suggested introducing control mechanisms. To implement control mechanisms and ITG frameworks while balancing agile methods requires monitoring, evaluation, and assessment of current practices. Measurements should relate to business targets and support decision-making.

4.3 Performance Management

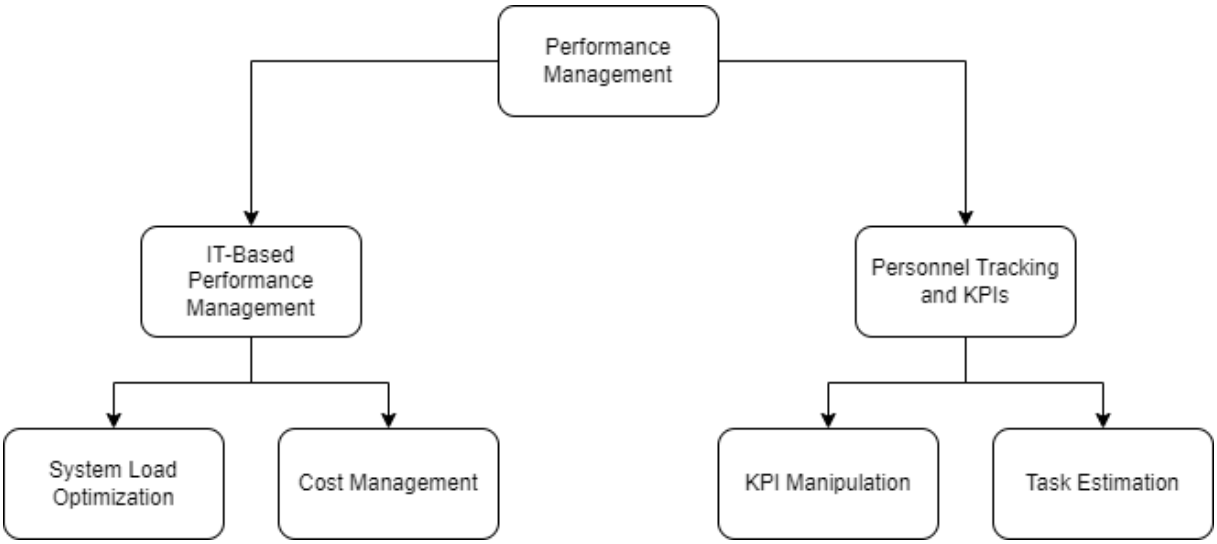

Figure 4.3: Performance Management Theme and Subthemes

4.3.1 IT-Based Performance Management

In the evolving business landscape, integrating IT-based performance management systems is crucial for aligning technology with business strategies. This strategic alignment leverages technological capabilities to meet business objectives, drive growth, and maintain competitive advantage.

Respondent 2 emphasized the importance of optimizing system load, particularly in cloud software development:

> "Basically the most important objectives for us is the project's results. I think, then, internally for what that's worth right now for me. One very important aspect is actually that we don't overload the system" (R2:2.20)

Maintaining an optimized load on IT systems ensures efficient performance and service delivery while preventing system failures due to overload. This proactive management of IT resources supports continuous operational efficiency and reliability in cloud infrastructures.

Respondent 4 highlighted the financial aspects of infrastructure decisions, stressing the need to scrutinize cost implications associated with technology choice and usage, especially within cloud environments:

"When we get the specifications, we'll surely test that because that can quickly become very expensive if you use something in the wrong way up in the cloud." (R4:4.46)

Rigorous testing of cloud service implementations based on detailed specifications ensures that investments in cloud technologies yield optimal returns without unforeseen financial burdens. This preventive measure is crucial in cloud technology deployments, where costs can escalate quickly due to improper management or inefficient resource utilization.

The management of IT performance relies heavily on informed decisions made by a select group of technical experts, as noted by Respondent 1:

"Decisions are made by a small collection of people like the architects." (R1:1.16)

Relying on specialized knowledge and expertise, this approach ensures that IT strategies are designed with a deep understanding of system architecture and best practices, aligning closely with overall business objectives.

Responses from key organizational members indicate that IT-based performance management strategies are integrated into daily operations, focusing on operational efficiency, cost-effectiveness, and strategic foresight.

4.3.2 Personnel Tracking and Key Performance Indicators (KPIs)

Performance measurement, as discussed with respondents within the organization, lacked a solid form. When analysing the concept of performance management, views from internal and external stakeholders showed skewed knowledge and understanding. There was no clear theme or common language developed within the organization for tracking performance. Respondent 3, brought in as an external consultant to bolster performance management capabilities, noted:

“But usually when I ask about performance, I don’t get any clear objectives.” (R3:3.16)

When probed for more information, Respondent 3 elaborated that performance management metrics might not be of the highest need for the individuals interviewed within the organization:

“If you had included a real project leader or a project manager, it would make a significant impact. I mean, it would be enough to achieve a measurable outcome. For example, some kind of metrics, like traffic or load, could be measured.” (R3:3.18)

Respondent 3 highlighted that performance measurement capabilities could be very role-based, with clear responsibilities for capturing performance metrics assigned to certain organizational personnel and assets.

In contrast, Respondent 5 offered a critical view of performance measurement in the context of engineers:

“My opinion about KPIs is that when you work with a bunch of very smart people, like engineers often are, they figure out how to manipulate the KPIs in about 10 seconds. If you just want to measure to make a report to show your supervisors, engineers will fill in whatever is needed to make the KPIs look good. They will then arrange their work or their impression of work to align with the KPIs. In such cases, KPIs don’t provide any meaningful insights.” (R5:5.28)

Respondent 5 emphasized that Key Performance Indicator (KPI) and metric measurements for employee performance do not provide value for the organization. Engineers might manipulate metrics to capture value for management without providing meaningful insights. This behaviour goes against agency theory, where engineers prioritize their self-interest over the organization's interest, creating a barrier to ITG implementation.

"For KPIs to work, you need to understand what you want to measure and use them as a learning tool. Only then might you get accurate and useful results."(R5:5.28)

From a front-line perspective, Respondent 1 noted an increase in performance capture for teams within product development:

"I don't believe there are many things in the xxx team. We have started to estimate stories, tasks, and so on. We aim to complete them by the end of the sprint. We try to estimate how many points each item is worth, primarily as a measurement for ourselves and to align expectations within the team. For example, if I think a task is a three, you think it's a five, and someone else thinks it's a 15, we can discuss why the estimates are so different. Maybe one of us is an expert, or perhaps the other isn't." (R1:1.50)

Respondent 1 suggested that cyclical feedback is being used as a performance management mechanism via agile methods. This includes rough attribution of work to individuals, allowing for estimates of completion measurements. Story point estimation, a common Agile practice, enables teams to gauge the effort required for tasks, highlighting the subjective nature of task estimation influenced by individual skill levels and perceptions (R1:1.50).

In summary, the findings indicate varied perspectives on performance measurement within the organization. While there is an acknowledgment of the need for structured performance metrics, there are challenges related to the manipulation of KPIs and the lack of clear objectives. Agile practices like story point estimation provide some structure, but a more cohesive and transparent approach to performance measurement is needed to align IT strategies with business objectives effectively.

4.4 Resource Management

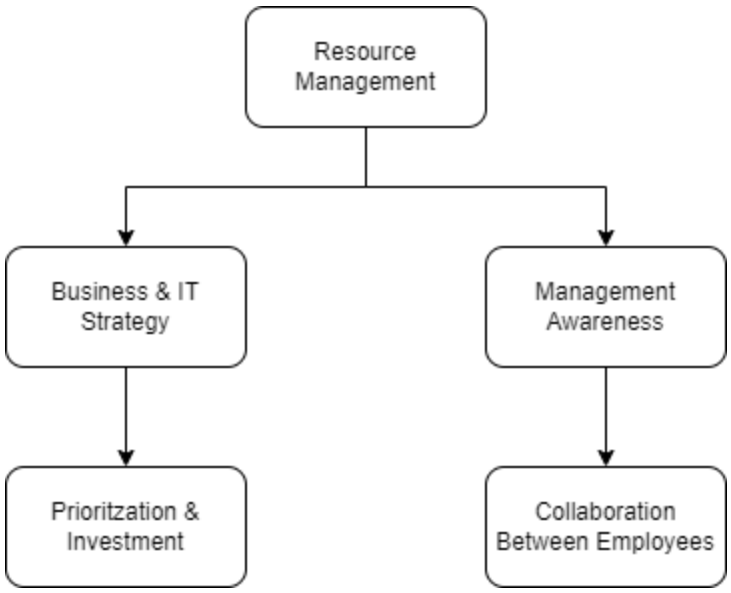

Figure 4.4: Resource Management Theme and Subthemes

In resource management, the key is to establish expertise in people, efficient data and IT management, and optimize investments in IT-related initiatives. Collaboration, shared understanding, and trust in IT practices, as well as engagement in its potential value, are the cornerstones of effective resource management. The shared vision within the organization presents challenges, as recognized by Respondent 5. Respondent 1 also believes that new and innovative IT initiatives will shift the company's prioritization:

"I think currently, it's still not fully prioritized. We're not fumbling in the dark, but we're positioning ourselves to handle and maintain this product long term. So we're not focusing much on the xxx technology at this point in time. We have limited resources, so it's like an offshoot that will, at some point, become the most prioritized thing. I believe it will become our flagship product, like the xxx team in my mind. Right now, I think we're positioning ourselves for that."(R1:1.14)

One of the key challenges in establishing the right prioritization is effectively delegating the resources the organization has available. Respondent 2 mentioned that this responsibility lies with product management, and it is their duty to see the value in IT-based initiatives. While frontline employees can bring up issues, the actual initiatives require a collaborative effort and trust. There is a limit to expanding resources and personnel, so a delicate balance must be found:

"In product development, we have to highlight issues like technical debt and suggest improvements to become more efficient. We can't expect our product managers to identify these issues on their own; we need to bring them up. However, it is their responsibility to assess and value these concerns. It requires cooperation, of course." (R2:2.38)

"And then yeah, because everything is usually done with the same resources. So we have to come back to the balance we talked about to get the day now not try to believe that things like that will be done with a left hand on the side. Because if it's important, we should make time to do it."(R2:2.40)

In summary, the findings indicate that effective resource management relies on establishing expertise, efficient data and IT management, and optimizing investments in IT initiatives. Collaboration, trust, and a shared understanding of IT practices are crucial. Product management plays a pivotal role in prioritizing and valuing IT initiatives, and a balance must be found to make the most of available resources.

4.5 Environmental Effect (External)

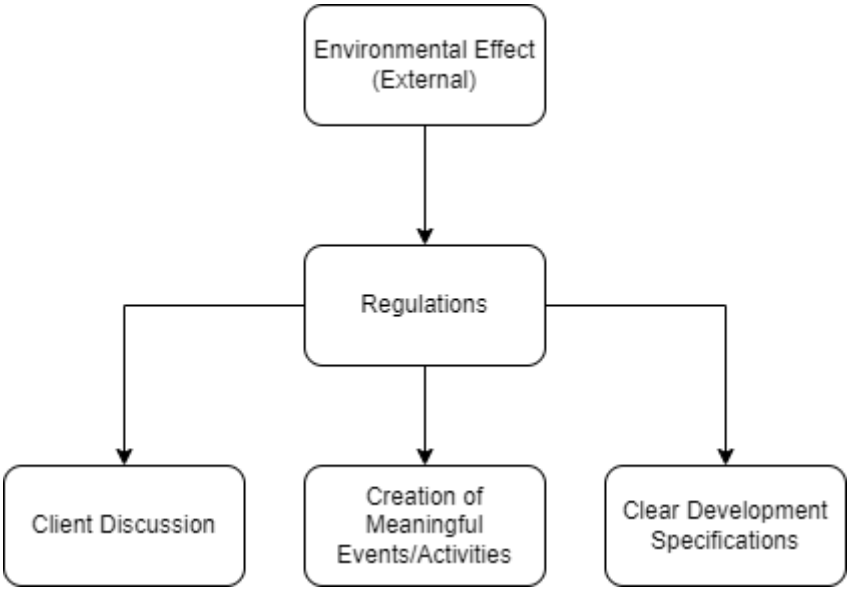

Figure 4.5: Environmental Effect Theme and Subthemes

Environmental effects include external factors, namely regulations and market pressure. The introduction of new regulations could have a significant impact on IT operations within the organization, which could necessitate increased level of governance at organizations.

4.5.1 Regulations

Regulations require the company to sense and respond to organizational requirements effectively. Respondent 5 perceived that the company had a good response to regulations, viewing them positively for product development decisions. Regulations introduce clear policies and principles, providing goals and targets for engineers to follow:

> "We think we have a fairly good response to that. Regulations are nice in one way because they are very clear; there isn't much room for interpretation. If you want to fulfill something, you need to perform specific tasks, tests, or implement specific functionality. There is no way around that, so it provides a clear goal, actually a target. That's why engineers sometimes like these standards. While they can hate them because they are quite extensive and sometimes very hard to fulfill, they also appreciate the clarity. They are not like clients who say 'maybe this,' 'maybe that,' or 'maybe something else'." (R5:5.38)

Respondent 2 mentioned that regulations introduce a dynamic with customers, leading to discussions about expectations and obligations. The pressure mainly comes from customer expectations and the organization's need to inform customers about its regulatory obligations and how they are fulfilled.

Respondent 3 emphasized that it is crucial for the development team not to take shortcuts in conforming to regulations. Respondent 1 agreed, stating that regulations simplify decision-making and necessary changes to comply with new laws:

> "Yeah, I mean, I think there are still some different levels. One is just basically signing the paper to take a shortcut, which leads to no learning at all in the organization. So I think the task for the development organization is to ask, 'Okay, we have this. If we do it this way, how can we do it for a fifth or a tenth of the cost but still do it the right way?' Focus on identifying the real risks and determining what we really need to do."(R3:3.28)

In summary, the findings indicate that regulations play a significant role in guiding product development and operational decisions within the organization. They provide clear targets and goals, helping engineers and teams understand and meet specific requirements. The company's approach to regulations involves maintaining clarity, ensuring compliance, and balancing cost-effectiveness without compromising on quality or learning opportunities.

5 Discussion

This chapter engages in a thorough discussion of the findings presented in the previous section, interpreting them within the broader context of ITG in SMEs. It critically examines how the results relate to the theoretical frameworks and literature reviewed earlier, highlighting the significance of these findings in advancing our understanding of ITG implementation. The discussion explores the implications of organizational culture, structure, and processes on the effectiveness of ITG practices.

5.1 IT Governance in SMEs

IT governance practices are increasingly being recognized across various organizations. ITG encompasses a wide array of business aspects including value delivery activities, management activities, and stakeholder transparency (De Haes & Van Grembergen, 2015; Weill & Ross, 2004; Wilkin & Chenhall, 2020; Wu et al., 2015). However, the adoption of ITG within SMEs presents notable challenges, primarily due to resource limitations that affect the recruitment and retention of skilled personnel (Othman & Chan, 2013). Effective implementation and adoption of ITG demands a concerted effort to align people, processes, and structures (Buchwald et al., 2014). This alignment is essential for delivering value and achieving strategic orientation between business and IT strategies. Additionally, ITG is also addressing the managing efforts of risks, resources, and performance. Our findings reveal that there was no apparent use of existing ITG frameworks at the organization, prompting a further investigation into how IT governance is informally structured and executed in this context.

The impact of organizational culture, structures, and existing processes on IT governance in SMEs cannot be overstated. Organizational culture, structure and existing processes influences how these challenges are addressed and can either facilitate or hinder the effective integration of ITG practices. As we explore the findings from our case study, we will see how specific cultural attributes, the organizational structure and existing processes within SMEs support or impede their IT governance capabilities.

5.2 Organizational Culture

In SMEs, people—including stakeholders, managers, and front-line employees—are fundamental to success. Respondent 5 highlighted the importance of giving engineers the freedom to innovate, a sentiment supported by Respondent 4 who noted the significant contributions of personnel in adapting a technological product post-acquisition.

Agency theory suggests implementing policies and principles that guide actors within the company toward aligning financial investments in IT with outputs that sustain long-term performance (Dong et al., 2021). However, contrasting views, like those of Devos et al. (2012), emphasize the importance of trust and informal control systems in SMEs. They argue that instead of stringent control mechanisms, SMEs benefit from informal systems combined with adequate reporting and a greater focus on people. This perspective is corroborated by our findings, where Respondent 5 saw potential benefits in policies and principles but warned that

overly formal restrictions could stifle innovation and give employees the impression that they are not trusted, undermining their sense of empowerment.

Further supporting the blend of structure and flexibility, the adoption of agile methodologies at the organization allows for decentralized decision-making, enabling decisions to be made where the knowledge lies (R2; R5). However, the extent of decentralization largely depends on the potential impact of the decision. Respondent 1 highlighted that while development decisions can often be made on the spot, decisions with broader impacts require consultation with architects or product management. This distinction underscores the agile approach's adaptability, which enhances flexibility and responsiveness while fostering a culture of trust and empowerment. Respondent 2 and Respondent 4 emphasized that trust in this context is built upon dialogue between the involved parties – which includes employees, managers, stakeholders, as well as clients. This illustrates the practical application of trust as a fundamental component of governance of SMEs, suggesting that a rigid control system may not be as effective in such dynamic environments. Instead, discussion should take place when they are called for by the individuals.

The cultural challenges faced in ITG implementation range from resistance to change, organizational politics, lack of personnel, and lack of middle management support (Othman & Chan, 2013). These challenges were particularly highlighted by Respondent 5, who noted that the introduction of new tools can cause discomfort among personnel, suggesting the need for a careful balance between control and flexibility. Respondent 5 stressed the importance of implementing these tools in a manner that not only respects but also promotes learning and growth within the company. This approach highlights the critical role of supportive leadership and appropriate change management strategies in overcoming the barriers to effective IT governance.

5.2.1 Leadership and Initiatives

Leadership plays a pivotal role in driving IT initiatives within SMEs. The need for a central figure to drive these initiatives and align them with business objectives is evident, yet could be lacking in execution. Respondent 1’s insight underscores a gap in leadership effectiveness, noting the absence of a proactive push for strategic initiatives which stifles the speed and effectiveness of implementation. The acknowledgment of the necessity for a delineated scope of responsibilities and leadership is further supported by Respondent 3, who emphasizes the openness and need for clear leadership within the team. However, Respondent 3 also suggests that the lack of a central leader might not necessarily be the root of the problem, indicating that other underlying issues could also impede organizational progress and IT success.

Furthermore, the effective management of IT involves an integrative strategy that aligns with business objectives (Sadler & Craig, 2003), in our findings where decisions are decentralized throughout the organization, we argue that it extends responsibilities to front-line employees. Respondent 5 highlights the limitations of governance capabilities and structures, explaining that neither a purely bottom-up approach, which might address the needs of developers and teams, nor a strictly top-down approach, which could result in tools that fail to meet the practical needs of those teams, are sufficient. This dual perspective is essential for creating policies and tools that are practical, applicable, and beneficial across all levels of the organization. Respondent 5 advocates for a balanced approach where both management and employees collaborate to create governance practices and utilize tools that support the business objectives.

Moreover, Respondent 5 mentioned that the creation of these governance practices only works when both parties fully trust each other.

5.2.2 Linking Culture to Agile Governance Theory

The integrative strategy that combines both top-down and bottom-up approaches underscores the necessity of trust, effective communication, and information sharing between stakeholders, management, and employees (Devos et al., 2012; Luna et al., 2014), ensuring that strategic decisions and the implementation of governance tools are made with a comprehensive understanding of both the organizational goals and the operational realities faced by teams. By fostering a culture of collaboration and mutual respect, SMEs can enhance their IT governance practices to be more adaptive, responsive, and ultimately more effective in supporting business objectives. The principles of agile governance, as outlined in our literature review, advocate for a flexible, responsive approach that integrates agile capabilities with traditional governance frameworks. This model supports rapid decision-making and adaptability while maintaining necessary controls and oversight (Luna et al., 2015).

Our findings reflect agile governance's emphasis on the integration of bottom-up and top-down approaches, which is critical in creating a dynamic and responsive organizational environment that can quickly adapt to market changes and technological advancements. The discussion with Respondent 5 particularly aligns with agile governance’s principle of continuous improvement and learning, where iterative processes and feedback loops are crucial. Such an environment is conducive to agile practices, allowing organizations to navigate complexities effectively and maintain competitiveness in dynamic markets.

5.3 Organizational Structure and Processes

The literature and findings from our study converge to illustrate the critical role of agile governance within the organizational structures of SMEs. Agile governance, which integrates principles from agile software development into organizational management, advocates for flexibility, responsiveness, and a decentralized decision-making approach. This aligns well with the organizational structure in the chosen organization, where flat hierarchies and empowered teams are prevalent. According to Luna et al. (2015), agile governance facilitates rapid and sustainable responses to environmental changes, which is vital in dynamic markets where SMEs operate. The first law of agile governance states that this approach emerges when agile capabilities are effectively combined with governance capabilities, enhancing business operations and value delivery.

Empowerment of teams within SMEs is not merely a structural attribute but a strategic necessity. Our interviews indicate that when teams are empowered, there is a notable increase in innovation and efficiency. This observation is supported by the agile governance theory, which suggests that empowering teams enhances business operations and value delivery (Second Law) (Luna et al., 2015). Additionally, trust emerges as a fundamental element within these structures, aligning with Devos et al. (2012) who argue that in SMEs, informal control systems based on trust can be more effective than rigid, formal controls.

While minimal hierarchy supports quick decision-making and enhances flexibility, it also introduces challenges such as potential ambiguities in role definitions and decision-making authority. Our findings suggest that these challenges can be mitigated by clearly defined roles and responsibilities, consistent with the literature that highlights the need for clear governance structures to support agile practices (Vejseli et al., 2022). The lack of delineated responsibilities can be seen as an internal moderator factor that negatively impacts both agile and IT governance capabilities (third law) (Luna et al., 2015), potentially hindering the organization's effectiveness in business operations and value delivery.

The integration of agile and traditional governance frameworks appears as a recurring theme in both literature and our empirical data. This hybrid approach facilitates a balance between rapid innovation and robust control mechanisms, essential for managing risks and aligning IT with business strategies. Such a balance is crucial for mitigating the adverse effects of environmental and moderator factors, thereby enhancing operations and competitiveness over time (Fifth Law) (Luna et al., 2015). This was also reflected by Respondent 5, who advocated that while more principles and policies would be beneficial, the company must also remain agile and adapt to the environment. Respondents 2 and 4 reinforced this view, emphasizing the importance of continually evaluating tasks and projects within teams, which are then utilized by product management in their planning activities.

In planning activities, management sets both short-term and long-term targets. However, when examining how these plans are measured using the Balanced Scorecard (BSC) framework (Kaplan, 2009) as our theoretical basis, it became apparent that clear measurement practices were lacking. Despite probing whether measures were clearly formulated to evaluate if objectives and targets were met, no solid measurement practices were identified. This ties into Respondent 5's emphasis on the importance of bottom-to-top and top-to-bottom trust in the context of measurement. Respondent 5 highlighted that key performance indicators (KPIs), when properly understood and implemented, can lead to significant improvements in value delivery. This underscores the causal relationship between effective business practices and the resulting organizational benefits, as described in the Sixth Law of Agile Governance theory (Luna et al., 2015).

Respondent 5 also noted that KPIs intended to measure individual performance can be manipulated by front-line employees to appear favorable to management, thus defeating their purpose. According to Respondent 5, KPIs are effective only when they clearly define the metrics to be measured and identify the reasons for any shortfalls. Furthermore, KPIs must be embraced as a learning tool by both front-line employees and managers to enhance collaborative efforts. This perspective aligns with Devos et al. (2012), who emphasize the importance of trust established through interpersonal relationships within projects. The successful use of KPIs in an organization depends heavily on its culture, which acts as a moderating factor and an internal constraint for successful Agile governance or ITG capabilities (third law) (Luna et al., 2015).

It is evident that the organizational structure and processes in the observed SME are uniquely positioned to leverage agile governance principles. These structures not only support rapid adaptability and responsiveness but also enhance the strategic alignment and effective governance necessary for thriving in volatile markets. However, the challenges associated with minimal hierarchical structures, such as role confusion, highlight the need for SMEs to refine these structures to support clear governance without sacrificing the benefits of agility. By continuing to foster a culture of trust and empowerment, and by refining role definitions and

decision-making processes, SMEs can better leverage their organizational structures to achieve strategic alignment and effective IT governance.

5.4 Environmental and Regulatory Impact

The environmental and regulatory landscapes are critical external factors that influence the IT governance practices in SMEs. Respondent 2 underscores the necessity for SMEs to quickly adapt to changing market environments and regulatory requirements, which is particularly challenging given their resource constraints. This is consistent with the literature, which suggests that the agility of SMEs in adapting to new business environments is essential for maintaining compliance and securing a competitive advantage (Elazhary et al., 2023). Moreover, regulatory pressures are identified as a significant driver for the adoption and refinement of IT governance frameworks in SMEs, aligning with the observation by Huygh et al. (2022) that external regulatory requirements necessitate robust governance mechanisms.

Market dynamics, including technological disruptions and competitive pressures, also significantly impact IT governance in SMEs. Our interviews revealed that SMEs are particularly susceptible to shifts in technology and market conditions, which can abruptly change competitive landscapes (R1;R2). These findings align with the literature that emphasizes the need for SMEs to employ agile governance frameworks that allow for swift operational and strategic responses to market changes (Luna et al., 2015).

The integration of regulatory compliance within IT governance frameworks is a recurrent theme from both the literature and our empirical findings. SMEs often face challenges in aligning their IT governance structures with compliance demands due to limited resources. However, compliance can act as a catalyst for strengthening IT governance practices. Robust governance frameworks facilitate better alignment with regulatory standards and enhance organizational credibility (Wilkin & Chenhall, 2020). This necessitates a balance between compliance and operational flexibility, ensuring that SMEs can meet regulatory demands without stifling innovation.

Respondent 5 mentioned that regulatory requirements provide clear guidelines for product development, noting that engineers appreciate the clarity these regulations bring. Respondent 3 emphasized that activities implemented to comply with regulatory requirements should transition into continuously monitored and evaluated practices to reduce costs.

Technological advancements, such as the adoption of cloud computing, big data, and AI, bring about new compliance challenges for SMEs. As Respondent 5 stated the organisation is looking into new technologies that utilize data. While these technologies may offer significant opportunities for value creation and competitive differentiation, they also require SMEs to navigate complex regulatory landscapes, particularly concerning data privacy and cybersecurity. This echoes the literature's emphasis on the need for governance frameworks that can adapt to the rapid evolution of technology and the associated regulatory implications (Abraham et al., 2019; Mäntymäki et al., 2022).

In conclusion, the environmental and regulatory impacts on IT governance in SMEs are multifaceted, involving a complex interplay of compliance demands, market dynamics, and technological advancements. Our discussion, informed by both literature and empirical findings,

highlights the critical need for SMEs to adopt flexible and responsive governance frameworks that can accommodate rapid changes in the external environment while ensuring compliance and strategic alignment. This adaptive approach is essential for SMEs to leverage external pressures as opportunities for growth and innovation, rather than as barriers to their operational effectiveness and competitive standing.

5.5 Practical Suggestions

Based on the literature review and empirical findings, several practical suggestions can be proposed to enhance ITG practices in SMEs. These suggestions aim to address the unique challenges faced by SMEs and leverage their inherent strengths to improve their agile and IT governance capabilities.

Empowering teams and fostering a culture of trust are critical for the successful implementation of agile governance. SMEs should ensure that decision-making is decentralized to the level where the knowledge lies and that there is continuous dialogue between employees, managers, and stakeholders to build and maintain trust. This aligns with Devos et al. (2012), who suggest that trust established through interpersonal relationships within projects is a major focus in SMEs. A trust-based environment encourages innovation and collaboration, leading to improved governance outcomes. Additionally, it could also lead to ITG success by making ITG mechanisms more easily accepted and integrated within the organization (Buchwald et al., 2014)

SMEs should integrate agile governance models that combine agile principles with traditional ITG principles into their governance capabilities. This approach facilitates rapid decision-making and continuous adaptation, which are crucial for SMEs operating in dynamic environments where regulatory changes and technological advancements are prevalent (Luna et al., 2015; Vejseli et al., 2022). By adopting agile governance, SMEs can enhance their responsiveness to market demands and improve overall operational efficiency.

SMEs should adopt comprehensive risk management strategies that start with defining roles and responsibilities, conducting risk and vulnerability assessments, and ensuring that the findings are translated into actionable activities that are continuously measured and evaluated. Effective risk management is essential for balancing an organization's risk appetite with regulatory compliance and strategic initiatives (Eriksson & Anna-Karin, 2012; Stoneburner et al., 2002). By proactively managing risks, SMEs can safeguard their operations and build resilience against potential disruptions.

By focusing on these practical suggestions, SMEs can significantly enhance their ITG practices, thereby improving their adaptability, innovation, and overall competitiveness in the rapidly changing business and technological landscape.

6 Conclusion

This research has investigated and explored the role of organizational culture, structures, and processes in implementation of ITG. ITG practices has been recognized for their potential to strategically align business and IT strategies, increase value delivery, and improve risk and performance management practices in organizations. In this research we aimed to answer the following question:

How does organizational culture, structure and existing processes influence the implementation of IT governance practices in SMEs?

To address this question, a comprehensive literature review on ITG and its related areas was conducted. Subsequently, a case study was performed on an organization, where semi-structured interviews were carried out with a wide range of respondents to gain in-depth insights into the organizational culture, processes, and structures. A codebook was developed based on the success factors of ITG implementation to deductively analyse our findings. The results were then compared to existing theories and contextualized within the SME under study.

Our research revealed that the organization investigated relied heavily on ad-hoc methods of ITG, utilizing agile principles to continuously evaluate and transform business operations.

Our study found that empowering individuals and fostering a culture that promotes learning, growth, and trust are crucial components of successful ITG implementation. Such an environment facilitates agile governance practices and supports the emergence of traditional ITG practices. However, elements of resistance to change and the complexity of integrating governance were identified. Excessive restrictions can stifle self-empowerment and innovation. Additionally, creating policies and principles to govern IT can hinder production if not carefully managed.

Challenges in creating efficient measurement practices were also noted, highlighting the importance of trust within the organization. Effective measurement is crucial for evaluating the success of ITG initiatives and ensuring continuous improvement.

This study emphasizes that agile governance can be effectively applied in SMEs. By leveraging agile principles, SMEs can enhance their responsiveness to market demands, improve operational efficiency, and better align IT strategies with business objectives. This research contributes to the understanding of ITG in SMEs and provides practical insights into how organizational culture, structure, and processes influence ITG implementation.

In conclusion, the successful implementation of ITG in SMEs requires a balanced approach that integrates agile and traditional governance practices. Empowering individuals, fostering a culture of trust, and addressing resistance to change are essential for creating an environment where ITG can thrive. Aligning ITG practices with the unique cultural and structural characteristics of SMEs is crucial for achieving strategic alignment and improving overall business performance.

6.1.1 Future Research

The application of IT governance frameworks across different sectors within the SME category remains underexplored. Future research should consider cross-sectoral studies to identify sector-specific challenges and opportunities in IT governance, uncovering insights into how these frameworks can be tailored to meet the distinct needs of SMEs operating in various industries. Additionally, given the global nature of technology and business, understanding the cultural and regional differences in IT governance practices is crucial. Research should examine how different cultural and regulatory environments affect the IT governance strategies of SMEs. This global perspective will be invaluable in the implementation of IT governance frameworks that are both culturally adaptable and globally applicable.

As technology continues to evolve and AI and data-driven technologies improve business operations, the complexity and need for ITG will become increasingly apparent for SMEs. This raises the question, how will the rise of AI influence the need for robust ITG practices in SMEs? Future research could include longitudinal studies to track the long-term impact of implementing traditional ITG practices in agile settings. Such studies would provide deeper insights into the effectiveness and necessity of specific IT governance strategies over time and their effect on organizational agility. This approach would offer a comprehensive understanding of the causal relationships between technological advancements, governance practices, and organizational outcomes. Additionally, it could help identify which areas of ITG practices are most critical for sustaining competitive advantage. For instance, should performance management or risk management be prioritized? How does the integration of Agile governance theory with traditional ITG frameworks impact organizational value delivery over time?

Appendix 1 - Case Study Protocol

Section A: Overview of the case study protocol

This research aims to uncover the perception of ITG used in development teams, including managers and developers. A particular focus is on how these mechanisms facilitate strategic alignment and organizational agility. The case study will explore the complexity and challenges associated with ITG (or the absence of it) within SME's context, which has become increasingly crucial as ITG grows integral to business operations. A field study has been conducted with one of the researcher acting as

Section B: Data collection procedures

- Direct observations were conducted through a field study, wherein one of the researchers engaged part-time in tasks peripheral to the primary research inquiry. These observations did not target individuals but rather focused on the structures and processes foundational to the organization's decision-making.

- Semi-structured interviews

Section C interview questions

Semi- structured interview guide:
The goal of this interview is to gather insights into the dynamics at your organization, explore the practical and perceived usage of IT Governance mechanisms, in short how it affects the people, processes and structures at the organization. Are you ok with this?
If you at any point after this interview feel like withdrawing your participation of this study, send an email and all information about you and this interview.
We will anonymize you in the thesis, and any mentioning of specific people or projects related to the organisation.
Is it okay if we record this interview?
We will later send you a transcribed version of the interview so you can look through it and give additional inputs, or if there are any specific statements you would like to withdraw from this interview.

General questions

G1) Please introduce yourself and briefly describe your role in the organization.
G2) What are the main business and IT objectives of your organization?

Strategic Alignment

(CSF 1, 2)

QSA1) How do stakeholders, including management, participate in IT-related decision-making?

QSA2) Can you describe the level of ownership and support from management for IT decision-making?

(CSF 3, 4)

QSA3) Can you discuss how IT and business strategies are communicated and aligned within the organization?

– What mechanisms ensure effective ongoing communication between these areas?

QRM1) How is risk management integrated into your IT strategy and decision-making processes?

– Are there any tools or methodologies that you employ to evaluate and mitigate risks?

Environmental Effect (External)
(CSF 1)
Q**EE1)** How does your organization respond to and comply with regulatory changes?

– Can you provide examples of how these regulations have shaped your IT practices?

Organizational Effect (Internal)

(CSF 1)

QOE1) What are the IT governance policies, principles, and responsibilities currently established in your organization?

(CSF 2, 5)

QOE2) How does the existing enterprise governance support IT governance?

QOE3) What change strategies have been implemented to adapt IT practices within the organization?

(CSF 3, 4)

QOE4) Can you describe your organizational culture and its impact on IT strategy and policies?

QOE5) How is the IT strategy articulated and updated?

Performance Management

(CSF 1)

QPM1) How does your organization evaluate the current and future use of IT?

– What tools or methodologies are employed?

(CSF 2, 3)

QPM3) Can you describe your project management methodologies?

– How do these methodologies support effective performance management in IT projects?

Resource Management

(CSF 1, 2)

QRM1) Discuss how your organization ensures sufficient financial and human resources for IT initiatives. How are IT skills and staffing levels assessed and managed?

Change management specific questions (added after initial interviews and directly targeted towards the change management)

CMQ1) Do you utilize any pain points or trigger events as a launching point for change initiatives? This could be for example IT-enabled changes that fail to meet business needs and are delivered late or over budget.
– It could also be new regulations/security requirements

CMQ2) In enabling change do you utilize or create any principles, Policies and frameworks?

CMQ3) How do you manage the human and cultural aspects of change and motivate stakeholders to buy into the change process?

CMQ4) Do you have a structured and proactive approach to address the possibility of ignorance or resistance to change?

Section D. Tentative outline for the case study report

Objectives:

- To explore how people, processes and structures are governed within the organization.
- To evaluate the effectiveness of people, processes, and structures in ensuring sufficient attention to the five main areas (value delivery, strategic alignment, resource management, performance management and risk management) concerned within ITG.

Appendix 2 - AI Contribution Statement

Tools Used:

ChatGPT: This tool was instrumental in the structuring and planning phases of the thesis. It assisted in creating detailed outlines and provided guidance on the logical development of the document, ensuring a coherent flow and organization. ChatGPT was also utilized for grammar corrections and refining language use, which helped enhance the clarity and professionalism of the written content.

OtterAI: Employed primarily for the transcription of audio content, including interviews and lectures that formed the foundational research material for the thesis. This tool facilitated accurate and efficient conversion of spoken words into text, which was critical for data analysis and integration into the research findings.

Degree of Use:

ChatGPT: The tool's contribution was significant in the initial and final stages of thesis preparation, particularly in improving the text's language and grammatical structure. It was also used to summarize written text to gain insight into potential improvements.

OtterAI: This tool was used to transcribe audio recordings. The transcriptions provided by OtterAI were essential for accurately capturing verbatim data and integrating it into the thesis analysis.

References

Abraham, R., Schneider, J. & Vom Brocke, J. (2019). Data Governance: A Conceptual Framework, Structured Review, and Research Agenda, *International Journal of Information Management*, vol. 49, pp.424–438

Alhassan, I., Sammon, D. & Daly, M. (2016). Data Governance Activities: An Analysis of the Literature, *Journal of Decision Systems*, vol. 25, no. sup1, pp.64–75

Alreemy, Z., Chang, V., Walters, R. & Wills, G. (2016). Critical Success Factors (CSFs) for Information Technology Governance (ITG), *International Journal of Information Management*, vol. 36, no. 6, pp.907–916

Antonsen, Y. (2014). The Downside of the Balanced Scorecard: A Case Study from Norway, *Scandinavian Journal of Management*, vol. 30, no. 1, pp.40–50

Awadallah, E. A. & Allam, A. (2015). A Critique of the Balanced Scorecard as a Performance Measurement Tool, *International journal of business and social science*, vol. 6, no. 7

Bailey, J. (2008). First Steps in Qualitative Data Analysis: Transcribing, *Family Practice*, vol. 25, no. 2, pp.127–131

Bartens, Y., De Haes, S., Lamoen, Y., Schulte, F. & Voss, S. (2015). On the Way to a Minimum Baseline in IT Governance: Using Expert Views for Selective Implementation of COBIT 5, in *2015 48th Hawaii International Conference on System Sciences*, 2015 48th Hawaii International Conference on System Sciences (HICSS), Kauai, HI, January 2015, Kauai, HI: IEEE, pp.4554–4563, Available Online: https://ieeexplore.ieee.org/document/7070363/ [Accessed 9 May 2024]

Bebchuk, L. A., Cohen, A. & Ferrell, A. (2009). What Matters in Corporate Governance, *The Review of Financial Studies*, vol. 22, no. 2, pp.783–827

Benaroch, M. & Chernobai, A. (2017). Operational IT Failures, IT Value Destruction, and Board-Level IT Governance Changes, *MIS Quarterly*, vol. 41, no. 3, pp.729–762

Bergeron, F., Croteau, A.-M., Uwizeyemungu, S. & Raymond, L. (2015). IT Governance Theories and the Reality of SMEs: Bridging the Gap, in *2015 48th Hawaii International Conference on System Sciences*, 2015 48th Hawaii International Conference on System Sciences (HICSS), HI, USA, January 2015, HI, USA: IEEE, pp.4544–4553, Available Online: http://ieeexplore.ieee.org/document/7070362/ [Accessed 19 May 2024]

Bhattacherjee, A. (2012). Social Science Research: Principles, Methods, and Practices, Second edition., University of South Florida

Brunninge, O., Nordqvist, M. & Wiklund, J. (2007). Corporate Governance and Strategic Change in SMEs: The Effects of Ownership, Board Composition and Top Management Teams, *Small Business Economics*, vol. 29, no. 3, pp.295–308

Buchwald, A., Urbach, N. & Ahlemann, F. (2014). Business Value through Controlled IT: Toward An Integrated Model of IT Governance Success and Its Impact, *Journal of Information Technology*, vol. 29, no. 2, pp.128–147

Butler, T., Gozman, D. & Lyytinen, K. (2023). The Regulation of and through Information Technology: Towards a Conceptual Ontology for IS Research, *Journal of Information Technology*, vol. 38, no. 2, pp.86–107

Chan, Y. E. & Reich, B. H. (2007). IT Alignment: What Have We Learned?, *Journal of Information Technology*, vol. 22, no. 4, pp.297–315

Coltman, T., Tallon, P., Sharma, R. & Queiroz, M. (2015). Strategic IT Alignment: Twenty-Five Years On, *Journal of Information Technology*, vol. 30, no. 2, pp.91–100

Corbin, J. M. & Strauss, A. L. (2015). Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory, Fourth edition., Sage publications

De Haes, S. & Van Grembergen, W. (2009). An Exploratory Study into IT Governance Implementations and Its Impact on Business/IT Alignment, *Information Systems Management*, vol. 26, no. 2, pp.123–137

De Haes, S. & Van Grembergen, W. (2015). Enterprise Governance of Information Technology: Achieving Alignment and Value, Featuring COBIT 5, Cham: Springer Publishing Company, Incorporated

De Haes, S., Van Grembergen, W. & Debreceny, R. S. (2013). COBIT 5 and Enterprise Governance of Information Technology: Building Blocks and Research Opportunities, *Journal of Information Systems*, vol. 27, no. 1, pp.307–324

Devos, J., Van Landeghem, H. & Deschoolmeester, D. (2012). Rethinking IT Governance for SMEs, *Industrial Management & Data Systems*, vol. 112, no. 2, pp.206–223

Directive 2555/2022. (n.d.). DIRECTIVE (EU) 2022/2555 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 December 2022 on Measures for a High Common Level of Cybersecurity across the Union, Amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and Repealing Directive (EU) 2016/1148 (NIS 2 Directive), Available Online: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02022L2555-20221227&qid=1713771845115

Dong, J. Q., Karhade, P. P., Rai, A. & Xu, S. X. (2021). How Firms Make Information Technology Investment Decisions: Toward a Behavioral Agency Theory, *Journal of Management Information Systems*, vol. 38, no. 1, pp.29–58

Elazhary, M., Popovič, A., Henrique De Souza Bermejo, P. & Oliveira, T. (2023). How Information Technology Governance Influences Organizational Agility: The Role of Market Turbulence, *Information Systems Management*, vol. 40, no. 2, pp.148–168

Eriksson, J. & Anna-Karin, J. (2012). Guide to Risk and Vulnerability Analyses, Karlstad: Swedish Civil Contingencies Agency (MSB)

Fast, V., Schnurr, D. & Wohlfarth, M. (2023). Regulation of Data-Driven Market Power in the Digital Economy: Business Value Creation and Competitive Advantages from Big Data, *Journal of Information Technology*, vol. 38, no. 2, pp.202–229

Fink, L. & Neumann, S. (2007). Gaining Agility through IT Personnel Capabilities: The Mediating Role of IT Infrastructure Capabilities, *Journal of the Association for Information Systems*, vol. 8, no. 8, pp.440–462

Gartner. (2010). Measuring IT Operations With the Balanced Scorecard, Available Online: https://www.gartner.com/en/documents/1503217 [Accessed 17 April 2024]

Golafshani, N. (2015). Understanding Reliability and Validity in Qualitative Research, *The Qualitative Report*, [e-journal], Available Online: https://nsuworks.nova.edu/tqr/vol8/iss4/6/ [Accessed 7 January 2024]

Goldkuhl, G. (2012). Pragmatism *vs* Interpretivism in Qualitative Information Systems Research, *European Journal of Information Systems*, vol. 21, no. 2, pp.135–146

Guest, G., MacQueen, K. & Namey, E. (2012). Applied Thematic Analysis, 2455 Teller Road, Thousand Oaks California 91320 United States: SAGE Publications, Inc.

Hassan, N. R., Mingers, J. & Stahl, B. (2018). Philosophy and Information Systems: Where Are We and Where Should We Go?, *European Journal of Information Systems*, vol. 27, no. 3, pp.263–277

Heart, T., Maoz, H. & Pliskin, N. (2010). From Governance to Adaptability: The Mediating Effect of IT Executives' Managerial Capabilities, *Information Systems Management*, vol. 27, no. 1, pp.42–60

Henderson, J. C. & Venkatraman, H. (1999). Strategic Alignment: Leveraging Information Technology for Transforming Organizations, *IBM Systems Journal*, vol. 38, no. 2.3, pp.472–484

Hiekkanen, K., Helenius, M., Korhonen, J. J. & Patricio, E. (2013). Aligning Alignment with Strategic Context: A Literature Review, in P.-J. Benghozi, D. Krob, & F. Rowe (eds), *Digital Enterprise Design and Management 2013*, Vol. 205, [e-book] Berlin, Heidelberg: Springer Berlin Heidelberg, pp.81–98, Available Online: https://link.springer.com/10.1007/978-3-642-37317-6_8 [Accessed 4 May 2024]

Huygh, T., Steuperaert, D., De Haes, S. & Joshi, A. (2022). The Role of Compliance Requirements in IT Governance Implementation: An Empirical Study Based on COBIT 2019, in *Proceedings of the 55th Hawaii International Conference on System Sciences*, Hawaii International Conference on System Sciences, 2022, Springer Berlin Heidelberg, Available Online: http://hdl.handle.net/10125/80146 [Accessed 17 April 2024]

ISACA. (2012). Cobit 5 A Business Framework for the Governance and Management of Enterprise, ISACA

ITGovernanceUK. (2024). What Is COBIT 5? Definition & Explanation, Available Online: https://www.itgovernance.co.uk/cobit#:~:text=COBIT%20(Control%20Objectives%20for%20Information,framework%2C%20was%20released%20in%202012. [Accessed 25 April 2024]

Jewer, J. & Van Der Meulen, N. (2022). Governance of Digital Transformation: A Review of the Literature, in *Proceedings of the 55th Hawaii International Conference on System Sciences*, Hawaii International Conference on System Sciences, 2022, Available Online: http://hdl.handle.net/10125/80144 [Accessed 17 April 2024]

Kaplan, R. S. (2009). Conceptual Foundations of the Balanced Scorecard, in *Handbooks of Management Accounting Research*, Vol. 3, [e-book] Elsevier, pp.1253–1269, Available Online: https://linkinghub.elsevier.com/retrieve/pii/S1751324307030039 [Accessed 8 April 2024]

Kohli, R. & Grover, V. (2008). Business Value of IT: An Essay on Expanding Research Directions to Keep up with the Times, *Journal of the Association for Information Systems*, vol. 9, no. 1, pp.23–39

Luna, A. J. H. D. O., de Moura, H. P. & Kruchten, P. (2015). Agile Governance Theory: Conceptual Development, in D. M. G. Sakata (ed.), , 12th International Conference on Management of Technology and Information Systems, São Paulo, 2015, São Paulo: FEA-USP

Luna, A. J. H. D. O., Kruchten, P., E.Pedrosa, M. L. G. D., Almeida Neto, H. R. de & Moura, H. P. de M. (2014). State of the Art of Agile Governance: A Systematic Review, *International Journal of Computer Science and Information Technology*, vol. 6, no. 5, pp.121–141

Mäntymäki, M., Minkkinen, M., Birkstedt, T. & Viljanen, M. (2022). Defining Organizational AI Governance, *AI and Ethics*, vol. 2, no. 4, pp.603–609

McKibben, W. B., Cade, R., Purgason, L. L. & Wahesh, E. (2022). How to Conduct a Deductive Content Analysis in Counseling Research, *Counseling Outcome Research and Evaluation*, vol. 13, no. 2, pp.156–168

Mohammed, M. & Taborda, L. J. (2023). Governance Ambidexterity in Digital Transformation, in *2023 IEEE European Technology and Engineering Management Summit (E-TEMS)*, 2023 IEEE European Technology and Engineering Management Summit (E-TEMS), Kaunas, Lithuania, 20 April 2023, Kaunas, Lithuania: IEEE, pp.26–33, Available Online: https://ieeexplore.ieee.org/document/10424517/ [Accessed 10 May 2024]

Mulyana, R., Rusu, L. & Perjons, E. (2021). IT Governance Mechanisms Influence on Digital Transformation: A Systematic Literature Review, in *Twenty-Seventh Americas' Conference on Information Systems (AMCIS), Digital Innovation and Entrepreneurship*, 2021, Association for Information Systems (AIS), pp.1–10

Neirotti, P. & Raguseo, E. (2017). On the Contingent Value of IT-Based Capabilities for the Competitive Advantage of SMEs: Mechanisms and Empirical Evidence, *Information & Management*, vol. 54, no. 2, pp.139–153

Ni, H., Chen, A. & Chen, N. (2010). Some Extensions on Risk Matrix Approach, *Safety Science*, vol. 48, no. 10, pp.1269–1278

OECD. (2023). G20/OECD Principles of Corporate Governance 2023, [e-book] OECD, Available Online: https://www.oecd-ilibrary.org/governance/g20-oecd-principles-of-corporate-governance-2023_ed750b30-en [Accessed 19 May 2024]

Othman, M. F. I. & Chan, T. (2013). Barriers to Formal IT Governance Practice -- Insights from a Qualitative Study, in *2013 46th Hawaii International Conference on System Sciences*, 2013 46th Hawaii International Conference on System Sciences (HICSS), Wailea, HI, USA, January 2013, Wailea, HI, USA: IEEE, pp.4415–4424, Available Online: http://ieeexplore.ieee.org/document/6480377/ [Accessed 9 May 2024]

Otto, B. (2011). Organizing Data Governance: Findings from the Telecommunications Industry and Consequences for Large Service Providers, *Communications of the Association for Information Systems*, [e-journal] vol. 29, Available Online: https://aisel.aisnet.org/cais/vol29/iss1/3 [Accessed 2 April 2024]

Patton, M. Q. (2015). Qualitative Research & Evaluation Methods: Integrating Theory and Practice, Fourth edition., SAGE Publications, Inc

Priya, A. (2021). Case Study Methodology of Qualitative Research: Key Attributes and Navigating the Conundrums in Its Application, *Sociological Bulletin*, vol. 70, no. 1, pp.94–110

Recker, J. (2021). Scientific Research in Information Systems: A Beginner's Guide, [e-book] Cham: Springer International Publishing, Available Online: https://link.springer.com/10.1007/978-3-030-85436-2 [Accessed 7 January 2024]

Regulation 679/2016. (n.d.). REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation), Available Online: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02016R0679-20160504

Regulation 1020/2019. (n.d.). Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Horizontal Cybersecurity Requirements for Products with Digital Elements and Amending Regulation (EU) 2019/1020, Available Online: https://eur-lex.europa.eu/resource.html?uri=cellar:864f472b-34e9-11ed-9c68-01aa75ed71a1.0001.02/DOC_1&format=PDF

Rubino, M. & Vitolla, F. (2014). Corporate Governance and the Information System: How a Framework for IT Governance Supports ERM, *Corporate Governance*, vol. 14, no. 3, pp.320–338

Sadler, P. & Craig, J. C. (2003). Strategic Management, 2nd ed., London ; Sterling, VA: Kogan Page

Saunders, M., Lewis, P. & Thornhill, A. (2009). Research Methods for Business Students, 5. ed., Financial Times Prentice Hall

Schultze, U. & Avital, M. (2011). Designing Interviews to Generate Rich Data for Information Systems Research, *Information and Organization*, vol. 21, no. 1, pp.1–16

Shapiro, S. P. (2005). Agency Theory, *Annual Review of Sociology*, vol. 31, no. 1, pp.263–284

Sharma, R., Mithas, S. & Kankanhalli, A. (2014). Transforming Decision-Making Processes: A Research Agenda for Understanding the Impact of Business Analytics on Organisations, *European Journal of Information Systems*, vol. 23, no. 4, pp.433–441

Stoneburner, G., Goguen, A. & Feringa, A. (2002). Risk Management Guide for Information Technology Systems : Recommendations of the National Institute of Standards and Technology, NIST SP 800-30, 0 edn, Gaithersburg, MD: National Institute of Standards and Technology, p.NIST SP 800-30, Available Online: https://nvlpubs.nist.gov/nistpubs/Legacy/SP/nistspecialpublication800-30.pdf [Accessed 9 April 2024]

Teece, D. J. (2018). Business Models and Dynamic Capabilities, *Long Range Planning*, vol. 51, no. 1, pp.40–49

Vejseli, S., Rossmann, A. & Connolly, T. (2019). IT Governance and Its Agile Dimensions: Exploratory Research in the Banking Sector, in *Proceedings of the 52nd Hawaii International Conference on System Sciences*, Hawaii International Conference on System Sciences, 8 January 2019

Vejseli, S., Rossmann, A. & Garidis, K. (2022). The Concept of Agility in IT Governance and Its Impact on Firm Performance, 2022, ECIS Research Papers

Vejseli, S., Rossmann, A., Rossmann, A. & Connolly, T. (2020). Agility Matters! Agile Mechanisms in IT Governance and Their Impact on Firm Performance, in *Proceedings of the 53rd Hawaii International Conference on System Sciences*, Hawaii International Conference on System Sciences, 2020

Vial, G. (2019). Understanding Digital Transformation: A Review and a Research Agenda, *The Journal of Strategic Information Systems*, vol. 28, no. 2, pp.118–144

Warner, K. S. R. & Wäger, M. (2019). Building Dynamic Capabilities for Digital Transformation: An Ongoing Process of Strategic Renewal, *Long Range Planning*, vol. 52, no. 3, pp.326–349

Weill, P. & Ross, J. W. (2004). IT Governance: How Top Performers Manage IT Decision Rights for Superior Results, 1st edn, Harvard Business Review Press

Wilkin, C. L. & Chenhall, R. H. (2020). Information Technology Governance: Reflections on the Past and Future Directions, *Journal of Information Systems*, vol. 34, no. 2, pp.257–292

Wu, S. P.-J., Straub, D. W. & Liang, T.-P. (2015). How Information Technology Governance Mechanisms and Strategic Alignment Influence Organizational Performance: Insights from a Matched Survey of Business and IT Managers, *MIS Quarterly*, vol. 39, no. 2, pp.497–518

Yin, R. K. (2018). Case Study Research and Applications: Design and Methods, Sixth edition., SAGE Publications, Inc