



**UNIVERSITY
OF TURKU**

Turku School of
Economics

Translating foresight insights into action: A multiple- case study on foresight capabilities in large Finnish companies

International Business

Department of Marketing and International Business

Master's thesis

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17.6.2026

Turku

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Subject: International Business

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Title: Translating foresight insights into action: A multiple-case study on foresight capabilities in large Finnish companies

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Number of pages: 135 pages + appendices 11 pages

Date: 17.6.2026

Abstract

The operating environment of companies is changing at an increasingly rapid pace and has become more turbulent than ever. Uncertainty complicates decision-making, and operational pressures often steer companies' activities at the expense of longer-term perspective. The ability to anticipate future developments has emerged as a key competitive advantage, enabling companies to respond to change proactively. Corporate foresight refers to the systematic identification of environmental changes, interpretation of gathered information, and development of organizational responses. Although companies are increasingly utilizing foresight to better understand their operating environment, they often face challenges particularly in using foresight insights in decision-making.

This study aims to examine how companies carry out their foresight processes and what foresight capabilities are required for the effective utilization of foresight insights. The study combines process and capability perspectives on foresight into a systemic view, according to which foresight is strongly context-specific. Both the external and internal organizational context significantly shape what the foresight process should look like, how it is enacted in practice, and what capabilities are required. The empirical research was conducted as a qualitative multiple-case study involving four large Finnish companies operating across different industries. The data was collected through semi-structured interviews with five company representatives and two foresight experts, whose perspectives complemented and broadened the company-specific findings. In addition, secondary data was utilized to support the interview data. This approach provides an in-depth perspective on the development and utilization of foresight capabilities in organizations.

The study demonstrates that the foresight process consists of three complementary phases: scanning the operating environment, interpreting the collected information, and translating insights into actions. Each phase requires distinct capabilities. A capability that emerged as central throughout the entire foresight process was the capability to challenge existing assumptions and become aware of cognitive biases that can influence which signals are noticed, how information is interpreted, and how open decision-makers are to utilizing foresight insights. Companies should furthermore pay particular attention to broad environmental scanning, consideration of multiple alternative futures, and assessment of their potential implications. For foresight insights to be translated into decisions and actions, making them concrete and communicating them clearly to decision-makers is essential.

The study confirms the context-specific nature of foresight and demonstrates that its implementation varies considerably according to the organization's internal and external context. A key finding is that translating foresight insights into decision-making requires not only the capabilities to enact each phase of the foresight process but also internal enablers, such as management commitment, clear ownership, structures, and shared organizational understanding of the purpose of foresight. The study contributes to the corporate foresight literature by examining how foresight capabilities manifest in practice and how they support the translation of foresight insights into concrete actions.

Keywords: corporate foresight, foresight process, foresight capabilities, translating foresight insights into actions.

Pro gradu -tutkielma

Oppiaine: Kansainvälinen liiketoiminta

Tekijä: Lea Kemppainen

Otsikko: Ennakointitiedon muuttaminen toiminnaksi: monitapaustutkimus ennakointikyvykkyyksistä suomalaisissa suuryrityksissä

Ohjaaja: KTT Niina Nummela

Sivumäärä: 135 sivua + liitteet 11 sivua

Päivämäärä: 17.6.2026

Tiivistelmä

Yritysten toimintaympäristö muuttuu yhä nopeammin ja on entistä epävakampi. Epävarmuus vaikeuttaa päätöksentekoa ja operatiiviset paineet ohjaavat yritysten toimintaa usein pidemmän aikavälin kustannuksella. Kyky ennakoida tulevia kehityskulkuja on noussut keskeiseksi kilpailutekijäksi, joka mahdollistaa muutoksiin vastaamisen ennakoivasti. Yritysenennakoinnilla viitataan systemaattiseen ympäristön muutosten havaitsemiseen, havaitun tiedon tulkitsemiseen ja muutoksiin vastaamiseen. Vaikka yritykset hyödyntävät yhä enemmän ennakointia toimintaympäristönsä ymmärtämiseen, niillä on usein kuitenkin haasteita erityisesti ennakointitiedon hyödyntämisessä päätöksenteossa.

Tämän tutkielman tavoitteena on selvittää, miten yritykset toteuttavat ennakointiprosessinsa ja mitä ennakointikyvykkyyksiä tarvitaan ennakointitiedon tehokkaaseen hyödyntämiseen. Tutkimuksessa yhdistetään ennakoinnin prosessi- ja kyvykkyyšnäkökulmat systeemiseksi näkökulmaksi, jonka mukaan ennakointi on vahvasti kontekstisidonnainen. Yrityksen ulkoinen ja sisäinen konteksti määrittelevät merkittävästi sen, millainen ennakointiprosessin tulisi olla, miten se käytännössä toteutuu ja mitä kyvykkyyksiä se edellyttää. Empiirinen tutkimus toteutettiin laadullisena monitapaustutkimuksena, johon osallistui neljä eri toimialoilla toimivaa suomalaista suuryritystä. Aineisto kerättiin puolistrukturoiduilla haastattelulla haastatteleamalla viittä yritysedustajaa sekä kahta asiantuntijaa, joiden näkemykset täydensivät ja laajensivat yrityskohtaisia havaintoja. Haastatteluaineiston tukena tutkielmassa hyödynnettiin lisäksi sekundääridataa. Lähestymistapa tarjoaa syvällisen näkökulman ennakointikyvykkyyksien kehittämiseen ja hyödyntämiseen yrityksissä.

Tutkimus osoittaa, että ennakointiprosessi rakentuu kolmesta toisiaan täydentävästä vaiheesta: ympäristön havainnoinnista, kerätyn tiedon tulkinnasta ja toimenpiteisiin ryhtymisestä. Näiden toteuttaminen edellyttää erilaisia kyvykkyyksiä. Läpi ennakointiprosessin keskeiseksi kyvykkyydeksi nousi kyky haastaa olemassa olevia oletuksia ja tulla tietoiseksi ajatusväärityksistä, jotka voivat vaikuttaa siihen, millaisiin signaaleihin kiinnitetään huomiota, miten tietoa tulkitaan, ja kuinka avoimia päätöksentekijät ovat hyödyntämään ennakointitietoa päätöksenteossa. Yritysten tulisi lisäksi kiinnittää erityistä huomiota ympäristön laajaan havainnointiin, useiden vaihtoehtojen tulevaisuuksien tarkasteluun sekä mahdollisten seurausten arviointiin. Jotta ennakointitieto voidaan muuttaa päätöksiksi ja toiminnaksi, on sen konkretisoiminen ja esittäminen selkeästi päätöksentekijöille keskeistä.

Tutkimus vahvistaa näkemystä ennakoinnin kontekstisidonnaisuudesta ja osoittaa, että sen toteuttaminen vaihtelee organisaation sisäisten ja ulkoisten tekijöiden mukaan. Keskeinen löydös on, että ennakointitiedon muuttaminen toiminnaksi edellyttää paitsi kyvykkyyksiä toteuttaa ennakointiprosessin eri vaiheet myös sisäisiä mahdollistajia, kuten johdon sitoutumista, selkeää omistajuutta sekä ennakointia tukevia rakenteita ja organisaation yhteistä ymmärrystä ennakoinnin tarkoituksesta. Tutkimus täydentää yritysenennakoinnin tutkimuskenttää tarkastelemalla, miten ennakointikyvykkydet ilmenevät käytännössä ja miten ne tukevat ennakointitiedon muuttamista konkreettisiksi toimenpiteiksi.

Avainsanat: yritysennakointi, ennakointiprosessi, ennakointikyvykkydet, ennakointitiedon muuttaminen toiminnaksi

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1 Introduction

1.1 Background for the study

Companies operate in a rapidly evolving and increasingly turbulent environment, which makes the future of companies more uncertain than ever. They encounter interrelated consequences of rapid technological, demographic, and social shifts, and other unprecedented challenges such as changing politics and economic crises (Fergnani 2022, 820). As a result, predicting future developments has become increasingly difficult (Rohrbeck & Bade 2012, 1), and traditional strategic planning is no longer seen as sufficient to respond to the change (Pouru et al. 2019, 84; Schwarz 2024, 141; Carayannis et al. 2025, 17495). Discontinuous change can represent both opportunity and threat to a company (Rohrbeck & Schwarz 2013, 1594), and the resulting uncertainty often makes rational decision-making difficult. In situations of ambiguity, there is a tendency to disregard uncertainty rather than confront it (Torres & Pena Jr 2021, 479). Consequently, as uncertainty grows, there is a rising need to understand which dynamics lead to it (Rohrbeck et al. 2015, 1) and recognize that the success of today's decisions depends on the environment that will emerge tomorrow (Gordon 2009, 5). However, the pressures of daily operations tend to consume the limited attention of leadership teams, leaving insufficient time and resources to consider beyond immediate concerns (Schoemaker & Day 2020, 2). Nevertheless, the ability to look beyond the immediate concerns is what separates companies that adapt to change successfully from those that do not (Gordon 2009, 6). This underscores the need for companies to develop structured approaches to manage uncertainty.

Corporate foresight has become a critical organizational practice for companies to understand the complicated environment and to develop agility to adapt to the constant change (Pouru et al. 2019, 84), ensuring long-term survival and success of companies (Rohrbeck 2010, 11). In this study, corporate foresight is understood as systematically detecting, interpreting, and responding to changes in the environment (Rohrbeck et al. 2015, 2). It contributes to competitive advantage by allowing companies to address problems before they materialize (Torres & Pena Jr 2021, 481). Corporate foresight can be captured through three phases: *perceiving*, which entails recognizing change drivers; *prospecting*, which focuses on understanding their individual and collective implications; and *probing*, which involves the creation of appropriate organizational reactions to the change (Højland & Rohrbeck 2018, 735). In addition to understanding and responding to environmental changes, corporate foresight enables companies to actively influence and shape the future into a desired direction (Becker 2002, 7; Rohrbeck et al 2015, 2). As a result, companies that are prepared for the future tend to achieve better profitability and market capitalization growth (Rohrbeck et al. 2018, 3).

Furthermore, corporate foresight has been shown to positively influence critical organizational outcomes such as learning, creativity, innovation, and performance, thereby enhancing competitive advantage (Fergnani 2022, 822). Notably, the terms strategic foresight, corporate foresight and futures research are frequently used synonymously in the literature (Rohrbeck 2015, 1). In this thesis the term corporate foresight is used to maintain consistency and to highlight that the focus is on private sector companies, although several cited sources use the term strategic foresight.

Recent research has increasingly viewed corporate foresight as an integrated practice, that takes advantage of distributed organizational sensing, interpretation and planning capabilities (Rohrbeck et al. 2015, 4). The effectiveness of corporate foresight is closely linked to the company's ability to utilize knowledge about the future. Any future-oriented information that a company obtains, processes, and utilizes can be defined as futures knowledge or futures insights. This includes explicit information such as scenarios, visions, and weak signals as well as tacit knowledge such as the perceptions of organizational members about alternative futures. (Pouru et al. 2019, 84–85.) Corporate foresight seeks to create actionable and context specific knowledge (Piirainen & Gonzalez 2015, 192), and to fully benefit from it, companies must integrate these insights into their organizational transformation and innovation processes (Gordon et al. 2020, 1). Ultimately, foresight is valuable only if it influences decision-making and is connected to the strategy; otherwise, it loses its relevance (Torres & Pena Jr 2021, 478).

However, companies continue to have challenges in the practical implementation of corporate foresight. Many find it difficult to utilize futures knowledge (Pouru et al. 2019, 86) and to translate the insights into organizational actions (Rohrbeck 2011, 115). Difficulties often arise in recognizing the value of new knowledge, assimilating it, and embedding it within strategic and innovative processes (Paliokaitė & Pačėsa 2015, 167). The primary challenge is therefore not a lack of information, but rather the timely and effective use of existing knowledge (Dufva & Ahlqvist 2015, 6).

The consequences of not acting on foresight insights can be severe, as illustrated by historical examples of companies that foresaw relevant external changes yet failed to govern and take advantage of them in the long run (Vecchiato & Roveda 2010). Nokia, at the time one of the world's leading technology companies, identified the rise of smartphones and touchscreen technology early, and was even aware of the upcoming launch of the iPhone a year in advance. However, it failed to respond adequately to these market changes, which ultimately caused the company to lose its market leadership and face severe existential challenges. (Vuori & Huy 2016.) Similarly, Kodak had already

invented the first digital camera in the 1970s, but chose not to pursue digital photography further, as doing so would have threatened its highly profitable film business. In the late 1980s, when competitors began to develop the digital photography market, Kodak attempted to react. (Rohrbeck 2011, 1–4.) By then it was too late, and Kodak filed for bankruptcy in 2012.

These cases demonstrate that foreseeing change is not enough, and what ultimately determines success is the ability to act on those insights (Rohrbeck 2011, 4; Battistella & Attanasio 2025, 16). This challenge is particularly evident in the probing phase, where insights should be implemented through strategic decisions, experiments, action plans, or development of new products, services, and business models (Rohrbeck 2012; Højland & Rohrbeck 2018; Schwarz 2024). Furthermore, previous research has often approached corporate foresight as a set of tools and processes rather than as an organizational capability, neglecting the connection between foresight and actionable implementation. As a result, little attention has been paid to developing foresight capabilities, and real case examples remain scarce. (Battistella & Attanasio 2025, 17; Pihlajamaa et al. 2025, 1.) This highlights the need to understand how foresight insights are translated into concrete actions within companies and which foresight capabilities enable this process. To address this gap, this study examines foresight practices across multiple companies, aiming to provide practical insights on the capabilities that enable companies to detect and interpret change, and ultimately to actively respond to it. The following sub-chapter introduces the research questions that guide this study and outlines its structure.

1.2 Research questions and structure of the study

The aim of this study is to provide conceptual clarity on corporate foresight capabilities and how they enable companies to implement foresight in practice. Beyond contributing to the literature, this study aims to provide practical guidance for companies by outlining how foresight can be made actionable. To address this aim, the study is guided by the following research question: *How can companies translate¹ foresight insights into actions by developing foresight capabilities?*

The main research question is divided into three sub-questions that examine different aspects of the phenomenon:

- 1) How do companies carry out their foresight process?

¹ *Translate* refers to the process through which foresight insights are converted into concrete organizational responses to change. The term is used to highlight that this requires active effort, as insights do not lead to actions on their own.

- 2) What foresight capabilities are required for effectively translating foresight insights into actions?
- 3) How do these capabilities support the translation?

This study focuses on organizational-level foresight capabilities in Finnish private sector companies. Rather than examining individual-level capabilities, the aim is to understand how companies as a whole develop and enact foresight. This enables a broader understanding of the foresight process and how the insights are translated into actions within companies. The empirical scope of this study is further focused on Finnish private sector companies. The private sector context was selected because companies in competitive environments face increasing pressure to anticipate changes and respond to uncertainty. Limiting the study to the Finnish context ensured accessibility of data and improved comparability between case companies. Furthermore, this study examines how foresight capabilities together across the foresight process enable the translation of insights into actions. While previous research has identified that the probing phase remains underexplored and particularly challenging, the preceding phases also strongly influence a company's ability to translate foresight insights to actions.

The structure of this study is illustrated in Figure 1. The study begins by reviewing existing literature in Chapter 2, which provides the theoretical foundation for addressing the research questions. The literature review first conceptualizes corporate foresight and provides an understanding of its nature and purpose. The chapter then examines what the foresight process typically entails in companies, outlining what each phase of the process inherently includes. Subsequently, the literature review forms an understanding of foresight capabilities, which are examined in relation to each phase of the foresight process – perceiving, prospecting, and probing. The chapter concludes with a synthesis of the reviewed literature, which forms the theoretical framework of the study.

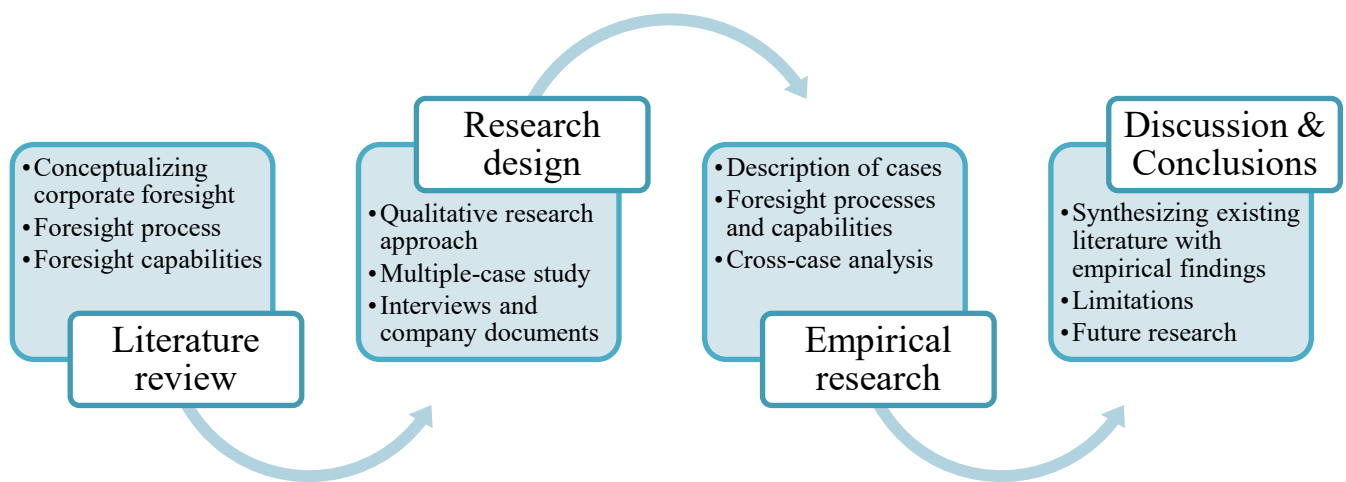


Figure 1 Structure of the study

Following the literature review, Chapter 3 presents the research design, covering research approach, case study strategy, data collection, data analysis, and evaluation of the study. The evaluation addresses the trustworthiness and ethical considerations. This study employs a qualitative research approach and is conducted as a multiple-case study. The empirical data consists of both primary and secondary data. Primary data was collected through semi-structured interviews with five company representatives and two experts to gain a comprehensive understanding of how companies conduct foresight. Publicly available company documents were analyzed as secondary data to complement the interview data and provide a contextual understanding of the case companies.

Chapter 4 presents and analyzes the empirical findings. The structure of the chapter is guided by the themes that emerged from the thematic analysis of the interviews, while also reflecting the literature review. Each case company is examined individually, beginning with an introduction to the company and its context based on interview and secondary data. This is followed by an examination of how foresight is organized and conducted within the company. The chapter concludes with a cross-case analysis, where the findings from each case are compared and synthesized to illustrate similarities and differences across the companies, with particular focus on the foresight processes and capabilities.

Chapter 5 discusses the theoretical and managerial contributions of the study. The chapter identifies and analyzes similarities and differences between the findings and existing literature, addresses the limitations of the study and proposes directions for future research. Lastly, Chapter 6 provides a summary of the study.

2 Corporate foresight

2.1 Conceptualizing corporate foresight

Corporate foresight is based in the premise that there are multiple futures and the decisions made today influence how the future unfolds. Rather than aiming to predict the future, the purpose of foresight is to help companies recognize alternative future developments, prepare for emerging challenges and opportunities, and make more informed and timely decisions. (Becker 2002, 7; Gordon 2009, 6; Nikolova 2013, 7; Vecchiato 2015, 26–28.) Although corporate foresight has been widely discussed in earlier research through various definitions, evolving from a set of foresight methods to a process, and finally an organizational capability (Becker 2002, 7; Rohrbeck et al. 2015, 2), the literature still lacks consensus on how to conceptualize it (Fergnani 2022, 823). Because the definition is inherently dependent on the organizational context and intended value creation (Rohrbeck 2011, 72, 115–116), this chapter discusses the most common perspectives in order to define how corporate foresight is understood in this study.

Early definitions primarily define corporate foresight as a process (Rohrbeck et al. 2015, 2) that involves creating organizational interpretation systems to scan the environment, interpret the data, and create managerial action (Daft & Weick 1984, 286). Becker (2002) expanded the definition to include follow-up activities and decision-making (Rohrbeck et al. 2015, 2) by arguing that foresight is a collaborative process that incorporates feedback between those involved (Becker 2002, 7). Only a few however consider conceptualizing corporate foresight as a process accurate as it often follows a linear approach with a clear beginning and end (Rohrbeck et al. 2015, 2). As a result, more recent research has refined the process view. Foresight is rather understood as continuous efforts that inform management about potential future states and the necessary steps to achieve these (Rohrbeck et al. 2015, 2). Corporate foresight is thus considered as a set of practices that occur through process phases in a non-linear, iterative manner (Højland & Rohrbeck 2018; Rohrbeck & Kum 2018).

Alongside the process perspective, corporate foresight has been conceptualized as an organizational ability or capability, that does not assume linearity. The capability perspective emphasizes how companies can continuously prepare for uncertainty and connects foresight methods and activities with strategic action and implementation. (Slaughter 1997, 1; Battistella & Attanasio 2025, 17.) Slaughter (1997) first introduced conceptualization of foresight as an organizational ability (Rohrbeck et al. 2015, 2) which involves developing and maintaining a clear and functional future perspective and using the insights that arise for organizationally practical purposes such as identifying challenges,

and investigating new markets, products and services (Slaughter 1997, 1). The view emphasizes the ability to be prepared for uncertainty rather than predicting the future. Corporate foresight is thus understood as a capability to read the environment, including the ability to observe and perceive changes, recognize subtle deviations from past patterns, and remain alert to emerging developments. (Tsoukas & Shepherd 2004, 140.) Later definitions agree with this view, further emphasizing data collection and analysis, and reinforcing the idea that corporate foresight can benefit companies in variety of ways beyond value creation (Rohrbeck et al. 2015, 2).

More recent discussion has explored the relationship between corporate foresight and dynamic capabilities, which refer to a company's ability to sense opportunities and threats, seize opportunities, and to stay competitive by strengthening, combining, safeguarding, and if needed, reconfiguring their intangible and tangible assets (Teece 2007, 1319). Current literature does not however provide consensus on whether corporate foresight should be understood as a dynamic capability itself or rather as a set of practices that support and enable dynamic capabilities (Rhisiart et al. 2015; Schwarz et al. 2019; Semke & Tiberius 2020; Fergnani 2022; Laakkonen et al. 2025). Several scholars conceptualize corporate foresight as a dynamic capability or as a microfoundation of dynamic capabilities, arguing that foresight enhances a company's ability to sense, seize, and reconfigure in response to environmental change (Vecchiato 2015; Schwarz et al. 2019; Fergnani 2022; Laakkonen et al. 2025). Others, however, argue that foresight mainly supports the sensing dimension by improving the company's ability to identify and interpret emerging developments, while its connection to seizing and reconfiguring remains less explicit (Semke & Tiberius 2020; Rhisiart et al. 2015).

While it is useful to acknowledge this discussion, this thesis does not aim to resolve this ambiguity and therefore does not explicitly adopt the dynamic capabilities perspective. Combining the views of different scholars, corporate foresight is understood to have an impact on the dynamic capabilities of a company. Corporate foresight is seen to correspond with the sensing component of dynamic capabilities, and therefore also indirectly impacting the company's ability to seize and reconfigure. (Ramírez et al. 2013; Vecchiato 2015; Rhisiart 2015; Semke & Tiberius 2020.)

Conceptualizing corporate foresight solely as a process, capability, or a set of practices does not fully capture its dynamic and participatory nature. Foresight is rarely a process with definite beginning and end (Rohrbeck et al. 2015, 2) and it often unfolds in networks of many actions and actors, making it difficult to assess its impacts (Vataja et al. 2019, 328). To address this, research has advocated a systemic perspective on corporate foresight. From this viewpoint, foresight is understood as an evolving system composed of structures, roles, and activities for managing futures knowledge (Dufva

2015, 22; Pihlajamaa et al. 2025, 1). According to Dufva (2015, 29) “a foresight system operates through foresight processes and connects them”. These processes can be understood as temporary and situation-specific parts of a broader system, which itself is more permanent, although continuously evolving. The foresight system consists of actors sharing, discussing, debating, and shaping perceptions of futures. It also encompasses capabilities, referring to the ability to utilize futures knowledge. (Dufva 2015, 29, 31.) Table 1 summarizes the key perspectives discussed above.

Table 1 Perspectives on corporate foresight

Perspective	Literature	Core idea
Process	Daft & Weick (1984); Becker (2002); Højland & Rohrbeck (2018); Rohrbeck & Kum (2018)	Foresight as systematic scanning, interpretation, and organizational responses through iterative phases
Capability	Slaughter (1997); Tsoukas & Shepherd (2004); Battistella & Attanasio (2025)	Foresight as an organizational ability to continuously prepare for uncertainty and utilize insights for practical purposes
Systemic	Dufva (2015); Pihlajamaa et al. (2025)	Foresight as an evolving system for managing futures knowledge, operated through foresight process and encompassing capabilities to utilize futures knowledge

This thesis takes a systemic perspective to corporate foresight and combines the process and capability perspectives while also considering a company’s unique internal and external context as illustrated in Figure 2. From this perspective corporate foresight is considered an organizational capability that is enacted through a process, which is captured through three phases – perceiving, prospecting, and probing. The different elements of the foresight system shape the company’s ability to perceive, interpret and respond to future developments by determining the context within which foresight unfolds.

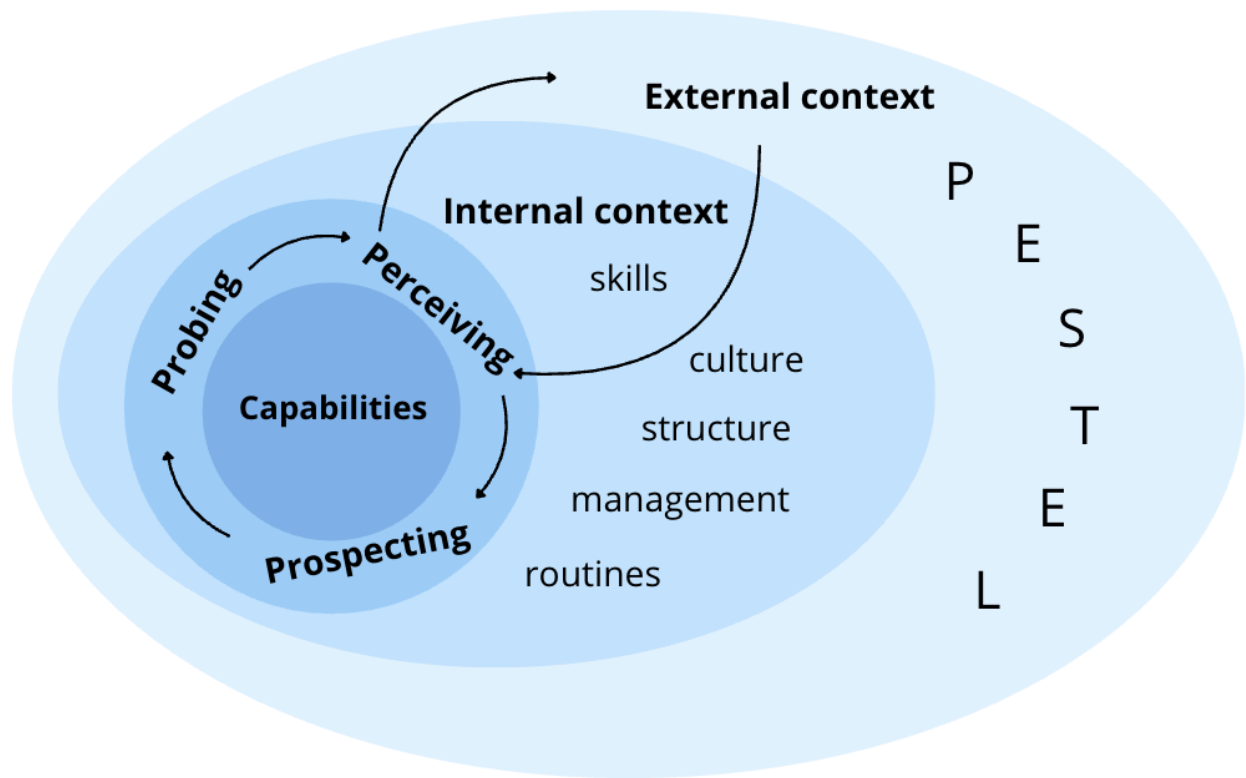


Figure 2 Foresight system (adapted from Saritas 2013; Rohrbeck & Kum 2018²)

Figure 2 shows how the external context, referring to the operating environment consisting of political, economic, social, technological, environmental, and legislative dimensions, shapes the nature and scope of the foresight process, including how deeply the environment should be monitored and analyzed and thus defining the required foresight capabilities (e.g., Schoemaker & Day 2005, Rohrbeck 2011). Simultaneously, internal organizational factors, such as structures, culture, routines, and management, shape how these capabilities are enacted and developed as the internal factors either enable or constrain how foresight is conducted in practice (e.g., Rohrbeck 2011; Schreiber 2019; Dörr et al. 2024).

In line with the systemic view, without defining corporate foresight explicitly as a capability, process or a set of tools (Marinković et al. 2022, 291), this thesis follows the definition of Rohrbeck et al. (2015, 2) who define corporate foresight as a practice that “permits an organization to lay the foundation for future competitive advantage”. It involves determining possible impacts for the company and initiating suitable actions after identifying, observing, and interpreting factors causing change, while engaging multiple stakeholders. Corporate foresight creates value by giving companies

² The layered structure with internal and external context is derived from Saritas (2013). The process phases combined with capabilities come from Rohrbeck & Kum (2018).

access to essential resources ahead of competitors, preparing companies for change, and enabling them to actively move towards their desired future. (Rohrbeck et al. 2015, 2.)

Corporate foresight is understood as a continuous practice that is embedded in the company. Conceptualizing foresight as a process provides structure by outlining the key phases through which companies create insights of the future and utilize them. Viewing foresight as a capability, in turn explains what enables companies to conduct the process effectively and translate foresight insights into action. Furthermore, there is a constant interplay between the external and internal context, and the foresight process and capabilities are adapted to the current and anticipated future situation and evolved over time. The following chapters provide a literature review of both foresight process and capabilities. Furthermore, by considering practices enacted in and aims of each phase of the foresight process as well as foresight capability literature, it will be outlined which foresight capabilities are required in each phase of the process, forming the theoretical foundation for this study.

2.2 Foresight process

2.2.1 Overview of the foresight process

Building on the systemic perspective, foresight can be understood as an ongoing process that considers the specific needs and context of the company (Hines & Gold 2015, 102). The process involves systematic collection and interpretation of information about the environment which lead to the creation of organizational responses in the form of action plans and concrete actions (Daft & Weick 1984; Rohrbeck et al. 2015). Rather than occurring in isolation, foresight should be a process of collaboratively creating meanings, where new knowledge about external changes is continuously gathered and the company's understanding about the future is regularly updated (Hines & Gold 2015, 102; Vecchiato 2015, 31).

Prior research has captured the process in a variety of ways (Rohrbeck & Kum 2018, 106; Højland & Rohrbeck 2018, 735; Rohrbeck 2011; Daft & Weick 1984; Horton 1999; Voros 2003; Grim 2009; Baškarada et al. 2016; Popper 2008). Despite differences on terminology and emphasis, these conceptualizations generally share the same underlying phases. In this thesis the foresight process is defined according to a definition by Rohrbeck & Kum (2018) and Højland & Rohrbeck (2018) as consisting of three interdependent phases which were introduced earlier: *perceiving*, *prospecting*, and *probing*, illustrated in Figure 3. The phases are further described through guiding questions that illustrate the type of thinking and activities involved at each phase.

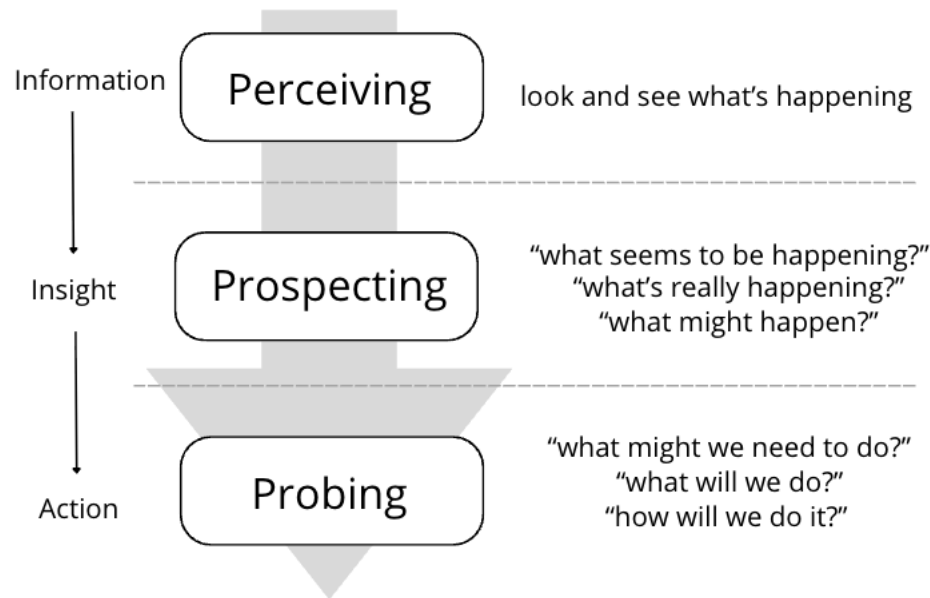


Figure 3 Foresight process (adapted from Voros 2003, 14)

Figure 3 also demonstrates how collected information is first translated into insights and subsequently into actions throughout the process, which is illustrated by the arrows on the left side in the figure. The phases provide a structured way to organize foresight activities and manage uncertainty, with particular emphasis on the probing phase as part of the process (Gordon et al. 2019, 35). Although the phases build on one another, the process does not necessarily follow a linear sequence, as shown in the figure for clarity. Instead, the phases are complementary and operate iteratively to translate signals into insights and furthermore into actions. As a result, the process should include multiple runs and feedback loops between the phases. (Højland & Rohrbeck 2018, 736, 744.) Later phases can feed back to earlier ones: for instance, insights generated through probing activities, such as early market feedback, can inform the perceiving phase (Rohrbeck et al. 2018, 17; Voros 2003, 16), illustrating how the process improves and evolves over time.

Each phase of the process consists of different foresight practices (Rohrbeck et al. 2018; Højland & Rohrbeck 2018; Li et al. 2022). By outlining what occurs at each phase and what is required, the process makes foresight less abstract and more attainable for companies (Højland & Rohrbeck 2018, 743–744). Moreover, it enhances understanding of how the different practices shape the company's ability to translate signals into actionable insights (Rohrbeck & Kum 2018, 106). Previous research has identified certain attributes that characterize effective practices in each phase. Perceiving involves practices such as environmental scanning, and it has been suggested that perceiving is most effective when it is continuous and supported by organizational mechanisms, such as sensors that enable

detection of change across a wide range and in-depth analysis of the identified change drivers. Prospecting should in turn be systematic to enable companies to detect and prepare for critical or potentially disruptive changes within the industry. (Rohrbeck et al. 2018, 3.) Prospecting phase often involves the development of scenarios to explore alternative futures (Rohrbeck et al. 2018, 3; Schwarz et al. 2023, 3). Probing includes critically exploring different futures and developing response options to them (Hines & Bishop 2006, 171; Demneh et al. 2023, 11). It can additionally involve experimentation practices that include testing of value propositions, product or service designs and market acceptance (Højland 2018, 735). Probing can be supported by dedicated budgets and accelerator units (Rohrbeck et al. 2018, 3, 17).

The phases can furthermore be categorized as cognitive and experimental, where perceiving and prospecting are cognitive search elements and probing is experimental search (Højland & Rohrbeck 2018, 734). Cognitive search is based on mental models that suggest what outcomes different actions might produce, while experimental search gains knowledge through taking actions and learning from the results (Gavetti & Levinthal 2000, 115). While each phase is important for successful foresight, they are not as effective when used separately. Most efficient outcomes can be achieved by combining the cognitive search mechanisms with experimental search mechanisms as the approaches reinforce each other. Thus, companies should iterate between thinking and acting. (Højland & Rohrbeck 2018, 743–744.) However, companies are often better at perceiving and prospecting than at probing (Schwarz 2024, 155) as identifying and interpreting change requires fewer organizational commitments than acting on the insights. Furthermore, the significance of probing has been underestimated. Conventional corporate foresight research has focused on a variety of methods, tools, and practices for cognitive search, but greater emphasis is needed on the role and benefits of experimental search, that is, probing. (Højland & Rohrbeck 2018, 744.)

The foresight process thus consists of three overlapping and iterative phases. The effectiveness of the process depends on how these phases interact and inform one another over time. Together, they form a structured pathway for transforming information into insights and ultimately into actions. The following sub-chapters examine each phase of the process separately, outlining the key activities involved and the typical challenges companies encounter at each phase.

2.2.2 Perceiving

Perceiving refers to identifying and interpreting change in the external environment of a company (Gordon et al. 2019, 35) with practices aimed at identifying drivers of change (Rohrbeck & Kum 2018, 106). It is also known as horizon scanning, environmental scanning or radar, and it involves

systematically observing and monitoring developments across social, technological, economic, environmental, political, and ethical dimensions (Popper 2008, 88; Gordon et al. 2019, 35). Companies aim to recognize the factors currently impacting their industry and environment and to anticipate emerging factors that may shape them in the future. By understanding change before their rivals, they are able to act ahead and create a lead-time advantage. (Rohrbeck et al. 2018, 14.) More significantly however, perceiving helps directing leadership attention towards emerging risks and possibilities in the environment, rather than assuming that current conditions will remain unchanged in the future (Gordon et al. 2019, 35).

Scanning typically begins with recognizing the key factors and forces driving change, often through a structured radar that identifies and registers notable events that point to underlying developments (Rohrbeck et al. 2018, 14). Scanning should draw on a wide range of information sources (Gordon 2009, 137). Environmental changes can be identified through both internal and external sources. Internal sources include employees and management, while external sources consist of customers, competitors, suppliers, consultants, government, and academics, as well as formal sources such as press, media, web sources, conferences, and informal channels such as meetings and social events. (Horton 1999, 6; Vecchiato 2015, 30.) Methods used during this phase include Delphi surveys, brainstorming sessions, workshops, and simply talking to different people (Horton 1999, 6; Voros 2003, 14).

This is followed by a more in-depth examination of the signals by analyzing and contextualizing them in terms of significance (Gordon 2009, 138). Perceiving produces a collection of weak and strong signals of change, trends, critical events and potential strategic surprises (Horton 1999, 6; Peter & Jarratt 2015, 51). The signals are frequently associated with technological advancements, but they can also be related to changes in the market, society, or legislation (Gordon et al. 2019, 35). To organize and prioritize these signals, their relevance, probability, significance and impacts of are evaluated (Demneh et al. 2023, 5). This involves understanding their underlying drivers and potential barriers, as well as beginning the initial evaluation of how they could influence the company's current models or create new opportunities (Gordon 2009, 141–142). As a result, signals can be categorized along dimensions such as uncertainty, impact, maturity, or domains (Højland & Rohrbeck 2018, 735).

Despite a significant growth in available information and increasingly advanced scanning systems and capabilities, companies often struggle to interpret and understand the key drivers of change. While perceiving involves both detecting change and beginning to make sense of it, companies frequently fail to scan broadly enough or to analyze information deeply enough to gain an insight

advantage. (Rohrbeck et al. 2018, 14.) Additionally, the expanding amount of available information itself increases the complexity of the environment, which often causes companies to concentrate on some areas while neglecting others (Torres & Pena Jr 2021, 479).

Furthermore, companies frequently utilize trend research in the perceiving phase (Schwarz et al. 2023, 3), but trends essentially reflect a continuation of the past and do not necessarily improve strategic management. It is therefore essential for companies to also take discontinuities and uncertainties into account. (Torres & Pena Jr 2021, 481.) However, at the perceiving phase, the significance and implications of the signals are still unknown (Gordon et al. 2019, 35), which makes the practice particularly challenging. When a weak signal first emerges, its information is quite ambiguous, and it only suggests what is going to happen. Thus, because weak signals do not have immediate significance on their own, they are often barely noticed and commonly disregarded. Yet, when analyzed within context, they can point to an unavoidable event with significant implications. (Torres & Pena Jr 2021, 481.) Indeed, many supposed surprises have subsequently been discovered to have had obvious antecedents, and perceiving fosters alertness to such situations (Gordon et al. 2019, 35).

To illustrate the perceiving phase in practice, the case of Nokia can be utilized as an example. Prior to broader change, Nokia identified early signals of change within its operating environment, including developments such as touchscreen technology and the upcoming launch of the iPhone (Vuori & Huy 2016). These signals alone did not point to an inevitable or fully predictable change, but they alerted about possible shifts within the markets. Thus, perceiving involves keeping track of the environmental changes and assessing whether they are important in the present moment but also assessing whether they could be relevant in the future and therefore require further attention. Recognizing important changes is however challenging, as not all signals point to broader shifts but at the same time, even minor developments can fundamentally change the operating environment.

The perceiving phase essentially includes activities to identify and collect a broad range of change factors in the environment and assessing their relevance to the company. Perceiving allows companies to detect signals of change, but it does not further analyze their implications. Merely identifying signals without interpreting them or planning responses is insufficient for achieving competitive advantage and does not fulfill the purpose of foresight, which is to inform decision making and guide strategic action (Rohrbeck & Kum 2018, 105). The perceiving phase prepares the company for the next phase where it develops a thorough understanding of its environment (Højland & Rohrbeck 2018, 735; Gordon et al. 2019, 36).

2.2.3 Prospecting

Prospecting encompasses practices that transform the collected information into insights through sensemaking and strategizing activities. It builds on the interpretation of scanning initiated in the perceiving phase and entails analyzing the signals collected to assess their consequences, which in turn contributes to reducing uncertainty. (Højland & Rohrbeck 2018, 735; Rohrbeck et al. 2018, 12, 16; Gordon et al. 2019, 36.) The aim of prospecting is obtaining an insight advantage that permits the company to determine the best course of action and appropriate timing for it in the probing phase (Rohrbeck et al. 2018, 16). This way, prospecting helps to reduce response uncertainty, which is the inability to recognize applicable responses and understand the implications of each choice (Vecchiato & Roveda 2010, 1529–1530, 1538) and facilitates managers to make more informed decisions since they are aware of impending changes (Torres & Pena Jr 2021, 481). Furthermore, prospecting can deepen and expand knowledge about innovations that have not yet been realized (Li et al. 2022, 553).

Prospecting consists of two interrelated practices: sensemaking and futuring. Sensemaking involves interpreting signals collected in the perceiving phase by identifying patterns and developing an informed view of the present, including consequences of change. (Gordon et al. 2019, 36, 38.) Interpretation refers to the process of converting events into shared understanding and conceptual frameworks, especially among top management. Interpretation provides meaning to data prior organizational learning and acting. (Daft & Weick 1984, 286; Horton 1999, 7.) Sensemaking entails sorting and assessing the signals, taking into account the strength of trends and considering systemic, cultural and political factors that may enable or hinder change (Gordon et al. 2019, 38). By establishing a shared future outlook, companies are better able to take unified strategic action, thus involving the company as a whole in scanning and interpretation practices is recommended (Rohrbeck et al. 2018, 14, 16).

Futuring, in turn, aligns with what Voros (2003, 15) defines as prospection, which is “purposefully looking forward to create forward views”. Building on the knowledge created through sensemaking, futuring develops non-predictive narratives or hypotheses about potential future developments. This involves concretizing the ways in which external forces may alter the environment by creating alternative future narratives to various outcomes, each of which have distinct and significant impacts for present decision-making. (Gordon et al. 2019, 36, 38.) This enables companies to understand the connections between changes and respond to them more effectively (Lindgren & Bandhold 2003, 118–119; Li et al. 2022, 553).

Companies use various practices to interpret the signals and create alternative future developments (Gordon et al. 2019, 36; Højland & Rohrbeck 2018, 735; Rohrbeck & Kum 2018, 106; Schwarz 2024, 39). Prospecting can involve the use of structured methods such as Delphi studies, expert panels, roadmaps, futures wheels, technology road mapping, systems dynamics, and backcasting (Gordon et al. 2019, 36; Schwarz 2024, 39; Demneh et al. 2023, 6). However, prospecting is frequently described through scenario planning (Schwarz et al. 2023, 3), as it is the most widely used and well-known of the forward-thinking tools (Gordon et al. 2019, 36). Scenarios are parallel narratives that illustrate how the future might develop (Bezold 2010, 1514) and aim to encourage discussion and foster thinking (Gordon et al. 2019, 37). They draw attention to the anticipation of potential change. Scenarios incorporate assumptions about uncertain future developments, such as technology breakthroughs, political crises, or potential macroeconomic change, with known facts, such as past trends and present circumstances. (Beckert 2021, 6.) Scenario thinking puts environmental changes into a broader context and enables decision-makers to examine multiple forward views of plausible external conditions (Rohrbeck et al. 2018, 16). Scenarios allow participants to engage with alternative realities, reduce their psychological distance to them, and question their deeply rooted views (Demneh et al. 2023, 11). Although longer time horizons can also be used, scenarios typically range between 5 to 15 years. Longer time horizons expand perceptions of what is possible but reduce short-term relevance. (Gordon et al. 2019, 37.)

To illustrate the prospecting phase, a brick-and-mortar retail company that has identified a growing trend toward online shopping through scanning, can in the prospecting phase develop alternative scenarios of how the trend could unfold. For instance, one where online shopping becomes dominant, one where physical stores remain dominant, and one where both are utilized equally. The scenarios make the developments more concrete, which can help the company to form a clearer understanding of what the future might look like and enable it to be better prepared for different outcomes.

Despite these tools, when faced with major changes and discontinuities, companies tend to underperform (Vecchiato & Roveda 2010, 1532). This is often due to limiting mental models, which according to Chermack (2004, 301) are “the lenses through which we see the world”. They help both individuals and organizations to interpret and navigate complex phenomena (Rhisiart et al. 2015, 126). However, a common cognitive attitude towards change is regarding it as a continuation of the present. Instead of creating new perspectives, managers often rely on past experiences and simplified representations of their business environment. This constraints creative problem-solving and the diversity and novelty of alternative responses. (Vecchiato & Roveda 2010, 1532.) This consequently

limits the development of diverse perspectives of the future that consider discontinuities and wide set of plausible alternatives (Grim 2009, 78; Torres & Pena Jr 2021, 481; Demneh et al. 2023, 14).

Prospecting enables companies to interpret signals and develop alternative future perspectives, broadening their understanding of what is possible. However, insights alone do not reduce uncertainty unless they are translated into actions. The main value of foresight for achieving competitive advantage is in developing alternative futures and then using these futures to inform strategic decisions (Fergnani 2022, 828). Insights generated during the prospecting phase only become valuable when they are internalized, reach the relevant actors, and lead to a commitment to act (Horton 1999, 4). Consequently, corporate foresight also requires probing practices, that enable companies to justify and initiate new courses of action (Rohrbeck & Kum 2018, 107).

2.2.4 Probing

Probing is the initial phase of direct action that enriches perceiving and prospecting phases (Højland & Rohrbeck 2018, 735–736) by turning perspectives of the future into decisions, innovations and strategies (Gordon et al. 2019, 37). It involves learning about new opportunities by going beyond the identification and comprehension of future solutions to the practical testing of insights (Rohrbeck et al. 2018, 3, 17). Through this, probing seeks to validate and initiate new courses of concrete action (Højland & Rohrbeck 2018, 735; Rohrbeck & Kum 2018, 107), such as investigating new business fields, pursuing new strategies (Boman & Heger 2019, 182), and turning insights into new products, services, or models that create value for the company (Rohrbeck et al. 2018, 17). This way, probing ensures that insights derived through perceiving and prospecting are actionable and implemented.

However, while probing prepares for scale-up and roll-out, it does not necessarily lead to the implementation of the solutions until the possible future materializes. Rather, it aims to iteratively improve the solutions through concrete evidence of the effectiveness of new ideas. (Gordon et al. 2019, 37–38.) In practice, this could mean that a company developing a new service might pilot it with a small group of customers, collect customer feedback, and iteratively improve it before deciding whether to fully launch it. As a result, probing also strengthens organizational learning. Instead of only depending on learning through a representation of the environment as in perceiving and prospecting, learning is enhanced in probing through operational-level and real-life experimentation, which improves learning by doing and the ability anticipate changes as they emerge (Li et al. 2022, 560).

Because probing and prospecting phases are interconnected, it might be difficult to distinguish which activities belong to each phase. In this thesis, prospecting is limited to the creation of alternative futures, whereas probing focuses on assessing the implications of these futures for the company and designing alternative responses to them. Probing can thus be divided into different activities, including assessing the consequences of alternative futures, evaluating the robustness of existing operations, creating responses to different future conditions, and possibly experimenting with solutions (Højland & Rohrbeck 2018, 735; Gordon et al. 2019, 37–38).

Alternative future views can be translated into decisions, innovations and strategies in multiple ways (Gordon et al. 2019, 37). Under conditions of uncertainty, companies can rely on imagined future states when making decisions. These images of the future guide action, as companies act “as if” they were representations of the future present. (Beckert 2021, 2.) Futures that differ from present conditions and what is commonly anticipated encourage bridge-thinking by raising questions about what different scenarios would require and what opportunities they might create, promoting creative ideas that extend beyond any single scenario. (Gordon et al. 2019, 37.) Going back to the brick-and-mortar retail company example, having developed scenarios of the growth of online shopping, the company might now consider what the different scenarios mean for its current business. If online shopping becomes dominant, would the company’s physical stores still be relevant? How could its customer base might shift? These questions help the company to assess its current position and identify what might need to change in different futures, before developing responses to each.

Thus, exposing participants to alternative futures can be used to assess the resilience of corporate strategies (Carayannis et al. 2024, 17505), enabling companies to assess strengths, weaknesses, opportunities, and threats, question long-held assumptions, and analyze the relationship between external developments and internal organizational capabilities (Demneh et al. 2023, 11). This helps companies to evaluate the robustness of existing products or solutions as well as sources of advantage in the future, strengthening the development of a shared understanding of potential futures (Rohrbeck et al. 2018, 16). Moreover, probing can reveal that some futures may require significant organizational transformation, including strategic, cultural, or structural changes (Demneh et al. 2023, 13).

This knowledge is then converted into plans and strategic options, which can eventually be translated into actions. Planning serves as a bridge between vision and action by translating alternative future possibilities into strategy. As the future remains unpredictable, it is crucial to develop contingency plans. Rather than committing to a single option that the company considers the best, companies

should maintain a flexible and robust approaches that considers multiple alternatives. (Hines & Bishop 2006, 171.) Contingency plans should therefore also cover worst-case scenarios, and companies should aim to foster a culture that is prepared to respond effectively to crises (Demneh et al. 2023, 15).

Companies can use tools such as business wargaming or design thinking to better understand what certain futures could mean for the company's future and design appropriate measures (Schwarz 2024, 39; Gordon et al. 2019). Business wargaming simulates different scenarios or situations through role-playing, often involving multiple teams representing different stakeholders such as markets, key customers, suppliers, or competitors. The inclusion of various perspectives helps to identify opportunities and threats that might not be discovered through conventional approaches. (Kurtz 2003, 13.) This way wargaming highlights alternative options in various scenarios, supporting the development of strategic options. Furthermore, through probing companies can select and test new courses of action via experimental searching, which seeks tangible proof of the potential success of new ideas and iteratively refines them (Gordon et al. 2019, 38). Probing practices can include R&D projects, initial prototyping, consumer testing of new products in trial markets, internal and external venturing, strategic initiatives such as partnerships as well as developing or acquiring key technologies, and creating intrapreneurship units (Schwarz 2024, 36; Højland & Rohrbeck 2018, 735; Rohrbeck et al. 2018, 17).

Although probing is the phase where the value of all prior foresight work is realized (Horton 1999, 4), it is also the phase where companies encounter the most challenges (Schwarz 2024, 155). Future prospectations are inherently uncertain, consisting of statements that cannot be entirely grounded in known facts (Rohrbeck 2011, 157; Beckert 2021, 2). Consequently, outcomes of the foresight process are often perceived as intangible (Hines & Gold 2015, 103) and their possible impacts are difficult to measure (Piirainen & Gonzalez 2015, 197). This can reduce the legitimacy of foresight and result in limited commitment and resources given to it (Pihlajamaa et al. 2025, 1). This challenge is particularly evident in units that tend to prefer concrete forecasts, such as finance or accounting, where foresight can cause resistance (Bezold 2010, 1516). Similarly, in strategic decision-making, managers tend to favor making decisions based on facts. Foresight also often results in additional number of options, which can rather hinder than assist when developing a strategy. (Rohrbeck 2011, 157.) Additionally, foresight has to compete with other organizational functions for resources and attention (Hines & Gold 2015, 102–103), which might make many companies reluctant to invest in probing activities that involve experimentation and testing without certainty of achieving returns (e.g., Rohrbeck 2011, 157). Moreover, insights generated in the prospecting phase need to be assimilated during probing by

those responsible for implementing actions (Horton 1999, 4). However, foresight and its integration are often not prioritized, and foresight is carried out by external consultants (Hines & Gold 2015, 102), which can limit organizational learning.

Similar to the prospecting phase, probing requires companies and individuals to challenge mental models and moving away from path dependency. Individuals however tend to underestimate the likelihood of uncertain events based on their own experiences, prefer confirmatory and concrete information, and concentrate on events that are certain to occur while disregarding uncertain ones (Torres & Pena Jr 2021, 479 according to March & Simon 1970). These tendencies reinforce the difficulties associated with probing. Individual perspectives influence how people interpret the future, often assigning low probability to undesirable scenarios, which reflects defensive and fearful rather than strategic response. (Demneh et al. 2023, 14.) Therefore, maintaining openness to possibilities is essential (Hines & Bishop 2006, 171).

The probing phase concretely bridges the gap between insights and actions and is therefore central for realizing the value of foresight within a company. However, it is also the most challenging phase, requiring companies to act on inherently uncertain future-oriented information. How well companies can succeed depends largely on the foresight capabilities they have developed. Before examining these capabilities, the following sub-chapter summarizes the foresight process based on the previous chapters.

2.2.5 The foresight process in this study

Having examined the foresight process phases individually, Figure 4 brings them together to illustrate how perceiving, prospecting, and probing interact through feedback loops. In reality the phases often occur simultaneously, making it difficult to draw clear boundaries between them. For the purpose of this thesis, perceiving encompasses the identification, collection, and initial assessment of the relevance of signals from the environment. Prospecting involves interpretation of collected signals and the exploration of their potential consequences which ultimately result in creating different possible futures through the practice of futuring. Probing includes assessing the implications of the different futures for the company, developing organizational responses and strategic options to different futures, and experimenting with different options.

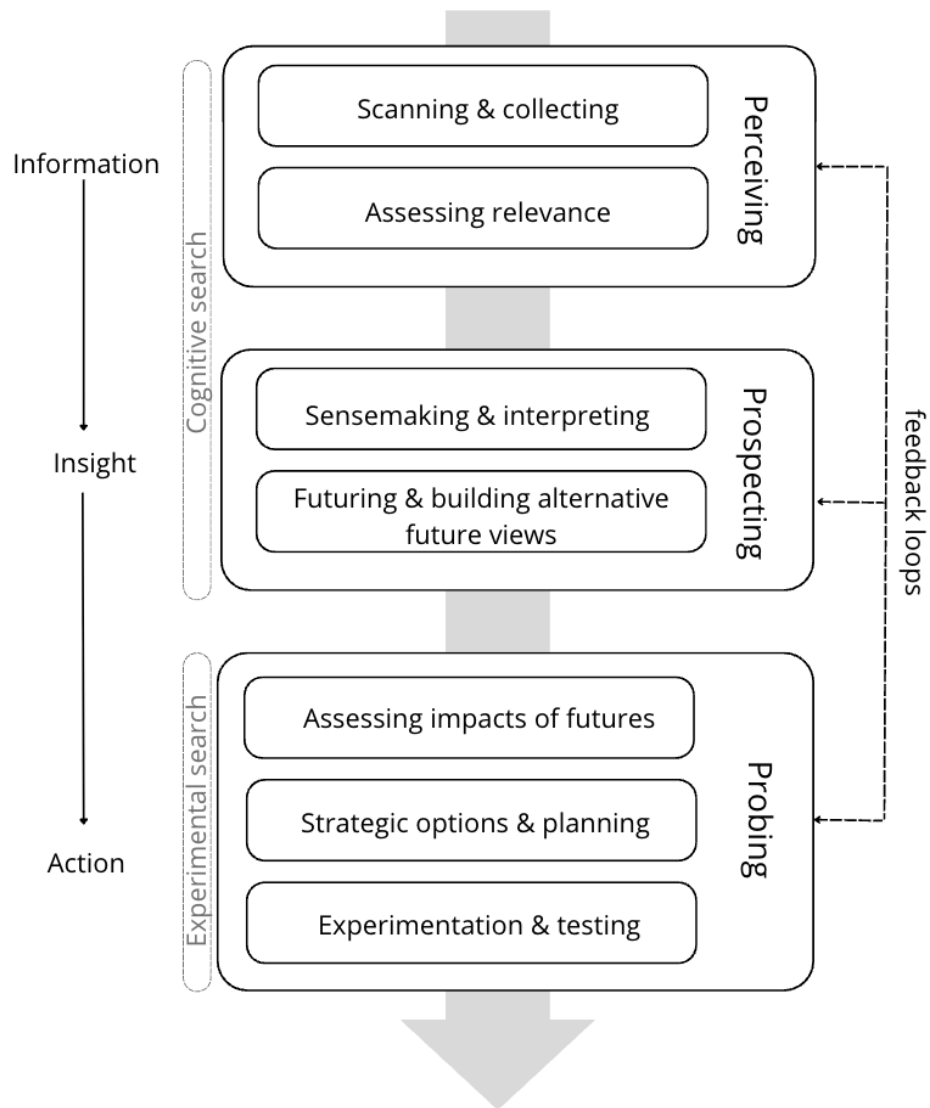


Figure 4 Foresight process and activities (adopted from Horton 1999; Voros 2003; Durst et al. 2015)

The three phases form a continuous and iterative process through which companies can transform environmental signals into actionable insights and consequently into concrete organizational responses. The process provides a structured way to understand how foresight unfolds in practice, but it does not fully explain what enables companies to execute the process. This ability in turn depends on the foresight capabilities that companies have developed. The following chapters therefore examine foresight capabilities in more detail, exploring which capabilities are required at each phase of the process and how these capabilities together enable companies to move from identifying change to actively responding to it, which ultimately contributes to competitive advantage.

2.3 Foresight capabilities

2.3.1 Overview of the foresight capabilities

Foresight capabilities allow companies to identify emerging trends and take informed actions in response to external changes (Battistella & Attanasio 2025, 27). They encompass structural and cultural capabilities that allow companies to identify discontinuous change, assess the implications and develop appropriate responses, while maintaining consistent and practical future view (Paliokaitė & Pačėsa 2015, 167). To improve a company's corporate foresight performance, it is necessary to identify the elements that influence it. This allows companies to develop the necessary capabilities to adapt to the discontinuous change and to embed foresight practices systematically into their operations. (Dadkhah et al. 2018, 1.) From a systemic perspective, foresight capabilities are not only prerequisites for conducting foresight but are also developed through it. Rather than seeing the results of a foresight process as objects, such as scenario documents, the value of foresight is in strengthening the company's ability to interpret and act on future developments. Foresight is thus a continuous action aimed at developing, maintaining, and enhancing this capability over time. (Dufva 2015, 43.)

Foresight capabilities can be understood as “high-level, learned, patterned, repetitious behaviors” (Paliokaitė & Pačėsa 2015, 166; Kononiuk 2022, 70), emphasizing the significance of the evolving organizational features and routines (Paliokaitė et al. 2014, 163). Accordingly, foresight capabilities are dynamic and can be developed over time (See Grim 2009; Rohrbeck 2011; Schreiber 2019). Similar to the foresight process, organizational foresight capabilities should not be interpreted as linear as development and learning can occur at all phases of the process. The capabilities should therefore be nurtured continuously rather than on sequential basis. (Paliokaitė & Pačėsa 2015, 168.)

Foresight capabilities have been studied by many researchers (Rohrbeck 2011; Paliokaitė et al. 2014; Rhisiart et al. 2015; Baškarada et al. 2016; Kononiuk et al. 2017), yet there is no consensus in the literature regarding which capabilities are most essential (Baškarada et al. 2016, 415; Battistella & Attanasio 2025, 17). Consequently, this study aims to provide a synthesized conceptualization of foresight capabilities by drawing on established foresight literature (Horton 1999; Voros 2003; Grim 2009; Rohrbeck 2011; Paliokaitė et al. 2014; Paliokaitė & Pačėsa 2015), dynamic capabilities (Fergnani 2022; Semke & Tiberius; Laakkonen et al. 2025), and absorptive capacity (Baškarada et al. 2016; Pouru et al. 2019; Fergnani 2022). In contrast to previous research, the identified capabilities are further divided according to the phases of the foresight process. The categorization is based on the activities and objectives of each process phase and examining which capabilities most directly enable those activities. The aim is to provide a comprehensive conceptualization that recognizes that

companies operate in different environments and therefore each capability could be further divided into more specific sub-capabilities and enacted in various ways.

Companies need capabilities oriented both towards understanding the external environment and towards utilizing internal organizational resources to adapt to the changes. *Perceiving* and *prospecting capabilities* refer to the abilities to search and analyze environmental factors, while *probing capabilities* include the ability to absorb, transfer and apply the information gathered. (Dadkhah et al. 2018, 3–4.) Due to the challenges in the probing phase, much of future-related information gathered and analyzed may not become actionable and gets lost within the company (Dadkhah 2018, 4; Schwarz 2024, 155), reflecting weaknesses in probing capabilities. This emphasises the need to develop capabilities that allow to combine resources internally and translate the information into concrete actions (Paliokaitė & Pačėsa 2015, 167).

Foresight capabilities are inherently embedded within and shaped by the broader organizational context, as suggested by the systemic view. Across all phases of the foresight process, the development and enactment of capabilities is shaped not only by the external environment and the need for foresight, but also by internal organizational factors such as culture, structures, participation, organizational knowledge, and managerial involvement (Daheim & Uerz 2008; Rohrbeck 2011; Dörr et al. 2024). Corporate foresight activities are typically collaborative and iterative by nature, and benefit from heterogeneous expertise and diverse perspectives (Gordon et al. 2019, 37). Broad organizational participation supports the development of foresight capabilities by increasing the diversity of interpretations and strengthening commitment to foresight activities and their outcomes (Schwarz 2024, 155). For example, involving employees from sales, customer service, and R&D in scanning and creating scenarios brings in diverse perspectives, enhancing range of detected signals and the comprehensiveness of the scenarios. Organizational culture that embraces openness to change is considered a prerequisite for receptiveness to foresight activities (Dörr et al. 2024, 3). Experimentation and creativity are likewise important for corporate foresight, as they are for organizational renewal more broadly (Rhisiart et al. 2015, 127).

Top management involvement has been identified a critical success factor, as it enhances the continuity, visibility, and strategic impact of corporate foresight and supports its institutionalization within the company (Daheim & Uerz 2008, 326; Peter & Jarratt 2015, 57). Even when companies are able to identify and interpret change, they often struggle to secure the buy-in of decision-makers, which can result in neglecting strategic issues. One way to address this would be to involve the decision-makers actively throughout the foresight process. (Rohrbeck 2011, 115.) An organization's

capacity to manage uncertainty therefore extends beyond its dedicated foresight unit: it depends on overall organizational flexibility and the ability to develop and act on strategic options (Battistella & Attanasio 2025, 24).

The perceiving, prospecting, and probing capabilities are examined in detail in the following sub-chapters. The aim is to understand what is required at each phase and how these capabilities together enable companies to conduct the process effectively, resulting in the implementation of foresight insights in practice.

2.3.2 Perceiving capabilities

Perceiving capabilities illustrate a company's ability to collect future-oriented information at early stages (e.g., Rohrbeck 2011, 76; Waseem et al. 2022, 72). They reflect the company's ability to identify and acquire relevant information, which connects to the acquisition stage of absorptive capacity (Baškarada et al. 2016, 421). From the perspective of dynamic capabilities, perceiving capabilities correspond to the sensing component, enabling companies not only to identify signals but also to recognize emerging opportunities and threats in the environment (Semke & Tiberius 2020, 180; Laakkonen et al. 2025, 4). Recognizing valuable sources of external knowledge is particularly important as it drives the ability to pursue opportunities for innovation and competitive advantage (Paliokaitė & Pačėsa 2015, 167; Fergnani 2022, 826).

A key perceiving capability is the *capability to broadly scan the operating environment across multiple dimensions for future-oriented information*. Disruptions can come outside of a company's immediate environment and signals that might appear unimportant at first can prove significant when examined closer. Effective perceiving relies on the understanding that elements of future developments might already be observable in the present, but they emerge unevenly across the environment. Therefore, companies should pay attention across different sectors and geographies. (Gordon et al. 2019, 35.) The breadth of foresight sources matters (Demneh et al. 2023, 2), and it is important to detect a wide range of external signals from a variety of different qualitative and quantitative sources (Paliokaitė & Pačėsa 2015, 167; Rohrbeck et al. 2018, 14; Fergnani 2022, 826). Companies should scan both the micro- and macroenvironment (Kononiuk 2022, 76), including their core and adjacent businesses, competitive environment, and white spaces, which are areas that appear unimportant at the moment, but have the potential to cause disruptive changes (Baškarada et al. 2016, 432). Scanning should also cover multiple dimensions, including political, environmental, technological, and social factors (Rohrbeck 2011, 75–76). Structured frameworks such as STEEP or PESTEL can help to ensure sufficiently broad scope (Gordon et al. 2019, 35), while ongoing scanning

systems and trend monitoring enable deeper analysis than addressing each strategic issue individually (Rohrbeck et al. 2018, 14).

Companies additionally need the *capability to leverage diverse internal and external networks for scanning*. The volume and quality of accessible information depend on the diversity of a company's formal and informal network ties (Paliokaitė et al. 2014, 164). Companies can use networks as platforms for knowledge creation and sharing. Networks enable companies to create first-hand information and collect exclusive insights, while also supporting the interpretation and assimilation of the information. (Rohrbeck et al. 2018, 14; Pouru et al. 2019, 89.) Networks encompass employees (Schwarz 2024, 155), customers, suppliers (Kononiuk 2022, 76), strategic alliances, business group memberships, online communities (Paliokaitė et al. 2014, 164), think tanks, as well as experts from industries, academia or business partners (Peter & Jarratt 2015, 60).

External and internal networks have distinct but complementary roles and are equally as important (Peter & Jarratt 2015, 60; Kononiuk 2022, 76). External networks assist in finding and directing external information into the company (Rohrbeck 2011, 78), which alerts the company to detect early warning signals, hidden market opportunities, and new developments in technologies and business models (Paliokaitė et al. 2014, 164), for example, a company that participates in an industry think tank might learn about an emerging regulation before it is published. Internal networks in turn enable foresight insights to reach stakeholders within the company and be utilized in strategically relevant ways (Rohrbeck 2011, 78). The expertise and diversity of those involved in foresight activities increases the likelihood of detecting weak and counterintuitive signals from the environment. Furthermore, bottom-up participation has been found to work well in practice and foresight is more effective when it is not limited to upper management. (Fergnani 2022, 826–827; Dörr et al. 2024, 3.) Broad internal participation in scanning therefore strengthens perceiving by drawing on the full intelligence of the company by ensuring that multiple perspectives are reflected (Schwarz 2024, 155). For example, a salesperson might notice a change in customer behavior before it appears in collected market data. This can further foster organizational acceptance towards foresight activities (Schwarz 2024, 155).

Scanning generates a large amount of data scattered in time, making the identification of relevant information a critical capability while scanning (Paliokaitė et al. 2014, 164; Baškarada et al. 2016, 415). Companies therefore need the *capability to align scanning scope and depth with organizational context and strategic needs*. While broad and continuous scanning systems enhance awareness (Paliokaitė & Pačėsa 2015; Rohrbeck et al. 2018), not all companies equally benefit from extensive

surveillance (Day & Schoemaker 2005, 2). Limited scanning focuses on the immediate environment and value network, whereas more extensive scanning may extend past the company's boundaries to monitor developments in other industries and peripheral groups, which might not be directly relevant to the company (Paliokaitė et al. 2014, 164). Companies with too much peripheral vision waste resources by focusing on information that is ultimately irrelevant. The appropriate scope therefore depends on context: companies in more stable environments do not need as much peripheral vision as those in environments that are complex and rapidly changing. (Day & Schoemaker 2005, 2; Rohrbeck 2011, 75–76.) Companies additionally need to deliberately select appropriate time horizon (Rohrbeck 2011, 76), which dictates the breadth of the scanning process. The selected time horizon defines the time frame to be covered, ranging from one to over fifteen years into the future. The choice is highly context-specific: in environments where change is rapid, the time horizon can be very restricted in order to stay up to date with transient opportunities. (Paliokaitė et al. 2014, 164.)

The final perceiving capability is the *capability to challenge perceptual frames and underlying assumptions during scanning*. Effective perceiving goes beyond simply identifying signals to truly understanding them, which requires awareness of the perceptual frames that observers inevitably bring to it. (Gordon et al. 2019, 35.) Although pure perception is impossible, conscious self-questioning can reveal the perceiver's cognitive biases and limitations. Individuals commonly notice and prioritize information that supports their existing beliefs, and their perceptions often align with group viewpoint, or previously made judgements. (Gordon et al. 2019, 35–36.) This can considerably limit which information is noticed, possibly leaving out information that could prove important. Furthermore, companies often focus on gathering “facts about futures”, while paying less attention to how the perceptions of organizational members and stakeholders regarding possible and plausible futures are shaped. Collecting signals is most effective when it challenges prevailing perceptions and offers new ways of seeing alternative futures. (Pouru et al. 2019, 88.) Companies should acknowledge their mental limitations and also aim to collect information that can seem surprising or unlikely. Promoting openness to ideas among individuals participating in foresight and drawing on their tacit knowledge can enhance the volume, breadth, and depth of information gathered (Battistella & Attanasio 2025, 27).

Perceiving capabilities collectively enable companies to gather organizationally relevant future-oriented information from the environment. Through broad scanning, utilizing networks, and challenging perceptual frames, perceiving provides a foundation for effective foresight process. The next sub-chapter examines prospecting capabilities, which support companies in making sense of the signals gathered during scanning and developing an understanding of possible futures.

2.3.3 Prospecting capabilities

Prospecting capabilities refer to a company's ability to systematically interpret information gathered through scanning and to develop forward-looking perspectives (Voros 2003; Rohrbeck 2011, 76; Paliokaitė et al. 2014; Højland & Rohrbeck 2018; Dadkhah 2018). These capabilities allow companies to identify and select relevant information and subsequently transforming it into futures knowledge (Paliokaitė et al. 2014, 164). Prospecting is closely linked to the assimilation and transformation dimensions of absorptive capacity, as it involves analyzing, interpreting, and understanding relevant information (sensemaking), as well as integrating new and existing knowledge to construct future views (futuring) (Baškrada et al. 2016, 422–423; Pouru et al. 2019, 85–86).

A central prospecting capability is the *capability to interpret large volumes of data and identify which factors are most strategically significant*. Since prospecting encompasses both sensemaking and futuring (Gordon et al. 2019, 36), companies require capabilities to systematically analyze information obtained from scanning, establish conceptual linkages among selected data and represent these insights in ways that can inform present actions with future implications (Paliokaitė et al. 2014, 165). This is further complicated by the temporal and causal relationships among data collected from various time horizons, environmental domains and depths of the environment (Rohrbeck 2011, 76–77). Effective prospecting necessitates integrating information from various sources and understanding the implications of multiple drivers, uncertainties, challenges, opportunities, and aspirations (Hines et al. 2017, 9). This involves collating data, filtering out irrelevant information, and summarizing the remainder in a manageable, usable form (Horton 1999, 6), while also interpreting the information to identify deeper structures and insights (Voros 2003, 15). Companies must identify subtle signals of change that can influence the industry's future development (Kononiuk 2022, 76) without discarding data that may appear irrelevant at first (Horton 1999, 6). This is often done through scenario planning, where alternative futures are built by synthesizing dispersed information into coherent narratives.

The *capability to challenge prevailing mental models and consider a wide range of future developments* is essential to effective prospecting. Hidden assumptions frequently undermine corporate foresight, as plans may fail when unstated assumptions prove incorrect. Individuals that participate in foresight may unconsciously favor evidence that supports these assumptions while disregarding contradictory information. (Hines & Bishop 2006, 149.) An industry leader might assume its market position will continue unchanged in the future and therefore overlook signals of emerging competitors. Effective prospecting therefore relies on the ability to question established

mental models and fostering creative sensemaking and futuring (Gordon et al. 2022; Demneh et al. 2023). This requires a willingness to challenge assumptions and suspend preconceived notions to approach the future with a fresh perspective (Hines et al. 2017, 9; Wach et al. 2024, 3). Decision-makers should be encouraged to articulate, monitor, and regularly challenge their fundamental assumptions (Rohrbeck 2011, 110). It is additionally important to identify which underlying assumptions and adopted values and beliefs influence the organizational culture (Grim 2009, 78), as the culture overall influences how foresight is understood and conducted. Corporate foresight should not be limited to optimistic projections but should also involve the consideration of undesirable and disruptive developments (Demneh et al. 2023, 15): the industry leader might consider future developments where emerging competitor wins market leadership. Exploring the boundaries of what is considered impossible can help to expand the range of possible futures (Voros 2003, 17), enabling companies to construct alternative scenarios that are not constrained by limited thinking or assumptions (Grim 2009, 78).

Companies additionally need the *capability to transform foresight insights into shared organizational understanding of possible futures*. Shared interpretations of the future increase commitment to foresight activities and subsequent actions (Horton 1999, 4; Rohrbeck et al. 2018, 16), and the collective construction of future views is therefore essential for aligning organizational understanding and supporting action. One way of forming collective understanding is through broad participation in foresight activities throughout the process (Gordon et al. 2019, 37; Schwarz 2024, 155), but since only a limited number of individuals typically participate directly in foresight activities, another is to communicate the outcomes to the rest of the company in accessible and engaging ways (Horton 1999, 4; Grim 2009, 77; Battistella & Attanasio 2025, 23). Both the content and quality of narrative construction of future developments influence the effectiveness (Beckert 2021, 13). While there is no single way of communicating foresight results in a way that guarantees commitment, traditional reports are overlooked or insufficiently assimilated. More interactive approaches, including tools, seminars, workshops, and informal networks, are generally more effective in fostering engagement. (Horton 1999, 4.) If employees from different functions can come together to a workshop and discuss what an identified trend could mean for their work, it is more likely to create shared understanding than a written report. The creation of future views can also benefit from rendering, which provides tangible representations of concepts, such as visual or assembled representations of scenarios rather relying solely on narrative descriptions (Gordon et al. 2019, 37). Practitioners are therefore encouraged to present trends or scenarios using visuals such as models, pictures, or videos to enhance employee engagement (Hammoud & Nash 2014, 19).

Prospecting is the phase in which foresight activities are most explicitly carried out in terms of methods (Voros 2003, 14). The *capability to select and apply appropriate methods for comprehensive analysis and interpretation of information* is thus critical (See Kononiuk 2022; Laakkonen et al. 2025). The effectiveness of prospecting is shaped by the methods and competencies used to interpret and generate future views. Companies must select methods that suit their specific context or problem. These methods should enable the integration of diverse types of information and support effective communication of insights both within and outside the company. (Rohrbeck 2011, 76–77.) This includes applying foresight methods to synthesize information into plausible future business environment, while maintaining methodological rigor and comprehensiveness throughout the foresight process. Additionally, companies should employ a diverse set of foresight methods and integrate them effectively in practice. Companies that utilize multiple methods, such as scenario planning, roadmapping, and Delphi studies, typically exhibit more advanced foresight capabilities. (Fergnani 2022, 827–828.)

Prospecting capabilities enable companies to move from fragmented information toward coherent and actionable understanding of the future. Through systematic interpretation, futuring, and widening perspectives, these capabilities support forming an understanding of alternative futures that can inform decision-making. Importantly, the value of prospecting is not only in the quality of the future views but also in building a shared organizational understanding of them, which can be achieved through broad participation and effective communication. The shared understanding can help to ensure better organizational commitment in the probing phase, which is discussed in the following sub-chapter.

2.3.4 Probing capabilities

Probing capabilities describe a company's ability to translate foresight insights into concrete actions. During probing, companies move from understanding environmental change to assessing its concrete consequences for the company (Gordon et al. 2019, 37). Probing capabilities thus enable companies to address consequences of different futures, evaluate organizational resilience, and prepare for the futures through planning, experimentation, and decision-making. Similar to prospecting, probing capabilities are closely connected to the transformation capability of absorptive capability as companies need to combine information from multiple sources when they consider the consequences implied by past, present and alternative futures to create strategic options and decisions (Hines et al. 2017, 9; Baškarada et al. 2016, 425). Probing capabilities are furthermore related to exploitation

component of absorptive capacity, which is the ability to integrate the gathered and processed information into the company's operations (Baškarada et al. 2016, 425).

The purpose of foresight is to enable making better and more informed decision-making in the present by expanding the perception of available strategic options (Voros 2003, 15; Hines & Bishop 2006, 143). Therefore, at the core of probing is the *capability to assess the implications of alternative futures for the organization and translate them into concrete strategic options*. This involves reflecting on alternative paths the company could take if a certain future materialized, weighing the advantages and disadvantages of different choices (Hines et al. 2017, 9), and assessing the resilience of existing strategies and practices considering the different futures (Demneh et al. 2023, 9; Carayannis et al. 2024, 17505). For instance, a company could consider whether its current product range would still be relevant if consumer preferences shifted significantly. Companies should differentiate between changes that they can influence and those they cannot and prepare for both while they still have flexibility in decision-making (Demneh et al. 2023, 15). To guide this assessment, companies should develop a clear vision of their desired future state to serve as a reference point for evaluating options (Hines & Bishop 2006, 158–160). The vision should be connected to the company's mission and long-term objectives to ensure alignment with broader organizational objectives and to enable its integration into strategy and other processes (Grim 2009, 78; Schreiber 2019, 48, 382; Kononiuk 2022, 76).

Based on this assessment, companies can develop concrete strategic options alternative futures (Horton 1999, 7), enabling to allocate resources towards their chosen direction and achieving competitive advantage (Paliokaitė et al. 2014, 165; Fergnani 2022, 828). Strategic options should cover a wide range of alternatives, including options for unexpected developments as well as most plausible and preferred directions (Hines & Bishop 2006, 184–186). For instance, a company could develop one option for rapid market growth and another for an uncertain economic environment. This enhances the company's ability to identify emerging opportunities, which in turn can contribute to new ideas on innovations (Paliokaitė & Pačėsa 2015, 168). Understanding what different futures mean for the company and developing strategic options for alternative futures require combining existing knowledge with new information (Baškarada et al. 2016, 423; Luo & Child 2015, 389), which improves the company's competitiveness and supports the development of new products and processes (Waseem et al. 2022, 71, 76; Yoon et al. 2018, 636). Strategic options should furthermore be grounded in the company's unique and context-specific qualities and resources that are difficult to replicate by others. This requires a deep understanding of both internal and external context of the

company, and evaluating strategic options along multiple dimensions, including stakeholder perspectives, multiple performance measures, and timeframes. (Hines & Bishop 2006, 181–182.)

Assessing the implications of different futures, evaluating organizational resilience and developing strategic options requires the willingness to challenge and test basic assumptions (Rohrbeck 2011, 110; Day & Schoemaker 2005, 6), or in other words the *capability to critically examine prevailing mental models in future-oriented decision-making*. Scenario thinking is most valuable when all scenarios are regarded equally, despite their perceived likelihood or attractiveness (Demneh et al. 2023, 14), which in dynamic environments demands updating and challenging mental models within the organization and understand how these influence decision-making (Grim 2009, 77; Rhisiart et al. 2015, 126). Reflexive and creative, out-of-the-box thinking further strengthens this capability by supporting the questioning of established assumptions and identification of threats and opportunities (Kononiuk 2022, 77; Gordon et al. 2019, 37). It is easier to focus on optimistic scenarios, but overlooking unpleasant ones can result in inadequate preparation for disruptive developments. At the same time, exploring a wide range of scenarios can create new innovative ideas regardless of which future ultimately materializes.

Further probing capability is the *capability to integrate foresight into organizational strategy and processes*. Translating foresight insights into actions is ultimately dependent how well foresight is embedded in strategy and other organizational processes (Fergnani 2022, 828; Baškarada et al. 2016, 423; Grim 2009, 77; Hines & Bishop 2006, 211), which requires creating an environment and processes that enable the use of foresight insights in practice (Grim 2009, 77). The expected links besides strategy include innovation management, R&D, corporate development, controlling, and marketing (Rohrbeck 2011, 79; Carayannis et al. 2024, 17505). Coordination across departments and functions is essential for the development, approval, and validation of different strategic options and future visions within the company (Paliokaitė et al. 2014, 165). When foresight is effectively integrated, it enables companies to dedicate expertise and resources which are typically dispersed across the company (Paliokaitė et al. 2014, 165), as well as to eventually act on the strategic options developed. This may also involve setting tangible goals to pursue the preferred future, tracking indicators to monitor how uncertainty unfolds in order to move toward particular scenarios, and developing prototypes, offerings, or artifacts to explore and test strategic options in practice (Hines et al. 2017, 9).

Final probing capability is the *capability to secure organizational commitment to action*. While in prospecting phase the focus was on building a shared understanding of alternative futures, probing

requires translating this understanding into concrete commitments to action and resource allocation. Internal stakeholders, especially the management, need to be convinced of the importance of foresight insights and strategic options to ensure timely action when needed (Rohrbeck 2011, 115). Communication has an important role in disseminating and preserving foresight information in the company (Paliokaitė & Pačėsa 2015, 167). It is therefore essential to communicate the results of foresight activities in a way that supports organizational understanding and action (Hines & Bishop 2006, 193), which is particularly important in convincing the top management and securing their buy-in. At the same time, the decision makers must consistently communicate the strategies and actions to be pursued in order to further ensure organizational consensus (Battistella & Attanasio 2025, 27). Communication should be continuous and open, which fosters an environment of informal information sharing and motivates employees to exchange ideas (Dörr et al. 2024, 9). Integration of foresight requires communication across all organizational areas before, during and after the planning processes (Peter & Jarratt 2015, 57).

Probing capabilities bridge the gap between insights and actions through assessing the implications of alternative futures, challenging mental models, integrating foresight into strategy and processes, and securing organizational commitment to change, enabling to implement foresight in practice. The following chapter presents the theoretical framework of this study.

2.4 Theoretical framework

The previous chapters provide the literature review for this study which is synthesized in this chapter to form the theoretical framework. This study adopts a systemic perspective on corporate foresight by combining the process and capability perspectives while also considering the influence of external and internal context of a company. Consequently, corporate foresight is understood as a capability that is enacted through an iterative process within a specific organizational and environmental context.

The framework builds on the three-phase foresight process model consisting of *perceiving*, *prospecting*, and *probing*. Perceiving involves identifying signals of change, prospecting focuses on interpreting them and exploring alternative futures, and probing focuses on assessing the implications of those futures and developing organizational responses. To enable the effective enactment of the process, the framework incorporates foresight capabilities associated with each phase. These explain how companies are able to identify, interpret, and respond to change. The same process can therefore be enacted differently in terms of effectiveness, depending on the company's foresight capabilities.

Together they form the company's ability to conduct foresight effectively and translate insights into actions.

Figure 5 presents the theoretical framework of the study by illustrating corporate foresight as a process that consist of the three phases, each supported by four distinct foresight capabilities.

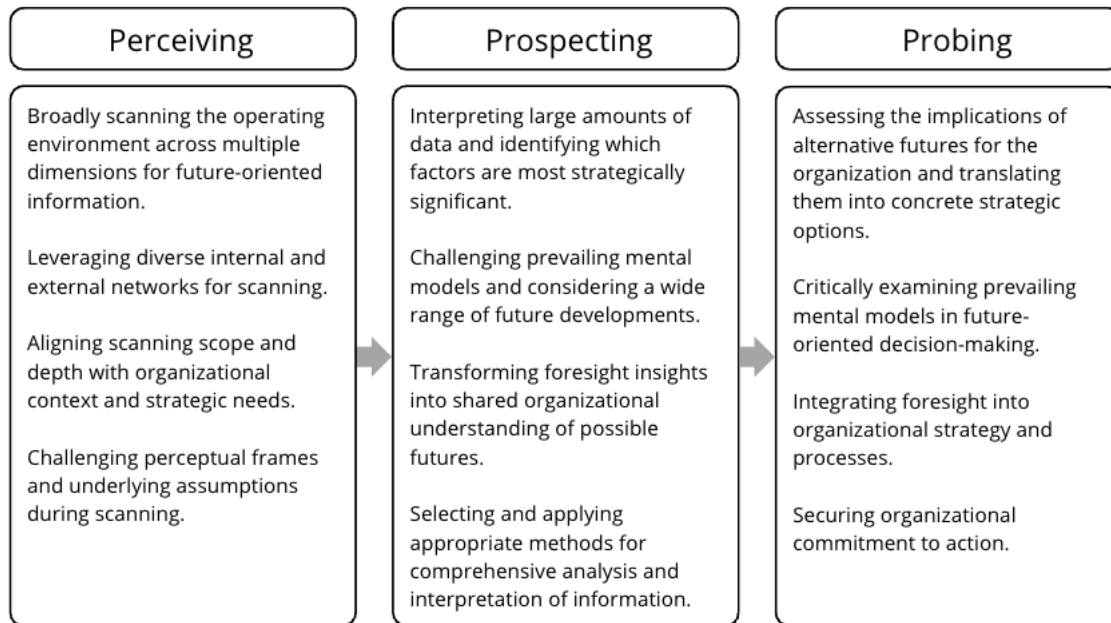


Figure 5 Theoretical framework of the study

Notably, challenging assumptions and mental models are essential throughout the foresight process because foresight fundamentally aims to expand perceptions of what futures may be possible. During perceiving they shape what signals are noticed, during prospecting they influence how signals are interpreted, and in probing whether decision-makers are open insights and to acting on insights.

Together, these capabilities enable companies to move through the foresight process: from broadly scanning the environment and making sense of the signals, to developing a shared understanding of possible futures, and ultimately to translating foresight insights into concrete actions. The framework serves as the analytical lens through which the empirical findings are examined in Chapter 5, where these identified capabilities are reflected against the findings of the cross-case analysis. Before that, the following chapter discusses how the empirical research was conducted.

3 Research design

This chapter details the methodological choices of the study and explains how the empirical research was conducted. It presents and justifies the selected research approach, case study strategy, data collection and analysis methods, followed by an evaluation of the trustworthiness and ethical considerations of the study.

3.1 Research approach

This study is grounded in interpretivist research philosophy and combines descriptive and exploratory natures. Interpretivism emphasizes that social phenomena are shaped by meanings constructed by individuals. Knowledge is considered context-dependent and subjective, acknowledging that multiple interpretations are possible. (Ghauri et al. 2020, 18; Saunders et al. 2023, 150.) Corporate foresight can be understood as a social and organizational phenomenon, that is shaped by shared meanings, practices, and interactions rather than measurable variables. This study is primarily descriptive in nature, as it aims to identify links and patterns related to theoretical concepts to advance understanding of the phenomenon (Tobin 2010, 288). It also has exploratory elements as the study seeks to build an understanding of a phenomenon that lacks detailed prior research (Streb 2010, 372), but because existing theoretical framework guides the inquiry, this study cannot purely be considered exploratory.

The objectives of this study are 1) to understand how companies conduct their foresight process, 2) to describe the capabilities required for effectively translating foresight insights into actions, and 3) to examine how these capabilities support the translation. Every aspect of the study, including research design, data collection, and data analysis methods are shaped by the features of the phenomenon being studied. A qualitative research approach was adopted for this study as it focuses on interpreting and understanding complex phenomenon within a context. (Eriksson & Kovalainen 2016, 4, 27–28.) Qualitative research approach is particularly suitable for topics that require in-depth insights, adopt an explorative orientation, and emphasize developing a holistic view (Ghauri et al. 2020, 96–98). Furthermore, qualitative research is suitable to answer “how”, “who”, and “why” questions (Doz 2011, 583) and unlike quantitative research, qualitative research does not use statistical methods or other forms of quantification when producing findings (Ghauri et al. 2020, 96–98).

The research process of this study is illustrated in Figure 6. Typical for qualitative research, this study followed a circular research process, also known as a hermeneutic circle. This process involved

iteratively moving back and forth between the different phases of the research to develop a deeper understanding of the phenomenon. (Eriksson & Kovalainen 2016, 34–35.) In qualitative research, the research plan is therefore typically flexible and evolves alongside the research process. The different phases of the research are intertwined, and interpretation takes place throughout the process. Accordingly, the research plan, research questions, and literature review were revised and adjusted as the study progressed. (Eskola & Suoranta 1998, 15–16.) This enabled a form of cross-fertilization, where established theoretical models and insights from empirical data informed each other and lead to new theoretical understandings (Dubois & Gadde 2002, 553, 559). The researcher's understanding evolved through engagement with literature and empirical data and analysis, which in turn influenced their perspective on prior knowledge and enabled continuous refinement of the study (Eriksson & Kovalainen 2016, 34–35). In particular, writing the literature review and formulating the research questions involved several rounds of revisions as the researcher's understanding of the phenomenon deepened and the theoretical framework became more precise.

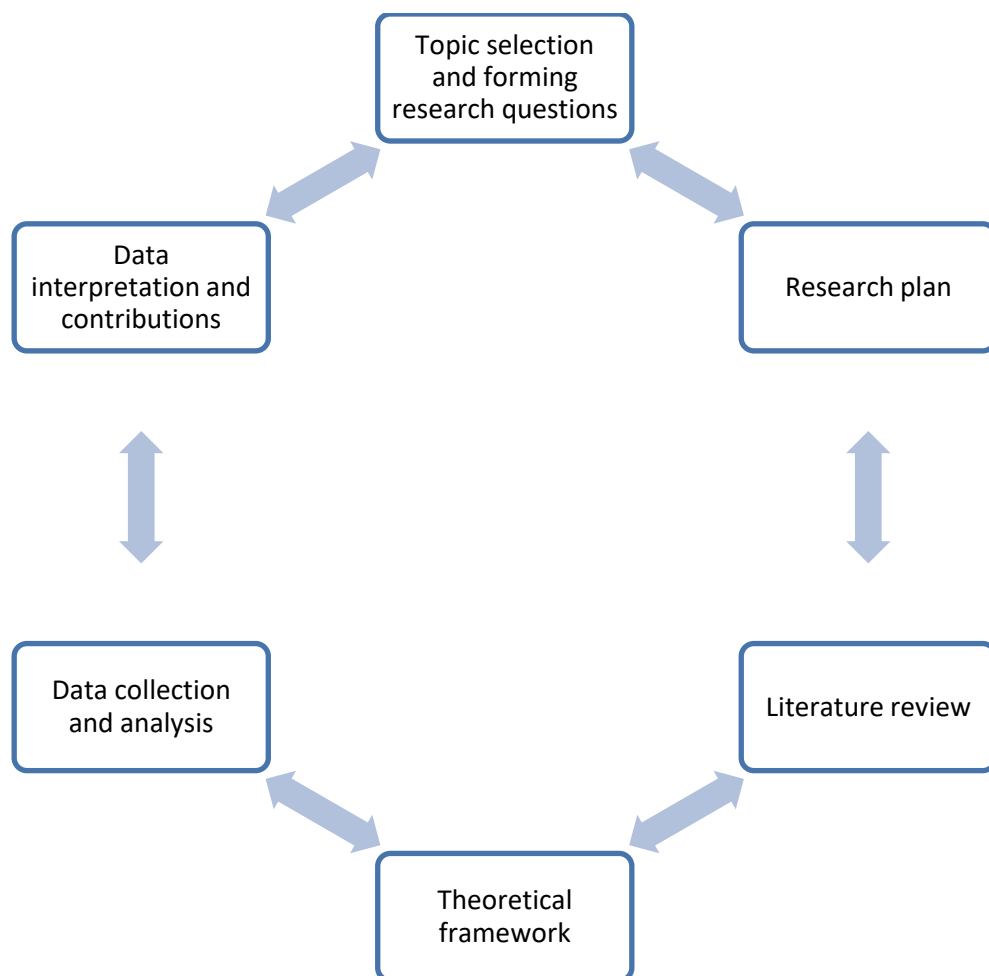


Figure 6 Research process

Furthermore, an essential part of the circular research process is reflexivity, which involves critically examining the entire research process (Tynjälä 1991, 393; Eriksson & Kovalainen 2016, 34). Reflexivity has been applied throughout the study to ensure that the literature review and empirical research address the research questions and were not influenced by the researcher's biases or prior assumptions. This has strengthened the validity of the study, as the researcher has been able to critically examine the entire research process and reflect on potential biases, prejudices, and methodological choices (Eriksson & Kovalainen 2016, 34). Reflexivity was particularly important in this study, as the researcher's role was to remain neutral by listening and interpreting, rather than guiding the participants. The following sub-chapter discusses the case study approach, outlining its key characteristics, justifying the choice of multiple-case design, and describing how the case companies were selected. Additionally, it briefly introduces the use of expert interviews and secondary data as complementary data sources

3.2 Case study as a research strategy

Case studies are widely used in business research because they enable to investigate complex business problems in a way that is practical, vivid, and grounded (Eriksson & Kovalainen 2016, 6–7, 132–133). Case study research enables to gain in-depth understanding of a contemporary phenomenon within its context, allowing to understand how the phenomenon unfolds in practice (Farquhar 2012, 6). Case studies can be divided into intensive and extensive. Intensive case study research seeks to develop an in-depth understanding of one or a few cases from the inside by providing a thick, holistic and contextualized description and interpretation. Extensive case study research is more associated with quantitative research and focuses on generating or advancing theory through the comparison of a number of cases to reach generalization. (Eriksson & Kovalainen 2016, 134–136.) An intensive multiple-case study approach was chosen for this study because foresight practices vary across companies, they are highly context specific, and often fragmented, thus benefitting from a detailed examination. Examining multiple companies enables to explore research questions more broadly and better contribute to theory development than a single case. (Eisenhardt & Graebner 2007, 27.) This is done through cross-case comparison where similarities and differences between the cases and the reasons behind them can be identified (Patton 2023, 293).

In this study, the cases are the corporate foresight processes and capabilities of the selected companies, which also constitute the unit of analysis. The companies provide the organizational context within which the foresight process is examined, while the unit of observation comprises the interviewed company representatives. (Fletcher & Plakoyiannaki 2011, 173–175.) Careful definition

of the case boundaries was important, as a poorly defined case can lead to findings that do not address the research question (Harder 2010, 370).

The selection of the cases is a central aspect of a case study research, as the chosen cases should provide rich insights that are relevant to the research objectives. Therefore, case study samples are ideally selected strategically rather than randomly, with the aim of maximizing information gained about the phenomenon under investigation. (Bleijenbergh 2010, 61.) In case study research, the focus is on the particular rather than the general, and by examining cases in depth, the researcher can explore the “why” and “how” of the phenomenon from multiple perspectives (Gary 2021, 4). In multiple-case study the selection of cases is guided less by the distinctiveness of individual cases and more by the collective contribution of the cases to theory development (Eisenhardt & Graebner 2007, 27). Given the existing gap in both practice and literature regarding foresight implementation, the intention was not to narrow the selection to a specific industry or size. As the phenomenon remains underexplored, a variety of organizational contexts were considered to provide insights to the phenomenon.

The selection of case companies in this study was not a single decision but rather an evolving process that developed throughout the research (Fletcher & Plakoyiannaki 2011, 176–178). While the selection was guided by prior literature and aimed to select cases suitable for examining and revising the developed theoretical framework, it remained dynamic as the focus gradually developed throughout it (Fletcher et al. 2018, 759–760). The initial aim was to conduct an in-depth single case study. However, as a sufficient number of interviews could not be obtained within a single company to ensure adequate depth and data triangulation, the approach was changed to a multiple-case study. Furthermore, identifying and accessing suitable case companies proved challenging, as companies rarely publicly disclose information about their foresight practices. Additionally, knowing whether foresight insights are translated into concrete actions requires insight into internal processes, which is difficult to obtain from the outside. For this reason, this study applied two complementary non-random sampling strategies: purposive and convenience selection (Fletcher & Plakoyiannaki 2011, 178).

Purposive selection, also referred to as judgemental or expert selection, involves the researcher deliberately selecting information-rich cases that can appropriately address the research questions under examination (Suoranta & Eskola 1998, 18; Lavrakas 2008, 857; Patton 2023, 264). As the approach changed to a multiple-case study, the selection criterion was broadened accordingly. This was necessary to ensure the feasibility of the study, acknowledging the practical challenges of identifying and gaining access to companies with sufficiently established foresight practices. Thus,

the criterion applied for purposive selection was that the companies actively utilize corporate foresight. It guided the identification of potential companies and was clearly communicated in the initial contact email to ensure that the companies aligned with the selection criterion.

The selection was further complemented by convenience selection, in which participants are chosen based on their accessibility (Lavrakas 2008, 269). Although convenience selection is criticized for lacking strategy and purpose (Patton 2023, 309), it was considered an acceptable complementary strategy in this study given the difficulty of identifying companies with foresight practices from the outside. Thus, while purposive selection guided the choice of case companies through predefined criterion, the selection was also influenced by the researcher's ability to identify relevant contacts and gain access to them.

Potential case companies were identified through multiple channels. To identify companies that met the criterion, online searches and generative artificial intelligence were used. Suggestions generated by generative artificial intelligence were evaluated and verified by the researcher. Many potential companies were also identified through VTT (Technical Research Centre of Finland) reports documenting foresight partnerships. LinkedIn was used to identify individuals in relevant roles, which provided an indication of the nature of foresight activities within the companies. A preliminary interview request was sent via email or LinkedIn to over 50 company representatives considered to be likely involved in foresight activities. The email included a brief description of the study, an information sheet (Appendix 3), and privacy notice, outlining how the research is conducted and what kind of information was sought.

The selected case companies and utilized data sources are outlined in Table 2. In qualitative research there are typically few cases (Eisenhardt & Graebner 2007, 27), and four cases were considered sufficient to enable meaningful cross-case comparison while maintaining the depth of intensive case study. Companies A, B, and C were identified through the researcher's own search process, while Company D was accessed through a referral from a researcher with expertise in the field. The selected case companies represent diverse sectors of the economy. Company A operates in manufacturing, Company B in consumer services, Company C in services, and Company D in manufacturing. Detailed descriptions of each company and their context can be found in Chapter 4.

Table 2 Case companies

Company	Industry	Size	Organizational context	Secondary data
A	Manufacturing	Large	Global, multiple business areas, capital-intensive, long-	Annual report (2025), website

			investment cycles, complex supply chains	
B	Consumer services	Large	Domestic, multiple business areas, fast industry clockspeed, consumer trends	Annual report (2025), website
C	Services	Large	Domestic, highly regulated, multiple business areas, risk-driven, long planning horizon	Annual report equivalent (2025), website
D	Manufacturing	Large	Global, project-based, long product lifecycles, complex supply chains	Annual report (2025), website

The diversity in industries enables the examination of corporate foresight across different operational environments and contexts, thereby enhancing the robustness and transferability of the findings (Eisenhardt & Graebner 2007, 27). Furthermore, all case companies are large organizations operating in Finland, which supports comparability. Comparability was also ensured by the shared unit of analysis and utilizing secondary data sources which enables the distinction of findings that reflect the phenomenon itself and those that might be context specific. The data collection methods are discussed in detail in the following sub-chapter.

3.3 Data collection

In this study, the empirical data consisted mainly of primary data, which was supported by secondary data. Primary data refers to information that is gathered for the specific study at hand by the researcher, while secondary data is already existing data that has initially been collected for other purposes (Ghauri et al. 2020, 153; Saunders et al. 2023, 342). In business research personal and in-depth interviews are typically used as the primary data, while other types of data are typically used as complementary and for triangulation purposes (Eriksson & Kovalainen 2016, 138). The choice of acquiring data from both primary and secondary sources arose from the need to study the phenomenon in depth, which is typical for intensive case studies.

Primary data was collected through semi-structured interviews with company representatives and two external experts with the aim of generating new insights to the research questions with fresh data directly from participants with relevant knowledge (Farquhar 2012, 68; Ghauri et al. 2020, 117). The purpose of the interviews was to explore the participants' experiences and perspectives on the phenomenon. (Eskola & Suoranta 1998, 86.) Expert views were considered valuable for this study for multiple reasons. As the maturity of corporate foresight practices varies across companies and is rarely disclosed publicly, it was difficult to assess in advance whether company interviews alone

could provide sufficiently comprehensive data. Furthermore, as gaining access to companies proved challenging, expert interviews were included to ensure adequate depth and breadth of data. Additionally, expert perspectives provided a broader view of foresight practices beyond individual company contexts, supporting cross-case analysis and enriching the interpretation of findings. The interviewed experts work as researchers at Turku School of Economics. Expert A works as a research director with expertise in dynamic capabilities, especially in the context of innovation management and network governance and has more recently expanded their expertise to corporate foresight. Expert B is a project-researcher and has specialized in strategic resilience and foresight capabilities, with additional expertise in technology foresight and the application of artificial intelligence in futures research methods. They are currently conducting joint research on corporate foresight, which made them suitable for this study.

Secondary data were retrieved from the case companies' websites and annual reports from 2025 to provide contextual information, which is an essential part of case study research (Eriksson & Kovalainen 2016, 144). The secondary data was initially expected to include internal foresight materials to deepen the understanding of the phenomenon and support the interpretation of the interview data, but such materials were not feasible for this study. Consequently, the secondary data was obtained from public sources and used primarily for contextual purposes, while also serving to verify the interview data through data triangulation (Eriksson & Kovalainen 2016, 139).

There are different types of qualitative interviews that can be distinguished based on the rigidity of the interview questions and the level of interviewer involvement (Eskola & Suoranta 1998; Eriksson & Kovalainen 2016). Semi-structured interviews were chosen as the primary data collection method for this study, as they are a commonly used method in qualitative research and allow flexibility while maintaining a systematic structure (Eskola & Suoranta 1998, 86; Farquhar 2012, 73). Unlike structured interviews which rely on fixed response categories and standardized processes, semi-structured interviews give the interviewer flexibility in terms of phrasing and order of questions. When creating a semi-structured interview, the interviewer designs an outline of topics, issues or themes, but each interview is different and allows for participants to elaborate on their experiences and perspectives. (Ghauri et al. 2020, 115–116; Eriksson & Kovalainen 2016, 94.) This approach aligns with the aim to understand and explore the cases from the inside and develop an understanding from the perspectives of the individuals involved in the case companies' foresight processes (Eriksson & Kovalainen 2016, 134).

Conducting semi-structured interviews requires careful preparation and planning, while remaining responsive to the interview situation (Farquhar 2012, 72; Creswell & Creswell 2022, 203). To design the interviews and ensure alignment with research objectives, an operationalization table (Table 3) was created prior to the interviews. The table was built based on the research questions and themes identified in the literature, linking each research question to the corresponding interview questions, with expert interview questions in parentheses. Moreover, the interview guides (Appendices 1 and 2), were designed to be open-ended so that participants can freely reflect on their experiences. This approach helped to maintain a logical structure during the interviews while giving the interviewer chance to delve deeper and seek clarification when necessary. Furthermore, attention was paid to using language familiar to the participants and avoiding overly technical terminology (Farquhar 2012, 73).

Table 3 Operationalization table

Research question	Sub-questions	Themes in literature	Interview questions
How can companies translate foresight insights into actions by developing foresight capabilities?	How do companies carry out their foresight process?	Foresight process, collecting, interpreting and utilizing future-oriented information	3, 4, 5, 6, 7, 8, 9, (2, 3, 4, 5, 6)
	What foresight capabilities are required for effectively translating foresight insights into actions?	Foresight capabilities, future preparedness, dynamic capabilities, absorptive capacity	10, 11, 12, 13, 14, 15, 18, (7, 8, 9, 10)
	How do these capabilities support the translation?	Organizational resilience, absorptive capacity, strategic agility, competitive advantage, decision-making quality	16, 17, 18, 19, (11, 12, 13, 14)

While developing the interview questions, it was also considered who would be able to provide the most relevant information for the study (Farquhar 2012, 74; Ghauri et al. 2020, 117). Qualitative research often focuses on a relatively small number of cases and aims to analyze them as thoroughly as possible. The criterion for the scientific nature of the data is therefore not its quantity but rather its quality. (Suoranta & Eskola 1998, 18.) The participants were selected through purposive selection, which allowed to include individuals who were directly involved in the company's foresight process, and similarly experts with relevant knowledge.

Altogether seven individuals were interviewed, as outlined in Table 4. In Company A, two individuals were interviewed, with the second participant identified through snowball selection. In Companies B,

C, and D, one representative from each was interviewed. Furthermore, Expert A was identified through the University of Turku's Futures Knowledge Distillery, recommended by the thesis supervisor. Expert B was subsequently identified through snowball selection.

Table 4 Interview details

Type	Interviewee	Role	Interview date	Duration	Language
Company A	1	Strategy manager	6.3.2026	54 min	Finnish
			13.3.2026	40 min	Finnish
	2	Director of integrated business planning	26.3.2026	51 min	Finnish
Company B	3	Business development analyst	7.4.2026	38 min	Finnish
Company C	4	Foresight and market intelligence manager	15.4.2026	67 min	Finnish
Company D	5	Business development manager	29.4.2026	65 min	English
Expert A	6	Researcher	9.4.2026	77 min	Finnish
Expert B	7	Researcher			

The interviews took place between 6th of March and 29th of April 2026 and lasted between 38–77 minutes. Interviews with the experts and Companies A, B and C were conducted in Finnish, the native language of both the researcher and participants, while the interview with Company D was conducted in English as it was the native language of the interviewee. This enabled to ensure that the participants can express their views comfortably and in-detail with their native language. The interviews were held via Microsoft Teams and audio-recorded with the permission of each participant to facilitate data analysis. The recordings were transcribed and yielded in total of 88 pages of transcribed data.

The interview with Interviewee 1 was conducted in two parts because of time constraints but covered the same questions as the other interviews. Furthermore, the experts were interviewed together in a pair interview, which was chosen to encourage dialogue and deepen the insights generated. The experts have expertise from slightly different areas thus, the interaction between them enabled to gain a more comprehensive understanding of the phenomenon. (e.g., Eskola & Suoranta 1998, 95, 97.)

Prior to the interview, each participant received an information sheet, a privacy notice, and a consent form, along with the interview questions (Appendices 1 or 2). The information sheet (Appendix 3) described the purpose of the study and the type of data collected. The privacy notice outlined how the data would be collected, processed, stored, and destroyed after the completion of the study. Participants were asked to fill and return a consent form (Appendix 4) before the interview. The consent form clarified that participation was voluntary and allowed participants to indicate whether

their name and title could be used in the study and whether the interview could be audio-recorded. Based on this, all companies and individuals were anonymized in this study. The next sub-chapter describes how empirical data was analysed and how secondary data was used to support the analysis.

3.4 Data analysis

The purpose of qualitative data analysis is to bring clarity to the data and thus produce new information about the subject being studied. The aim is to summarize the data without losing any of the information it contains while increasing the value of the information by making fragmented data clear and meaningful. (Eskola & Suoranta 1998, 138.) The interview data was analyzed through thematic analysis, which is a method used for recognizing, examining and presenting patterns or themes in qualitative data (Braun & Clarke 2006, 79). Thematic analysis provides a systematic way to organize and describe the data by extracting key topics from the material (Eskola & Suoranta 1998, 176). The analysis followed the six-phase approach outlined by Braun & Clarke (2006, 87): *familiarization with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report*. In multiple-case study, the analysis begins first with a within-case analysis, which means that each case is analyzed separately (Eriksson & Kovalainen 2016, 141). The expert interview was analyzed following the same process.

The analysis began with familiarization with data through transcription. The interview recordings were transcribed using UTU Transcribe, resulting in a total of 88 pages of transcribed material. The accuracy of each transcript was verified by listening all of the audio recordings thoroughly. Following transcription, the transcripts were read multiple times to gain a comprehensive understanding of the data. During this stage, initial thoughts, ideas for codes and notes were written down. (Braun & Clarke 2006, 87–88.)

Initial coding was done manually in Microsoft Word, using highlights and comments to mark relevant topics. At this stage, coding was extensive to ensure that all relevant and interesting information was included. Similarly, the coding was done in a way that reflected the perspectives of the participants, without imposing researcher's interpretation. (Braun & Clarke 2006, 88–89.) The coding process included two rounds. After the first round was completed for all case companies and expert interview, the transcripts were re-read, and a second round of coding was conducted separately for each. This approach enabled a comprehensive understanding of the data and supported consistent coding across the cases.

Following initial coding, the codes were collated and organized into potential themes within case companies. The themes were kept broad as they often require combining, refining, or discarding in subsequent phases. (Braun & Clarke 2006, 89–90.) Researcher judgement is necessary to determine what constitutes a theme, and the operationalization table guided the formation of initial themes by searching for topics relevant to the research questions (Braun & Clarke 2006, 82–84; Eskola & Suoranta 1998, 176).

The themes were then reviewed and refined by re-reading the entire dataset (Braun & Clarke 2006, 91–92). The within-case themes were compared to one another to create common themes across cases to ensure coherence and facilitate cross-case analysis in the subsequent phase. This was supported by the consistency of coding across cases. At this stage, the existing theory guided the creation of themes by identifying patterns from the empirical data and comparing them with theoretical propositions (Eriksson & Kovalainen 2016, 142). Specifically, the phases of the foresight process were identified from the data. Although foresight processes varied across case companies and the phases often occurred simultaneously, they could be identified from each case.

Subsequently, the common themes were defined and named. This included identifying the essence of each theme and considering how they relate to the research questions and fit into the overall narrative. Each theme included sub-themes, that varied across case companies depending on their foresight processes. (Braun & Clarke 2006, 92.) The themes correspond with the sub-chapters in each case: *Organizing the foresight process*, *scanning the environment*, *making sense of the signals*, and *translating foresight into action*. After naming the themes, a short description of each theme was written to outline its content and ensure coherence (Braun & Clarke 2006, 92). Prior to writing the findings, notes were written about each case to outline how the foresight process was conducted within the company, including categorization of interview excerpts by theme (Eriksson & Kovalainen 2016, 142). This verified that the themes were correctly organized and facilitated the writing process.

The findings were then written as concisely and coherently as possible to provide a comprehensive narrative of each case. Selected interview excerpts were embedded within the narrative to illustrate the findings. (Braun & Clarke 2006, 93.) Attention was paid to maintaining anonymity, and the interview excerpts were translated into English with particular care to preserve both meaning and tone. In multiple-case research, within-case analysis is followed by cross-case analysis, which involves comparing cases to identify similarities and differences across cases (Eriksson & Kovalainen 2016, 142). The findings from expert interview were incorporated into the cross-case analysis.

Secondary data was utilized to support the interview data and for contextual purposes. Prior to the interviews, the researcher familiarized themselves with the companies by reviewing company websites and annual reports to gain a background understanding. The secondary data was used to write the contextual introductions of the case companies in Chapter 4. Furthermore, after the primary data was analyzed, the secondary data was reviewed thoroughly, seeking for information that could support or contrast with the interview data. Attention was paid to the company strategy, operating environment, future orientation, and references related to corporate foresight.

3.5 Evaluation of the study

Assessing the quality of the research is essential for ensuring that it has been conducted in accordance with academic standards. This sub-chapter evaluates the trustworthiness and ethical considerations of the study to strengthen accountability of the research and reliability of the findings.

3.5.1 Trustworthiness of the study

The trustworthiness of this study is evaluated based on the commonly utilized criteria created by Lincoln and Guba (1985, 301): *credibility*, *transferability*, *dependability*, and *confirmability*. Using explicit evaluation criteria enhances the transparency and enables a comprehensive assessment of the strengths and limitations of the study (Eriksson & Kovalainen 2016, 303).

Credibility refers to the extent to which the study accurately measures or explores what it is intended (Shenton 2004, 64) and whether other researchers could reach similar interpretations or agree with the claims based on the data (Eriksson & Kovalainen 2016, 308). Several strategies were applied to enhance the credibility of this study. Semi-structured interviews were adopted as a well-established method for collecting primary data. (Shenton 2004, 64–69.) The interview format enabled participants to freely express their thoughts and experiences, reducing the impact of predetermined assumptions. Most of the interviews were conducted in Finnish, the native language of both the researcher and the participants, minimized misinterpretations and ensured a shared understanding of key concepts (Tynjälä 1991, 393). The interviews were recorded to ensure accuracy, and when translating the data into English for reporting the findings, particular attention was paid to preserving the meanings of original statements, although minor differences in tone could be present. Participants were also given the opportunity to review and comment on the findings prior to publication to ensure accuracy (Lincoln & Guba 1985, 302).

Credibility was further strengthened through data triangulation (Lincoln & Guba 1985, 305) as the study combined multiple data sources and applied different theories (Eskola & Suoranta 1998, 69).

In total seven individuals, including two experts and five representatives from four companies, were interviewed. The combination of company and expert perspectives enhanced the credibility of the findings. In addition, secondary data, including annual reports and websites of the case companies, were used in the study. However, as companies do not explicitly disclose the use of foresight publicly, the secondary data primarily served a contextual and supportive role rather than providing direct evidence of foresight activities. Early familiarity and prolonged engagement with the research topic and the case companies prior to data collection helped to ensure that the interview questions enabled the collection of relevant and rich data (Shenton 2004, 65; Saunders et al. 2023, 218; Lincoln & Guba 1985, 301–303). Credibility was further enhanced through continuous reflection and external feedback during the research process (Tynjälä 1991, 393; Shenton 2004, 67–68). The researcher maintained a research diary documenting reactions, interpretations, and decisions (Tynjälä 1991, 393), and regularly received feedback from the supervisor and peers through thesis seminar and reflective learning diaries. These practices supported transparency, critical reflection, and tracking of decisions.

Transferability relates to how applicable the findings of the study are in other research contexts and whether the findings connect to prior research (Eriksson & Kovalainen 2016, 308). This was ensured by providing a detailed description of research questions, design, context, findings, and interpretations, allowing readers to assess the transferability of the study to other settings (Lincoln & Guba 1985, 316; Tynjälä 1991, 390; Saunders et al. 2023, 218). Although the case companies remain anonymous, relevant contextual information about the companies is provided, and other researchers can study similar companies by following the detailed descriptions. Furthermore, this study was conducted in a Finnish context, which should be considered when evaluating the applicability of the findings to other settings. Findings may differ in other companies or contexts, which reflects the context-specific nature of the phenomenon. The use of multiple-case study approach, including companies from different industries, enhanced transferability by providing findings that could be applicable in multiple contexts. In addition, the findings were discussed in relation to prior research in Chapter 5, which demonstrates their connection to existing literature.

Dependability describes the logicity, transparency and thorough documentation of the research process, which supports the trustworthiness of the study (Eriksson & Kovalainen 2016, 308). This was enhanced by providing transparent documentation of the research process and the methodological decisions made, including development of research questions, research approach, case and participant selection, data collection, interview process, and data analysis. These details allow future researchers to understand, and if needed, replicate the study (Shenton 2004, 71). It is however acknowledged that

variation may occur in the researcher, context, or even the phenomenon itself during the research process, thus requiring identical results upon replication is not realistic (Tynjälä 1991, 391). The operationalization table (Table 3) and the interview guides (Appendices 1 and 2) demonstrate the linkages between literature and empirical data and show how the interview questions emerged from literature. Additionally, maintaining a research diary throughout the study allowed the researcher to reflect on new information and refine theory and research questions when necessary.

Confirmability assesses how objective the findings are and whether the interpretations are connected in the empirical data rather than the researcher's subjective preferences (Eriksson & Kovalainen 2016, 308; Shenton 2004, 72). In this study, the findings are grounded in both empirical data and literature. The literature review aimed to capture the phenomenon comprehensively, drawing on diverse and relevant sources. Furthermore, the empirical part of the study is documented and supported by the operationalization table to demonstrate how the conclusions were reached. Chapter 3.4 provides a detailed description of data analysis and how the themes were developed. Semi-structured interviews and open-ended questions allowed the participants to provide detailed insights from their perspectives, and careful attention was paid to phrasing the interview questions in a neutral manner. Additionally, the research diary also helped to maintain reflexivity and an audit trail, where each stage of the research process was systematically documented, including how the data was coded, analyzed and interpreted (Lincoln & Guba 1985, 319; Tynjälä 1991, 393; Saunders et al. 2023, 215). This ensured that the research process remained transparent and decisions were traceable. While complete objectivity cannot be achieved, these measures strengthen the confirmability of this study. To further evaluate this study, the ethical considerations that guided this research are discussed in the next sub-chapter.

3.5.2 Ethics of the study

Ethics relates to doing good and avoiding harm (Orb et al. 2001, 93). Ethical considerations address questions of morality, and ethical guidelines assist researchers in considering ethical dilemmas and challenges that may arise throughout the research (Wiles 2013, 4–6). Ethics are a fundamental aspect of research, encompassing the entire research process from the relationship between the researcher and research subject to writing and publishing the report. Research ethics guide how the study is conducted and reported. (Eriksson & Kovalainen 2016, 64–65.) Research ethics are often primarily associated with empirical data collection, but they concern many other aspects of the study as well, including the relationship between the researcher and the participant, informed consent, voluntary

participation, confidentiality, as well as plagiarism. (Eriksson & Kovalainen 2016, 65–75; Suoranta & Eskola 1998, 52–53.)

Research ethics were carefully considered throughout the entire research process. This study follows the ethical guidelines of the Finnish National Board on Research Integrity (TENK 2023) to ensure good scientific practice. Participants were provided with a comprehensive overview of the study, its purpose, objectives and the type of information needed prior to data collection (Ghauri et al. 2020, 27). Informed consent and voluntary participation were ensured by sending each participant an *information sheet*, a *privacy notice*, and a *consent form* before the interviews. The information sheet outlined the purpose of the study the principles that guide data collection, and the rationale for participant selection (Eriksson & Kovalainen 2016, 72). The participants were also informed of their role in the study and how the data they provided would be used and presented. They were further informed that they could withdraw at any time without consequences. (Farquhar 2012, 57; Ghauri et al. 2020, 26.)

The privacy notice detailed how the data would be collected, handled, stored, and eventually deleted after the completion of the study (Farquhar 2012, 55), acknowledging the EU General Data Protection Regulation (GDPR, EU 679/2016). All data and back-up copies were securely stored in the university's Seafire, secured with a password (Farquhar 2012, 55). Only information that was relevant to addressing the research question was collected, and personal background information of participants was excluded from the data and consequently from the study (Eriksson & Kovalainen 2016, 74). A more detailed description of data management practices is provided in the Data management plan in Appendix 5.

Confidentiality forms one of the cornerstones of ethical research (Farquhar 2012, 55), which was ensured through the consent form. The consent form required participants to confirm their voluntary participation in the study. Participants were also asked to indicate whether the interview could be audio-recorded, with the assurance that the recording would be used solely for transcription purposes. They were further asked whether they wished to remain anonymous and whether their role could be disclosed. In this study, participants were referred to by pseudonyms, and the case companies likewise remain anonymous (Farquhar 2012, 57). Anonymity was particularly important due to the strategic nature of corporate foresight and its role as a source of competitive advantage. All contextual information was presented in a way that prevented the identification of the companies, and therefore the secondary sources were not directly cited in the study. Interviews were audio-recorded only with

the permission of participants. Furthermore, participants were offered to review the research results and comment on them before publication (Ghauri et al. 2020, 26–27).

The role of the researcher in this study was to remain neutral and maintain a certain distance to the research subject (Eriksson & Kovalainen 2016, 66). Therefore, the researcher formulated the interview questions and guided the interview process, but the aim was to listen and understand the participant's perspective. Accordingly, the researcher carefully considered how the research questions were phrased to reduce influence on participants' interpretations and avoided directing their responses in any way (Ghauri et al. 2020, 27). It is also the researcher's responsibility to ensure that the research findings are reported honestly and accurately, even if the findings differ from initial expectations (Farquhar 2012, 56). In this study, careful attention was paid to maintaining an objective perspective. The analysis and reporting of the results were conducted as comprehensively as possible, relying on the interpretation of the empirical data rather than the researcher's personal opinions. As most of the interviews were conducted in Finnish, the interview excerpts were translated into English with careful attention to preserve both meaning and tone. To minimize the potential influence of researcher bias, the study followed a hermeneutic circle, which allowed the researcher to move between theory, empirical data, and their own knowledge and potential biases.

Generative artificial intelligence was used in this study as a supportive tool to facilitate the research process. Artificial intelligence was used to assist in planning of the study, to enhance the clarity of the language, and to transcribe the audio-recordings of the interviews. Artificial intelligence was only applied to rephrase sentences written by the researcher and not by other authors. All suggestions provided by artificial intelligence tools were critically assessed and edited by the researcher. Importantly, artificial intelligence was not used to produce any text directly for this study, and all textual content originates from the researcher. Moreover, all empirical data was processed solely by the researcher to ensure confidentiality and compliance with research ethics. No personal data or interview material was entered into artificial intelligence tools. A detailed description of the artificial intelligence tools utilized, and their specific application is provided in Appendix 6 in compliance with the policies of Turku School of Economics. Having addressed the trustworthiness and ethical considerations that guided the study, the following chapter presents the empirical findings.

4 Findings

This chapter presents the collected and analyzed data from the four case companies. The findings are presented separately for each case and structured around the themes which were formed through the data analysis. A synthesis of the findings is provided in chapter 4.5 where the company results are compared in a cross-case analysis, and the expert perspectives are also presented.

4.1 Case company A

4.1.1 Organizational context

Company A is a Finnish multinational group consisting of several subsidiaries operating globally across multiple business areas. The company operates primarily in the business-to-business sector, offering sustainable solutions through a broad business portfolio. Sustainability and innovation are strongly emphasized across its operations. The business can be characterized by a complex organizational structure and decentralized decision-making as each business area has a degree of autonomy. The industry is capital intensive and requires long-term planning as investments are expensive and production processes are lengthy. Therefore, investments need to be planned years or even decades in advance. Because the company relies on economies of scale, the industry is in some respects structurally inflexible.

The operating environment of Company A is complex and characterized by rapid change and increasing uncertainty, particularly in recent years. Changes in the industry may not be as rapid as in consumer-facing sectors but often they are even more remarkable. The company is affected by geopolitical tensions, trade disruptions, cyclical business environment, climate change, emerging technologies, as well as evolving stakeholder expectations and policies. Furthermore, the company is dependent on specific raw materials which makes it particularly vulnerable to supply chain disruptions and price fluctuations.

Two representatives from different levels of the company were interviewed, which offers complementary insights into how foresight is utilized both at the strategic and operational levels of the organization. Interviewee 1 has worked in the company for over three years and currently works as a strategy manager within the group-level strategy team. The team is responsible for developing the group-level strategy and the interviewee is therefore closely involved in the company's foresight activities. Interviewee 1 has developed foresight expertise through practical experience in their current and previous roles. They explain the future-oriented perspective of decision-making accordingly:

Whenever you start making plans for the future, your decision-making is based on things that you cannot necessarily verify in advance; that those things will actually happen in exactly that way. (Interviewee 1)

Interviewee 2 has worked at the company for twenty years in various roles and currently works as the director of integrated business planning within one of the company's business areas. In this role they are responsible for coordinating the alignment of sales, production, supply chain, and raw material procurement planning. Interviewee 2 was not familiar with the term foresight explicitly, and the concept was clarified during the interview. Nevertheless, it became evident throughout the interview that foresight-related practices form a substantial part of their work.

4.1.2 Purpose and organization of foresight

In Company A, foresight is embedded in the company's planning and strategy processes rather than operating in a dedicated unit. Foresight is conducted across multiple contexts, including long- and short-term strategic planning, business planning, and risk assessment. Through foresight, the company aims to gain a better understanding of how its market environment will evolve in the future. Although foresight is integrated into the strategy and planning processes at Company A, there is no clearly organized process for foresight itself; rather, foresight is utilized at different stages of various risk management and planning processes, and as a result, foresight is somewhat fragmented.

Both the company's annual report and interviews reflect a systematic approach to monitoring changes in the environment which serves as a basis for strategic decision-making. The company tracks megatrends such as urbanization, population growth, technological change and shifting consumer needs. It identifies trends as well as risks and opportunities in their environment, assesses their implications and develops action plans. Furthermore, they utilize innovations as one way to respond to the environmental changes.

The two interviewees represent foresight as practiced at the corporate strategy level and at the business area level. Differences in foresight understanding are observable between these levels, which may reflect both variation in how foresight has been embedded across the organization and the overall maturity of foresight practice within the company. Nevertheless, foresight is considered essential for the company:

Foresight work in itself is already everything; we are trying to form as clear a picture as possible of an uncertain future based on the limited information, we have available and based on that develop the best possible strategy for us. (Interviewee 1)

The time horizon of foresight follows the company's planning processes, which are organized across several time windows. Interviewee 2 emphasizes that understanding the time dimension is essential:

The time dimension is in my view an important thing to understand when discussing foresight, to understand what kind of foresight we are actually talking about.
(Interviewee 2)

Strategic planning covers approximately the next five years and assesses how the operating environment and markets will develop over the longer term. Annual planning is more detailed and focuses on the near future, such as customer-specific volumes and market price trends. Tactical planning covers a few months and is operational in nature. In investment decisions, the time horizon can extend up to 10–15 years, as the construction of production facilities requires long-term planning. These different time frames are not isolated from one another; rather, longer-term foresight informs shorter-term planning and vice versa.

As a concrete example of how foresight is conducted alongside planning, Interviewee 1 highlights the company's long-term economic forecasting process, which aims to outline what the company's business will look like in five years. The process is comprehensive with clearly defined areas of responsibility and combines top-down and bottom-up approaches. At the group level, the strategy team coordinates the process from the top-down and communicates about the process well in advance, defining common economic assumptions, such as economic growth forecasts, raw material prices, and inflation, that all business areas use. The group level also sets guidelines, schedule, and requirements for what kind of information is needed and in what format:

We act a bit like a quality assurer and ensure that everyone approaches things in the same way and work toward a unified approach. (Interviewee 1)

In practice, this process proceeds in three stages. First, the group level prepares a joint five-year economic outlook on macroeconomic figures, and this information is then shared with others throughout the organization. Next, the group level establishes cost premises regarding production and raw material costs. Based on these, each business unit prepares its own five-year financial forecast. Once each unit has prepared its own forecast, the group level steps in again to consolidate the results into a single financial forecast for the entire company.

Foresight has a two-way role in this process. Foresight insights inform the macroeconomic estimates that form the basis of the forecasts. At the same time, the estimates produced during the process feed into scenario work and strategic planning. The outcomes ultimately inform a range of strategic decisions and guide the allocation of resources across business areas.

A wide range of people across the company are involved in preparing this financial forecast and the related foresight process; in total, over a hundred people participate in the various stages of the process. The key functions are strategy, finance, and sales. The strategy function is responsible for overall picture and the plan. The finance organization ensures the quality and consistency of the figures while sales provide information directly from customers and the market. Procurement, production, and other functions are also involved but to a smaller extent. However, the responsibility for foresight is to an extent diffuse. In practice, everyone involved in foresight activities is expected to monitor news flows in their own field and assesses their implications, while at the group level, everyone must have at least some understanding of all business operations.

An important distinction for Company A is the difference between forecasting and foresight. The company engages in a great deal of quantitative forecasting, that is, using statistical models to predict the prices and demand for products and raw materials, which reflects the nature of its industry. Foresight, trends, megatrends, and drivers are used to support quantitative modelling and to gain a broader understanding of, for instance, the change forces affecting demand and how it might develop. On the other hand, economic figures are also used as inputs, for example, in scenario planning and in considering various future development paths, which aids in strategic decisions. The company generally aims to model foresight insights using economic figures, which on one hand facilitates comparison and decision-making but on the other can blur the boundary between foresight and forecasting. This reflects the company's industry and strongly analytical approach to foresight.

Foresight is recognized important in the company, and its role is expected to remain relevant in the future. Both interviewees highlight artificial intelligence (AI) as major opportunity for foresight activities in the future. While the process would not necessarily remarkably change, AI would enable more efficient and comprehensive foresight, as well as more accurate anticipation based on historical data and trends:

The quality of foresight work will grow considerably, and it creates an entirely different, a new kind of foundation for developing strategies. (Interviewee 1)

Interviewee 2 also highlights the potential of digital twins – transforming the operating environment into numbers and data would significantly facilitate simulations and scenario planning.

4.1.3 Scanning the environment

Although Company A does not have a unified and clearly defined foresight process, the distinct phases of the foresight process can be identified within its foresight activities. Environmental

scanning in the company is broad in scope, and it takes place formally as part of planning processes at both group and business area levels, but also informally as each person involved in foresight monitors news and developments in their own field independently.

The company monitors its operating environment at several levels, encompassing changes across its business areas and the activities of its competitors. The company closely follows key figures relevant to its business, such as raw material prices, production volumes, and demand, as well as forecasts for these, which are not in themselves foresight information. However, over time, the company has developed an understanding of the market drivers behind the macroeconomic indicators, which it scans to form a better assessment of those. In addition, the company also monitors industry-specific trends, global megatrends, geopolitical risks, and regulatory developments, which are also reflected in its annual report.

Information is collected from a wide range of sources. In addition to news outlets, the company utilizes public sources, such as national trade statistics and competitors' reports, as well as licenced data from external providers. Alongside these external sources, the company considers it important to conduct own research and analysis rather than only relying on external data:

If you rely solely on these external service providers to do that, then you might lose a bit of your own perspective and not be able to form your own view on the matter.
(Interviewee 1)

Direct engagement with stakeholders, particularly customers and suppliers, therefore constitute an important source of information and complements the externally sourced data. The sales department, which works at the customer interface, plays a key role when information is needed directly from the market. They can gather information directly from customers and map out their needs. The diversity of sources allows the company to compare sources and form its own perspective and understanding.

However, identifying essential information from a large volume of data can be challenging during this phase:

There is a lot of [–] noise in the market and in the news. There's a lot of that kind of clatter, so you have to try to distinguish which information is relevant for us. This is a very important part. (Interviewee 1)

Over time, the company has developed a good understanding of what its most important market drivers are; for example, rising prosperity, the growth of the middle class, and digitalization are recognized drivers behind the consumption of certain products. Having identified these drivers, the company knows to follow and evaluate these in more detail. At the same time, the company

recognizes that the operating environment is not fully predictable and that new disruptive forces may emerge, altering existing market dynamics. It is thus important to be prepared for unexpected changes that cannot be predicted in advance.

The key emphasis of this phase in Company A is scanning the environment broadly and from multiple perspectives, drawing on both internal and external sources. The company has over time identified the market drivers and indicators it considers most relevant and monitors these systematically. The macroeconomic figures serve as the primary starting point for environmental analysis, but the company's focus extends beyond the figures themselves to the underlying drivers that explain them, such as demographic trends, urbanization, and shifts in consumer behavior. Alongside this macroeconomic orientation, the company also monitors industry-specific developments, geopolitical risks, competitor activity, and regulatory change, reflecting the breadth of factors that can affect its operating environment.

4.1.4 Making sense of the signals

Company A seeks to form a comprehensive view of the data it collects through scanning by developing an understanding about the present and forming a vision for the future. Simultaneously identified changes in the environment are monitored and existing views are updated as new information emerges. Interviewee 1 summarizes what is needed to form a comprehensive view:

Being able to extract precisely those important things from that massive mass of data and convert them into such views and assessments. (Interviewee 1)

Before forming a view, the company evaluates the reliability of the information gathered. Because data is available from many sources, they first compare the information from different sources and examine how well it aligns with historical trends, assessing whether it seems like it could happen.

Individual signals are generally not sufficient to draw conclusions. Instead, multiple signals related to the same phenomenon are needed before the change is considered relevant. The company therefore monitors identified changes over time and waits for signals to accumulate before considering them significant and taking action. To form a view, the company analyzes observed phenomena on multiple levels and seeks to understand the causal relationships between macroeconomic indicators and the underlying drivers that explain them.

As part of making sense of the signals, the company also assesses its own position relative to competitors based on publicly available information, which also helps assessing the significance of change. By comparing its own performance to that of competitors, the company can assess where it

stands in the market and what that means strategically. Understanding its position in the market helps to interpret changes within a broader context, as changes affecting the entire industry often have a similar impact on competitors as well.

The company develops scenarios based on the insights, which form an essential part of different planning processes. In recent years the company has developed its scenario practices and sought to increase understanding of scenario work throughout the company. At the same time, systems and processes have also been adapted to support it.

Scenarios are developed at both the group and business area levels in connection with various processes. Scenario planning is utilized within the company across different time horizons, ranging from longer-term, multi-year periods to shorter, one-year time frames. As in economic forecasting, the group level often defines common macroeconomic estimates, such as economic growth, inflation, and exchange rates, so that the scenarios created at different levels can be compared with one another.

In practice, scenario planning involves developing alternative development paths for specific phenomena, markets, or potential crises, and assessing what each mean for the company. The scenarios include the macroeconomic estimates, but also the underlying market drivers, trends, and megatrends. The purpose is to outline in advance what possible futures might look like, which reflects the company's desire to broaden its perspective on the future. This supports planning activities by ensuring that decisions are not built on a single assumed future but on multiple possibilities.

4.1.5 Translating insights into actions

After developing the scenarios, the company assesses what the identified development paths mean for its operations. This is a central step between insights and action because the company examines how it is positioned within those scenarios and consequently what it can do. In Company A, it is recognized that many of the changes in the environment are beyond its control, such as geopolitical shifts and macroeconomic fluctuations, and that these changes affect all competitors in the same way. Therefore, emphasis is placed on identifying which actions are worth planning for in advance and to what extent.

Before building options of action in each scenario, the company seeks to assess the implications of the scenarios as thoroughly as possible, including effects that extend beyond the immediate and most visible consequences. For example, if a crisis materializes in a specific country, the company considers not only the direct impact on its facilities there, but also what happens next: if that country becomes an unacceptable trading partner, where would the excess products go? In practice, the

impacts of different scenarios on the company are often illustrated using financial figures, which makes the implications more concrete and supports decision-making between response options.

Then to further ensure preparedness and agility, the company develops alternative courses of action for different scenarios. The scenarios and options are illustrated in a matrix, where scenarios are displayed in columns and the options in rows. The company also assesses the probabilities of different scenarios and determines at what point it would act if a scenario began to materialize. Based on the probabilities, it evaluates whether a given scenario is likely enough and economically attractive enough to be profitable for the company. This supports both a way to visualize the options more clearly and to identify preferred scenarios.

If a scenario appears likely and economically attractive, the company may begin to actively work towards it, for example expanding to a new market. Throughout this process, however, the company strives to keep an open mind toward alternative futures and avoid committing too strongly to a single desired or expected future. This means accepting that predictions may not unfold as expected and that the assessments can prove wrong. By maintaining openness, the company consciously diversifies risks and builds readiness to act in a range of scenarios. Since foresight insights are inherently uncertain and surprises are always possible, flexibility is essential.

Preparing for different scenarios and creating options for action in advance has several purposes. It improves the company's ability to react quickly when an anticipated scenario begins to unfold, as the options have already been thought through:

There are quite a few of these “what if” situations, but at least we've gone through the thought process in advance and written things down very concretely on paper, so that if that situation actually materializes, people across the organization are more aware that we have at least preliminary plans. (Interviewee 1)

It also prepares the organization more broadly by ensuring that people across the company are aware of the changes happening in the environment. Furthermore, the company acknowledges that it has limited ability to influence the external changes, the focus is on what it can control:

What can companies do when the world has become like this – they can specifically design their planning processes in a way that they are able to adapt to rapid and unexpected changes. (Interviewee 2)

The company has previously been able to draw on scenario work done in advance when anticipated developments materialized. This enabled adaptation and ensured business continuity even in unexpected situations.

Foresight insights are also utilized in investment decisions. Because the industry is capital-intensive and investments are done years in advance, scenarios help to plan investments and enable to assess how profitable the investment would be in different market conditions and alternative development paths globally.

Similarly, foresight influences assessments of market attractiveness, portfolio choices, and the allocation of resources across different business areas. At the operational level, it supports optimization decisions related to production. Foresight insights can also serve as a starting point for innovation, as identified market opportunities are refined into product or service ideas that are tested on a small scale before scaling up. This process typically includes assessing product-market-fit, conducting a business case, piloting and discussions with customers. The process can take years before a decision is made on whether to scale up or discontinue it.

However, foresight insights do not always lead to immediate action, nor is that always the intention. Reasons can vary from not being able to react to the changes or reacting is not considered worthwhile:

It also happens quite often that nothing comes of it [foresight insights], we acknowledge that things are changing, but either we cannot do anything about it, or it is not reasonable for us to do anything despite the change. (Interviewee 2)

Rather than acting immediately, the company typically builds the strategic options for different scenarios and continues following the developments, acting only when it becomes necessary:

As time goes on, there comes a point when a choice between options A, B, or C has to be made, because time has passed and we have reached a critical point where a decision has to be made. (Interviewee 2)

In practice, decisions and actions are often triggered by a concrete event that confirms what had been anticipated. The commitment to action occurs after observable evidence rather than based on predictions. This can be seen as reactivity, but at the same time a deliberate approach to managing uncertainty.

Several factors influence whether foresight insights are ultimately translated into actions in Company A. Involving the right people and expertise from the beginning is important. Foresight spans across different business areas and levels of the company, which ensures that relevant information and expertise is obtained. However, is unclear how widely foresight is understood across the company, as for instance Interviewee 2 was not familiar with the term. This may suggest that foresight-related activities are carried out more broadly within the company than they are explicitly identified as foresight.

Management support and clear decision-making structure are also essential. Without the support of decision-makers, who have the authority and willingness to act, foresight is unlikely to lead to actions. However, insights might still fail to translate into action if their importance and benefits cannot be communicated convincingly. This highlights the role of communication and change management as critical factors enabling the use of foresight insights. Furthermore, the management often have many competing priorities, and therefore the insights need to be presented in clear and digestible format, which enables the decision-making:

If you come in with a big data dump or just show some numbers without explaining the background and what the core of the analysis is, they won't be able to make decisions.
(Interviewee 1)

Alongside clear presentation, concrete evidence is also important. Analysis that is based on already observable trends is more convincing than insights that are entirely abstract. The company addresses this partly by illustrating foresight insights in financial figures, which makes the insights more tangible. This can however narrow the perspective of what is considered as it might not be possible to quantify all phenomena. Additionally, the company monitors observed changes over time to find more evidence of the changes.

Analytical expertise and available resources can also limit how deeply foresight can be conducted, as not all data can be analyzed in equal depth. This requires prioritization and focus on the most relevant information. The potential of AI could be significant in this regard, as it would enable a more comprehensive analysis in less time with less resources and therefore strengthen the company's ability to translate insights into actions.

While foresight in Company A lacks clearly defined process of its own, it is deeply embedded in the company's planning and decision-making. The company scans and analyzes its environment extensively, prepares for different changes through scenario work, and applies foresight insights to many decisions through concrete evidence and clear communication. The company combines foresight insights with quantitative forecasting, which appears well-suited to its needs and reflects the demands of its industry context.

4.2 Case company B

4.2.1 Organizational context

Company B is a Finnish cooperative group operating across multiple consumer-facing sectors. The group operates primarily in the Finnish market with some international operations and holds a

significant market position across its core business areas. It consists of multiple cooperatives with strong regional focus and a support organization that offers expert services for them and is responsible for the group's strategic direction. Decision-making is decentralized as the cooperatives operate with significant autonomy in their markets. The support organization's activities focus on assortment, concepts, and service development, while daily operations and investment decisions remain the responsibility of the individual cooperatives.

Company B operates within consumer markets, where change is driven by shifting consumer trends, polarization, demographic trends, digitalization, and increasing competition. The industry clockspeed is relatively fast, which requires the company to monitor and respond to change on an ongoing basis. Furthermore, as the group is geographically dispersed and involves various business areas, the same trends may manifest differently or even have conflicting effects across operations.

The company demonstrates a strong ability to recognize and respond to changes in its operating environment. The annual report and strategic direction emphasize the need for continuous development to remain relevant in the markets, which requires building new competences and adapting to change. The company has an active approach to this, and they are focusing especially on sustainability and making the consumer journey more flexible through digitalization and new technologies. This is reflected by multiple changes implemented through 2025, ranging from renewing existing operations, updating product lines to entirely new ventures within their business areas.

The interviewee from Company B works as a business development analyst in the support organization's market and consumer insights team, which functions as an internal support unit serving all business areas of the group. Their primary responsibility is understanding the market and consumer needs, with megatrends, trends, and foresight forming one aspect of that work. Interviewee 3 has worked in Company B for six years and has spent their entire career in consumer insight. They have developed foresight expertise through practical work in Company B. Whereas before their work has focused on understanding present consumer behavior, a future-oriented perspective requires observing how consumer behavior might change in the future, which draws on sources beyond asking the consumers.

4.2.2 Purpose and organization of foresight

Foresight in Company B is organized as a support function for all the cooperatives and business areas, that they draw on when needed. Unlike in some companies, in Company B foresight does not feed

into strategy but is instead utilized when business areas or cooperatives are making independent decisions about future concepts, strategy updates, or service developments. While foresight is one part of the market and insight team's work, it is primarily the responsibility of a single person – the interviewee – who produces foresight insights and makes indicative suggestions and recommendations to the business areas or cooperatives. Decision-making and implementation, however, remain fully with them:

We're more of a provider of information, and then the business areas or cooperatives use it in their own way, putting it into practice and making decisions based on it.
(Interviewee 3)

Although foresight has formally been integrated to the team's responsibilities, it lacks organized structure and established routines. This is partly because of the company's structure consisting of cooperatives and different business areas, which makes it difficult to build a unified foresight practice. Because foresight is mainly based on needs, it can be considered reactive by nature, and therefore it has not developed into a continuous practice. Foresight is also fragmented across the company, as business areas and cooperatives can conduct foresight independently, and according to the interviewee, the strategy unit purchases foresight knowledge from external sources. As Interviewee 3 explains:

Our team is the kind that does this in a more systematic way all the time and then supports all these other units in small ways. (Interviewee 3)

Foresight activities are initiated in response to requests from business areas and cooperatives, meaning that the frequency is irregular and depends on the perceived need. Furthermore, in business areas where more change is happening, foresight may be conducted more often while in more stable business areas it is done less. The current process can be described accordingly:

It's not usually a continuous process, but rather – at least for now – a rather sporadic one; that is, when the need arises to make a change, that's when people want to understand what the future might look like. (Interviewee 3)

The focus of foresight is also limited in multiple ways. Because foresight is needs-based, it tends to seek answers to specific questions or topics, which can limit what is scanned from the environment. Each foresight project varies considerably in terms of focus and extent, depending on the requesting unit, industry and topic at hand. This makes it difficult to build a comprehensive understanding of the entire group's operating environment. The support organization's limited influence further shapes the scope of foresight.

The focus of foresight is strongly consumer-oriented, which reflects the company's business context. Foresight focuses on understanding consumer behavior and anticipating how consumer preferences might evolve in a given business area. The company operates across different regional and business areas which requires broad understanding of the different operations.

Due to the fast-moving nature of consumer markets and focus of foresight, the time horizon of foresight activities is relatively short. The company focuses on consumer trends that typically last around seven years, but also follows some megatrends, usually in time horizon of approximately ten years. However, the time horizon and frequency of foresight vary across business areas depending on the pace of change and each area's strategic planning cycle. As of now, the company does not have foresight practice focused on longer term, which is to an extent determined by their context. The interviewee would hope to extend the time horizon to complement the shorter perspective. More broadly, Interviewee 3 acknowledges that the current foresight capability is insufficient:

For now, it's more like our ability to anticipate the future lies with this team – and, really, with me to some extent. So, even in an organization of this size, that's a bit too limited a capability. (Interviewee 3)

A more organized and systematic approach to foresight would therefore be beneficial. In an ideal situation, the interviewee envisions having a dedicated foresight function, which would consist of members from different business areas:

We do not currently have a continuous monitoring done solely for the purpose of foresight. The goal, however, would perhaps be to move towards a continuous, organization-wide approach to foresight that would involve participants from different parts of the organization. (Interviewee 3)

This would enable a broader perspective of the company's operations and allow signals to be collected more systematically. A shared foresight function would also help identify common areas of change across different business areas, making it easier to build a collective view of the future. When different parts of the organization develop a shared understanding of what is changing and why, decision-making could become easier and responses coordinated across cooperatives and business areas.

4.2.3 Scanning the environment and making sense of the signals

In Company B, scanning the environment and interpreting the collected signals are closely intertwined and difficult to separate in practice. They occur simultaneously rather than as two sequential steps, which is why they are discussed together in one sub-chapter.

Foresight begins with an examination and analysis of the operating environment, typically initiated by a request from a business area or cooperative, for instance when they are updating their strategy for the upcoming five years. At the group level, certain megatrends and change forces have been defined as shared starting points that guide foresight work across all business areas. The interviewee has also created their own trend framework, which is available for all business areas to use. It describes long-term change at a general level across industries globally and includes key megatrends as well as consumer trend drivers, currently extending to the early 2030s. In practice, when for example a business area wants to understand how changes are affecting them, the interviewee examines the particular industry through the lens of this framework and identifies which megatrends and trend drivers are most prominent and what can be identified internationally in that industry.

The requests set the frame for foresight and define the purpose of it. Because the requests and industries across business areas vary, the depth and scope of scanning vary considerably; from needing to focus on a single market segment or product category to a broad examination of an entire area over a longer time horizon, which requires a more extensive background work. Scanning is not continuous and it happens when someone needs the information, as defined by how foresight is organized.

Foresight information is gathered from multiple sources and the company monitors both domestic and international markets as well as competitors. For example, social media listening has become a newer source of signal information. The company's own consumer and customer data also serves as an important source for identifying changes in purchasing behavior. While scanning is not continuous, the company's knowledge and signal base grows after each project:

It [data] accumulates over time through new projects conducted for different business units, and the same information can be refined for various purposes. (Interviewee 3)

Although foresight is project-based, the interviewee recognizes that this approach also gradually builds a better understanding of the group's operating environment, revealing connections between business areas and potential synergies between them. The growing knowledge base benefits the requesting business area but also future foresight work across the company.

Benchmarking plays a significant role throughout the entire foresight process, which demonstrates the iterative and overlapping nature of the different phases. The company actively looks what others are doing domestically and internationally to identify relevant changes and assess whether they need to react. Domestically, the company for instance monitors competitors and other actors in the markets, examining what they are doing differently and which trends they are responding to:

If we see that someone is growing really strongly, then we start to break down the recipe for that growth: what might be causing it, is there some underlying change that aligns with that growth or can explain it. (Interviewee 3)

By examining reasons behind others' growth, the company can identify changes it should also consider. Internationally, Company B looks at whether global players have already successfully responded to an identified change, which serves as a way of verifying its relevance:

Quite often, [–] we identify something that already appears to be working elsewhere, rather than deciding ourselves that we want to pursue something that no one has successfully tested yet. Instead, it usually comes through international benchmarking – that's how it [relevance of signals] is identified. (Interviewee 3)

The company typically looks for concrete evidence for an identified change rather than making independent judgements. This reduces uncertainty but can also reflect a reactive approach as the company does not independently detect and act on weak signals ahead of the market.

In Company B, the decision to act on identified changes can already emerge during the scanning and interpretation phases. This is closely linked to benchmarking, because when the company identifies that others are growing or responding to a certain change, it often simultaneously means that they should not only investigate the change but also respond to it. Thus, benchmarking also works as a way of triggering action:

If we notice that someone is growing strongly either globally or in our market, we try to understand the reason behind it and that becomes the trigger for us to make changes, for example to our product offering, communications, or overall concept. (Interviewee 3)

Based on the collected signals, the interviewee builds an understanding of the present situation and view of the future, which is updated if the situation changes. Once the trends and megatrends are collected, they are utilized to explain what is happening in the industry currently and how it might evolve in the future. The megatrends and trends help identify the underlying change drivers that shape consumer behavior:

We then use these megatrends and trend drivers to describe the key changes in consumer behavior. We look at how these are currently manifesting in [the relevant sectors]: how concepts are changing, whether the sector is likely to shrink or grow, and from that we build the future view. (Interviewee 3)

The interviewee does not explicitly construct scenarios, but the process involves considering alternative development paths and asking what the industry might look like under different conditions. This requires examining identified megatrends and trends on a deeper level and assessing their combined implications for the business area or cooperative in question.

4.2.4 Translating foresight into actions

Once a future view has been constructed, it is shared with the relevant cooperative or business area, sometimes involving recommendations about what to pay attention to. As the interviewee produces the insights but does not participate in decision-making, they have limited visibility into what happens after this point. Nevertheless, the management makes the first assessment of what is done with the insights. The foresight insights help the business areas or cooperatives reflect on how the identified changes affect them, with central questions focusing on what changes should be made to their current portfolio, what their concepts and services might look like in the future, and what therefore needs to be developed to remain relevant within the time horizon under examination.

Foresight can inform a range of decisions and actions. It is directed towards influencing concept development, communication, and product assortment, and can therefore lead to changes in product range, chain management, the customer purchasing journey, partnerships, and strategies, but also market expansion. When the company decides to respond to an identified change, the direction is typically set through strategy, which outlines the exact actions to be taken. These responses are also communicated externally through its annual report and website.

The annual report reflects this ability to analyze the operating environment and adapt to changes by highlighting multiple changes they have implemented throughout the year. The company has also been able to direct its customers in a desired direction through implemented changes, which can be seen as a way shaping the future rather than only reacting to it. However, foresight is not explicitly mentioned in the annual report, and as the interviewee noted, it can be difficult to identify which changes have resulted directly from foresight insights.

Distinguishing what changes have resulted directly from foresight can be partly because the interviewee produces the insights but does not participate in the decision-making, but also because it is generally difficult to trace what has influenced specific decisions. Similarly, the changes might not happen immediately but can take a long time to be implemented.

The company often seeks further validation for possible responses and changes through testing. It does not immediately commit large resources, and testing begins on a small scale, which informs whether the changes are worth pursuing more broadly. Ideas for testing often come from international benchmarking where the company has examined how others have already responded to a change and which solutions and concepts seem to be working successfully elsewhere and uses these as a basis for its own testing.

Testing typically begins within a single cooperative or area, and if the results are positive, the changes may be expanded to other areas, thus testing also serves as a way of concretely implementing foresight insights across the organization:

They may start testing significant changes to the selection or introduce something that we see as likely to become more important in the coming years. The idea is to test it by adding it to the selection or modifying it slightly and then observing what kind of effects it has so that it can later be justified. (Interviewee 3)

In Company B it is essential to gather evidence and back claims with concrete data for foresight insights to result in concrete actions. The data not only verifies the relevance of the identified changes but also helps to convince the decision-makers:

They [the management] certainly look for very concrete examples of what should be done in light of foresight insights. (Interviewee 3)

Furthermore, how the insights are presented to the decision-makers also matters. The interviewee emphasizes that insights must be thoroughly processed and refined before being shared. The insights should not remain at a general or theoretical level but must be tailored to the specific context and audience. According to the interviewee this is essential even if foresight would be done continuously and by a large team. This allows the decision-makers to make more informed decisions.

Several factors can also limit the translation of foresight insights into actions. Resources form a key constraint as, according to the interviewee, foresight is done at such a small scale. Foresight is mainly conducted by a single person alongside other responsibilities, and they serve all business areas and cooperatives, which can sometimes require prioritizing. The interviewee is also unable to participate in decision-making based on the produced foresight insights, which would be beneficial.

Furthermore, the complex company structure and decision-making are another barrier to implementing foresight. Decision-making is fragmented across multiple levels, and driving group-level change is particularly difficult as it requires consensus among the cooperatives. Achieving consensus can however be difficult, because the cooperatives operate in different regional areas, and the same trends might not affect them in the same ways. There have been situations where a significant opportunity has been identified but could not be pursued because not all cooperatives agreed of its importance. Therefore, when a change is to be implemented at the group level, it is taken to group management where all cooperatives are represented – which further highlights the importance of concrete evidence to support the proposed changes:

Even small changes that are introduced need to be justified with data before they can be implemented more broadly. (Interviewee 3)

Despite these challenges, the company demonstrates an ability to adopt to the changing environment and consumer preferences by implementing concrete changes. This is largely enabled by the nature of its business areas, where new ideas can often be tested on a small scale without requiring large investments. Making foresight actionable in Company B requires finding concrete evidence to support the insights. Benchmarking and testing serve as the primary ways for concretizing foresight insights and justifying responses before broader implementation. Tailoring insights to the specific context and audience is also essential for them to be understood and acted upon.

Foresight in Company B does not yet fully meet the organization's needs in terms of scope and systematicity. It is currently conducted mainly by the interviewee as a support practice, which limits the continuity of foresight work. The complex organizational structure and decision-making further complicate translating insights into actions especially at the group level. Consequently, there are plans to develop a more systematic and organization-wide approach to foresight in the future. This could enable an ongoing and thorough practice that could better support the company across all levels.

4.3 Case company C

4.3.1 Organizational context

Company C is a Finnish service group operating across multiple business areas within the domestic market, offering services to both private and corporate customers. The group consists of nationwide and regional companies, which results in decentralized decision-making structure. The company's operations are focused on risk management and the assessment of uncertainties within a highly regulated operating environment, which makes understanding long-term developments and emerging changes a key part of its operations. This is reflected on the company's website through emphasis on preparedness, and in its reporting through extensive risk assessment.

The company's operations are affected by economic uncertainty, changing regulation, technological development, and cybersecurity risks. In addition, broader societal developments such as demographic change, ageing population, urbanization, and transformation of work influence the company's operations and customers. Due to the nature of the industry, the company benefits from continuously anticipating changes affecting its customers and the broader operating environment, as these directly influence customer needs, risk profiles, and demand for services. This is reflected in

the company's active communication on risks and societal changes to inform customers and raise broader public awareness.

The interviewee from Company C has worked in the group for over twenty years. Currently they work as the foresight and market intelligence manager within the group's strategic function. They are responsible for market analysis and strategic foresight at the group level, including implementation of foresight and related practices. Interviewee 4 has developed foresight expertise through both practical work and formal education and has continued to develop their expertise through professional networks and collaboration with other foresight practitioners, as well as independent familiarization with the topic.

4.3.2 Purpose and organization of foresight

In Company C, foresight is purposefully integrated into the group-level strategy process and decision-making. Foresight was integrated within the strategic function because it was considered the most effective location for it to influence decision-making. An alternative would have been to link foresight to innovation activities or product development. While foresight is currently utilized to some extent in those areas as well, its primary aim is to serve the strategy process and its needs. In addition to group-level foresight, individual companies within the group can also conduct foresight independently.

The purpose of foresight in Company C is to ensure that decision-makers have an up-to-date understanding of the operating environment, which enables them to make informed decisions when needed. Moreover, foresight helps to identify strategic competitive advantages that will enable the company to succeed in the long term. Within the strategic function, foresight is regularly on management's agenda, which keeps future developments visible and relevant in decision-making.

Foresight in Company C is continuous rather than episodic or project based. This was also a deliberate choice to ensure foresight can achieve its purpose. The interviewee explains that if foresight was conducted only occasionally as a separate project, it would remain temporary and unlikely to lead to action:

It's not the kind of thing where you just switch on the long headlights once a year and then switch them off again, rather the aim is to make foresight activity continuous and longitudinal. (Interviewee 4)

In practice, continuity means that the company monitors its operating environment regularly at multiple levels, updates its views of the current and future state as situations evolve, and integrates

foresight into the rhythm of strategic work. It is conducted continuously across three time horizons: operational, tactical, and strategic. These provide a simple framework for monitoring change and enable a comprehensive view of both short- and long-term developments in the environment. In practice however, the extent and frequency of foresight activities depend on the participants' other responsibilities, as foresight forms only one part of the participants' broader roles.

Foresight has been planned from the beginning and its organization in Company C has been divided to three levels: ownership, participation, and knowledge utilization. Ownership forms the most critical aspect of organizing foresight within the company. According to the interviewee, there has to be a clear ownership for foresight, its development, management, and adequate resourcing:

If ownership is distributed across too many places, it often means that no one actually takes responsibility. (Interviewee 4)

The second level concerns who participates in foresight, which has led to the development of a foresight network involving people across the company to gain a wide perspective. Foresight is thus embedded in the roles of selected individuals at expert level. This is also partly a consequence of resource constraints, as it is not feasible to have people whose sole responsibility is foresight. The company has purposefully defined who participates in foresight, seeking to involve individuals in development roles or positions where understanding the changes in the operating environment is essential. This way foresight is connected to the company's daily activities, making it easier to implement in practice:

It is business-oriented, meaning that it is genuinely about understanding real customer needs and centered around issues related to organizational development. (Interviewee 4)

Foresight and the subsequent decision-making are therefore carried out separately. The experts conduct foresight activities and develop future views, which are reported to the management. Management is responsible for utilizing these insights in decision-making, without being directly involved in the foresight work itself.

The company also aims to involve other actors in the foresight process to prevent it from becoming too internally driven. According to the interviewee, there is a risk that foresight becomes too internally focused if it is conducted solely within the organization. The company therefore involves its governance body, for instance in strategy work, which enables a broader perspective. Additionally, the company participates in external networks to discuss foresight practices with various stakeholders in order to collectively develop foresight and learn from best practices. However, the interviewee identifies that the company could involve their customers more in foresight activities.

The networked approach also serves to make foresight, its methods and tools more widely known throughout the organization:

Many people may not have familiarized themselves with foresight as a theme on its own or thought of it as a distinct area of expertise. One purpose of the network activity is therefore to make foresight practices better known within the organization. (Interviewee 4)

Thus, the foresight network plays a central role in the company in distributing knowledge. It enables to develop a broad view of current and future developments by involving experts from multiple parts of the organization. It also acts as a sparring partner, helping to consider what needs to be included in foresight. In addition, it ensures that foresight is widely utilized within the company rather than remaining the work of a limited group.

The third level of organizing foresight concerns how insights are distributed and utilized within the company, with the aim of building a shared understanding that encourages their active use. To support this, the company shares foresight insights as openly and transparently as possible, ensuring they are accessible across the organization. The broader aim is to turn individual insights into a shared understanding, which makes foresight feel more collective. Achieving this is not however straightforward, and the company continues to actively work toward it, supported by its collaborative and networked way of working.

While the foresight process has been carefully developed and embedded within the company, the interviewee also identifies several areas that could be further developed. These include more active customer involvement to make foresight less organizationally driven and linking foresight more closely to innovation activities. The interviewee sees potential especially in experimentation and piloting. Furthermore, the company could additionally place even more emphasis on learning, communicating the benefits of foresight more visibly, and building better foresight competences.

4.3.3 Scanning the environment

Scanning in Company C is continuous and systematic, involving both the identification of new signals and the monitoring of those already identified. Over time, the company has developed an understanding of which driving forces are most relevant and monitors them on an ongoing basis. This illustrates how the different phases of the foresight process inform each other as insights from later phases shape what is scanned and how.

The company scans changes in the environment continuously across the three time horizons, each with a distinct focus:

At the operational level there is the daily monitoring, at the tactical level perhaps a one-to-two-year time horizon [–], and at the strategic level we are talking about plus five years – the assessment of long-term change. (Interviewee 4)

The three-level structure has been found useful within the company because it differentiates how changes are monitored and allows different tools to be applied at each level. Thus, the goal across all levels is to identify significant change forces and phenomena in the operating environment, but the depth of analysis varies.

At the operational level, the company tracks daily developments in the environment. This includes media monitoring and automated tracking of weak signals and trends related to specific phenomena. Automation tools are used to minimize working time required for daily scanning so that more capacity can be used for tactical and strategic-level activities. Thus, the company has defined certain topics to be monitored automatically, such as changes related to competitors or the industry.

At the tactical level, the focus is on understanding relevant medium-term themes on a time horizon of approximately one to two years. Changes are tracked through external reports that address specific topics, such as market reports, customer research, and industry or thematic reporting. The company uses both publicly available and purchased sources. This level requires more active working time than operational monitoring and involves a more deliberate effort to understand what is happening in the near future.

At the strategic level, the company monitors longer-term changes with a time horizon of over five years. This includes monitoring market developments such as competitors' long-term strategic directions and broader megatrends. In practice, such as during strategy work, the company analyzes its operating environment using various methods such as PESTEL or trend databases to observe changes from multiple directions.

The scope of scanning is also shaped by resources. Because the company operates across multiple business areas, not all of them can be given equal attention. Business areas are prioritized depending on both the available resources and how each business area perceives its need for foresight. As a result, in some areas foresight is done more extensively than at others.

Some of the driving forces that the company continuously monitors, have been defined in advance, as the company has developed an understanding of what kind of information is relevant to it over time. This reflects accumulated industry and customer understanding. However, determining and identifying which information in the environment is relevant is one of the central challenges of foresight. It is difficult to define with certainty what needs to be monitored and what can be left

outside the scope of scanning. The interviewee notes that there is always much that falls outside what has been defined as relevant, and the purpose of foresight is precisely to provide a broader perspective and identify things that do not currently seem significant but may prove to be important in the future. Organizational culture plays a significant role in shaping what is considered important and where attention is directed.

A related challenge is the tendency in organizations to focus on operating as they always have, which is a pattern that does not serve the purpose of foresight. In foresight, it is essential to also understand the things that are not currently perceived as relevant or as directly affecting operations. This reflects how the company uses foresight to identify new insights rather just confirming existing understandings, which in turn requires continuously re-examining assumptions about the operating environment within the organization:

The role of foresight is to challenge those current assumptions about the development of the operating environment and to create a better picture of the alternative futures.
(Interviewee 4)

Current assumptions may limit what can be imagined about the future, and as discussed, knowing which information will be relevant in the future is inherently difficult. A tension in foresight is therefore balancing present understanding and situation with future orientation. While Company C has over time developed its own understanding of what matters, the interviewee recognizes that this understanding must from time to time be challenged and questioned, asking whether what has historically been considered relevant still holds true. The scope of scanning must therefore remain be broad as even seemingly irrelevant changes can have an impact in the future.

4.3.4 Making sense of the signals

Based on the collected signals and drivers of change, the company seeks to form a comprehensive view of changes in the operating environment and update its understanding of previously identified phenomena. This requires evaluating the relevance of identified signals and, when necessary, conducting more in-depth analysis to understand how environmental changes may affect the company and its customers. As information and reports become outdated increasingly quickly, especially in relation to technology and artificial intelligence, continuously updating existing views is a prerequisite of foresight.

The relevance of signals is largely defined by how frequently they appear. As the interview describes:

Individual signals rarely lead to any action. It is usually only when more signals start to emerge around a certain theme, then it becomes something that is monitored more closely and perhaps also analyzed further. (Interviewee 4)

However, the nature of the change also influences this assessment. Some changes may be significant enough on their own to require monitoring or action. For example, broader strategic shifts within the industry are developments that can individually be relevant and are therefore reported forward and shared with a broader audience within the company.

Assessing the significance of signals is an inherently interpretive process in Company C. The aim is to identify the most significant drivers of change in the operating environment and evaluate their impacts in both the short- and long-term. At this stage, the company begins to create alternative development paths for the identified changes to build a better understanding of how they might evolve:

Building a view of the future is specifically about challenging and questioning the assumptions that have been made. (Interviewee 4)

This is not a straightforward process as existing assumptions of individuals and those embedded in the company's way of thinking, can limit the range of futures that are considered possible. Challenging these assumptions is therefore an important part of making sense of the identified signals, but it should not be done randomly, rather it requires a systematic approach to develop a clear view of which developments are likely to matter in the future.

To support this process, the company has developed an evaluation framework for assessing identified signals and driving drivers. The framework is not applied to all collected information, but rather to change drivers that are considered relevant. It is used to evaluate the likelihood of different development paths related to a certain phenomenon, whether the changes are positive or negative for the company, and whether they require immediate action, monitoring, or no action at all. The initial assessment is quite subjective as it is conducted by individuals on their own. This assessment is then reviewed together within a smaller group.

If an observed change appears to possibly affect the company's own operations or customers, the existing view of the operating environment is updated and reported forward. This updating and reporting are carried out regularly so that the entire company maintains an up to date understanding of changes in the environment, which also supports building a shared perspective. Beyond internal reporting, the company also actively communicates about environmental changes externally, and publishes insights and analyzes on topics such as environmental uncertainty and risk management for

both its individual and corporate customers. This reflects the ability to make sense of the changes in the environment and assess risks and opportunities for its customers. Furthermore, this demonstrates how foresight is part of the company's way of working and shapes how it engages with its stakeholders.

4.3.5 Translating insights into actions

Before decision-making or acting on foresight insights, the company develops a contextualized understanding of the identified changes. It assesses what they actually mean for the business and how they might affect the company's operations, customers, and position in the market.

To assess the long-term implications of identified changes, the company combines foresight insights with its own internal data. For example, they can combine demographic data with the company's customer data and customer insight to produce predictions of how demographic developments might unfold under different scenarios, and how these would be reflected in the company's customer base. This allows to assess the implications of changes more concretely and helps the company to consider how it could respond.

The interviewee emphasizes the importance of critically evaluating the company's own operations in light of different possible futures and questioning whether current ways of working will still hold true in the future. This kind of self-assessment supports the company's ability to prepare for and respond to future change by possibly revealing aspects it might have to change before the futures materialize.

Foresight insights inform decision-making and subsequent actions across several areas of the company. In practice, this includes risk management, product development, human resources strategy, and strategic planning. As a concrete example, the interviewee highlights demographic change as a significant change force that is assumed to continue being relevant for the company in the future. Therefore, the company has conducted long-term analysis on of demographic trends and linked these to strategic planning, and consequently it has influenced the company's strategic choices and plans to ensure that services respond to future customer needs. The interviewee was unable to disclose further details because of the competitive nature of the information, which in itself reflects the significance of foresight insights.

Climate change and biodiversity loss represent another long-term change force expected to remain relevant. In response, the company has intensified its sustainability and responsibility reporting to better assess the implications of these developments. Furthermore, foresight has influenced the human resources strategy. The company has identified the transition of work and related technological

developments as a significant driving force. Therefore, it has assessed what kinds of competencies should be prioritized and needed in the future and in response is working to acquire them. Foresight insights have also informed innovation activities and service design, where understanding driving forces and future customer needs has served as a starting point for developing new products and services. However, according to Interviewee 4, this is still an area where foresight could be utilized more extensively. Although foresight insights have led to various actions in the company, not all insights lead to action:

I would probably say that most foresight information does not lead to any action.
(Interviewee 4)

This does not, however, mean that foresight has failed. There can be multiple reasons why insights may not lead to action, but in the context of Company C, foresight does not always have to lead to action. The purpose of foresight is to ensure that decision-makers always have a timely knowledge of changes in the operating environment to make decisions, which is why foresight must be continuous and the company's view kept up to date. At the same time, it can also be difficult to assess what happens to the insights once they have been reported to the management, as whether and how they lead to action this is ultimately up to management to decide:

It is not always easy to say that it was specifically this action of ours that changed this thing. (Interviewee 4)

The interviewee recalls many situations where insights were communicated forward but did not immediately lead to concrete actions. This reflects the nature of foresight knowledge more broadly, as the connection between foresight insights and decisions is often indirect and difficult to trace.

According to the interviewee, the context in which foresight insights are presented influences whether they lead to action, which is why the company has carefully designed its foresight practice. Several steps have been taken to facilitate this. First, foresight has from the beginning been grounded in the company's organizational context. The interviewee describes this as action-orientation: foresight is designed to directly respond to the company's needs and fit how it operates, which gives it a clear purpose and makes it more likely that insights will be acted upon.

Second, the company has built structures that enable information to flow into decision-making. The networked approach, clear ownership, and open knowledge sharing, described earlier, facilitate using foresight insights. Involving experts in foresight work means that insights are developed collaboratively rather than delivered from outside, which makes them easier to trust and use. When people have been part of the process, findings feel relevant to their own work. Open knowledge

sharing supports this further because it ensures that foresight stays visible across the organization and that a common understanding of the future can be developed.

Third, and perhaps most significantly, foresight has the support of management. Because foresight is connected to strategic decision-making in Company C management is systematically exposed to the foresight insights. This determines whether foresight is utilized at all within a company but also whether it leads to action:

If the top management of an organization does not view foresight as significant, then no one else in the organization will necessarily view it as such [–]. The lifespan of foresight is quite short if management does not see it as worthwhile. (Interviewee 4)

Management support is therefore crucial and determines how seriously foresight is taken and how well it is resourced. According to the interviewee, management can support foresight by setting an example for the rest of the company by utilizing foresight insights, which encourages the rest of the company to utilize them as well.

However, wider use of foresight insights also requires that people across the organization understand what foresight is and why it matters. If decision-makers cannot see the value it produces, they will not know how to draw on it. In Company C, this is not an issue at the management level, as foresight has been integrated into operations and it directly informs decision-making. Beyond this, the company has also taken concrete steps to build foresight understanding more broadly across the organization, through the networked approach and the sharing of good practices.

Although the structures described above have been built to facilitate the translation of foresight into practice, resources set practical limits to foresight. Because foresight is part of a broader role of each participant, it inevitably competes with other tasks:

It depends on what other work we are sometimes assigned to; if time is taken away from foresight work or from organizing it, then not everything that was planned can be advanced. (Interviewee 4)

Thus, sometimes other tasks must be prioritized, which can impact foresight activities. Ultimately, it is management that decides what is considered essential, which once again underscores the importance of management support as a key enabler of foresight in practice.

Looking ahead, the interviewee anticipates that the role of foresight will continue to grow as the pace of change accelerates and the need for future-oriented information increases. They describe foresight as an evolving process which always entails room to grow and develop further. In Company C, this is reflected in the development areas the interviewee identified, which suggests that even established

foresight practices are never fully complete but can continuously be developed as the company and its environment change.

Company C approaches foresight in a structured and continuous manner which allows it to effectively use foresight insights. It has been embedded within the company and integrated into decision-making through strategy function. The company has built a foresight network that enables it to develop a comprehensive view of the operating environment and share foresight insights and knowledge across the company. Furthermore, foresight is understood as a way of broadening perspectives on alternative futures and challenging existing assumptions, which supports a better understanding of the future.

4.4 Case company D

4.4.1 Organizational context

Company D is a Finnish organization operating in a niche, project-based manufacturing industry. It is among the world leaders within its field and is an important industrial company in Finland. Its business is based on designing products together with its clients, who are often international, and delivering customized solutions according to specific client requirements. Networks form an essential part of the company's operations, as it functions within a broad ecosystem consisting of multiple suppliers, subcontractors, and other partners. The business is highly capital-intensive and characterized by long delivery cycles, significant resource commitments and complex project delivery, requiring advanced engineering expertise and production methods.

The company operates in a complex environment shaped by rapid change and increasing uncertainty. Its operations are affected by long-term developments such as urbanisation, technological development, and sustainability demands, as well as evolving regulation, geopolitical instability, fragmented supply chains, and intensified global competition.

A defining characteristic of the industry is the long lifespan of the products the company designs and delivers. The products are expected remain operational for around half a century, which requires to anticipate developments within relevant industries far into future. In addition to global megatrends, the company is indirectly affected by developments beyond its immediate industry context. Therefore, it is also impacted by societal and consumer-related changes that may affect end-customer expectations and product requirements over time, such as demographic shifts, changing lifestyles, and evolving consumer values and preferences.

The company demonstrates strong abilities to identify the main driving forces affecting its operating environment and responding to them accordingly, with particular focus on technology and sustainability-related solutions. Furthermore, the company overall demonstrates a future-oriented approach as it has been involved in numerous research and development efforts to stay competitive in the future.

Interviewee 5 has worked in Company D for nine years in various roles and currently works as a business development manager within an innovation and development unit. The unit is responsible for supporting research and innovation activities in collaboration with external stakeholders. The interviewee works across two departments: one focusing on client relations and another on EU strategy. The interviewee has developed foresight expertise through their current role and later initiated by their personal interest. They had engaged in foresight-related activities for several years before becoming familiar with the practice itself:

I have no background in studying foresight, so this is something that being involved with looking at trends and global worldwide megatrends for the last eight years [–]. I was just looking into that, and then along the way I stumbled across foresight, and I didn't even know it existed till like two years ago. (Interviewee 5)

Since then, the interviewee has independently developed their foresight knowledge and has gradually introduced foresight practices to the company. Currently, foresight forms part of the interviewee's broader role.

4.4.2 Purpose and organization of foresight

Foresight in Company D is at an early stage of development. While phases of the foresight process can already be identified, it currently lacks formal structure and explicit policy within the company. The company is simultaneously conducting foresight activities and exploring how foresight could be integrated more systematically into its operations. As Interviewee 5 explains:

We don't have an existing foresight policy as of yet, but I am trying to work on that. [–]. Currently I am trying to find the best way to analyze different signals [–] and then trying to gather those signals and to paint a picture of what's happening at a global scale within our industry. (Interviewee 5)

At the moment, foresight process is primarily the responsibility of a single individual, Interviewee 5, who conducts it as part of a broader role that spans two departments. As a result, foresight is not conducted continuously but rather integrated into daily work whenever time allows. As foresight activities are dependent of one individual, the current process is shaped by the interviewee's personal interests, expertise, and understanding of the company's industry and client industries. Nevertheless,

interest toward foresight has gradually increased within the company, particularly at the corporate level, and the interviewee is actively seeking ways to embed future-oriented thinking and foresight more broadly into the operations.

On the company website, foresight is recognized as an important component in responding to evolving customer and market needs. The focus of foresight in Company D is understanding long-term developments, mainly through global megatrends, and their implications for both the company's own industry and those of its clients. Currently, foresight insights are primarily utilized in product design and development, while also supporting internal decision-making by increasing management awareness of emerging changes. The interviewee emphasizes that foresight is closely linked to understanding clients' future needs and broader societal developments. In particular, Interviewee 5 highlights that since the company operates through its clients, understanding end-customer trends is essential for supporting clients in adapting to future change. In this sense, foresight is also seen as a way of helping the clients prepare for future, which in turn supports the company's own business development.

Thus, the interviewee independently follows developments relevant to the company and its clients, gathers signals from different sources, interprets their potential significance, and present the findings in meetings with management, clients, designers, engineers, and other relevant stakeholders. Although management and clients ultimately decide how the information is utilized, the interviewee points out the future developments that should at least be considered in the decision-making.

While the company's formal strategic planning horizon currently extends a few years to the future due to its project-based business model and existing order book, foresight activities consider substantially longer developments. The perspective of foresight is typically around ten to twenty years, but they also look as far as the year 2100 to understand what the industry might look like then. The long-term orientation of foresight in Company D is connected to the company's organizational context, as the products are designed to serve multiple generations, requiring considering far-reaching future developments already during planning.

At the same time, the products require substantial resources and are demanding to produce, which leaves limited room to test, experiment or change different designs. This emphasizes the importance of careful and detailed design, conducted in close collaboration between the client and the company's designers and engineers among others. The long-term foresight perspective supports the product design as it enables to consider the widest possible range of future developments in the planning phase.

While foresight insights are used in decisions and concrete actions, the process is still in development and not yet fully embedded in the company. At the moment, the interviewee is actively attempting to familiarize others in the company with foresight through a practical showing-by-doing approach. Foresight has been gradually integrated into meetings, workshops, and practices. Interviewee 5 describes the approach as follows:

To introduce things, you have to kind of first show them how it works right and a lot of showing is by doing. (Interviewee 5)

As part of this approach, colleagues are informally involved in the foresight process. After attending a conference or business trips, they are expected to report back their observations by collecting key insights and key words. This practice has a dual purpose as it works both as an input to foresight activities and as a way of institutionalizing foresight within the company. By involving colleagues in identifying and reporting relevant signals, foresight becomes more visible and familiar across the company. This practice might support gradual acceptance and credibility of foresight as the insights are partly grounded in observations of many individuals.

In the near future, the interviewee aims to extend the current approach and work across three different departments as a floater, with the intention of embedding foresight practices more deeply into different parts of the company. Rather than establishing a separate foresight unit, the focus is on demonstrating the relevance and value of foresight in practice:

I don't know if a full team is necessary [–], at least for my understanding just getting departments used to practicing foresight techniques would already be far more beneficial than hiring a team of researchers at the moment. (Interviewee 5)

In this approach the interviewee would act as the main driver of foresight activities and work to gain broader organizational support. In the longer term, however, the vision would be the establishment of a small strategic foresight department, which would function as an internal think tank. The department could include a head of strategic foresight and a few researchers that would support other departments and participate in design and strategy meetings on an ongoing basis. In addition, the interviewee aims to build a foresight trend radar to visualize key signals and topics over time. This would provide a cumulative understanding of emerging developments.

According to the interviewee, awareness of foresight typically develops gradually within the company. People often do not initially recognize its value until they have been exposed to it repeatedly. The need often develops gradually when a client recognizes the need to understand possible future developments or when previously discussed insights begin to materialize in the

present. This gradual development is also reflected in how foresight became established in the company. It started informally as a fun thing to have in meetings, but as the different trends began to compound together and materialize over time, foresight increasingly gained credibility within the company and was seen as valuable.

4.4.3 Scanning the environment

In Company D, scanning focuses on identifying broad global developments across its own and clients' industries. The approach to scanning is practical and, at least at present, does not involve foresight tools for collecting or managing information. The objective of scanning in Company D is to gain a comprehensive understanding of megatrends and trends that might be important now and in the future.

Information is gathered through multiple channels. One way is the method of involving colleagues in the process and utilizing them as sources of information. After an occasion, they report back with a summary of their observations to Interviewee 5 in a meeting – it can be a single PowerPoint slide including what they did, who they met, and what keywords they heard. The keywords are subsequently stored in a database, where their frequency is tracked over the years, which enables to identify topics that occur most prominently across different time periods:

It is important for us to get on a very shallow level the understanding of why we went there, what we heard, and then also for me to use those keywords in a database to start populating these signals that are popping up for this year or next year or the year after.
(Interviewee 5)

Additionally, Interviewee 5 conducts extensive independent research on megatrends and trends across industries globally, relying on a wide range of sources. The utilized sources are often external and publicly available materials such as megatrend and trend reports produced by consulting companies, and publications or industry reports from international organizations such as the United Nations, news organizations, and other entities. Blogs are also occasionally used, mainly to understand end-customer preferences but in general they are not prioritized as blogs are not considered as reliable. The interviewee prioritizes credible and well-known sources, because the reliability of sources directly affects how seriously foresight is taken in the later phases:

I think the best way is [–] doing your research, doing your homework, and making [–] sure it's bulletproof; make sure that nobody else can possibly argue against it.
(Interviewee 5)

Because the different reports vary considerably in how they define and emphasize megatrends, artificial intelligence (AI) is used as a complementary tool to process and analyze the reports. AI is used to recognize patterns and similarities across documents and to generate a synthesized narrative

of key highlights. The interviewee reads the materials themselves as well, but AI has proved to facilitate the process considerably.

Beyond documentary sources and signals collected from colleagues, the interviewee supplements the scanning activities through one-on-one discussions with individuals in relevant target groups and contexts. This ground-level research serves as a checking point against what the interviewee's research suggest. It helps to verify whether the observed trends correspond to actual behavior and experience. Thereby, the interviewee emphasizes that it is important to have foresight in one's personal life too to be able to make these observations. In a way, this could also be seen as ongoing observation and interpretation of emerging signals.

Rather than interpreting all information, only recurring or particularly relevant signals are retained for further analysis. Initial assessment of relevance thus already takes place during scanning, as Interviewee 5 evaluates the reliability of different sources and determines which signals are worth further attention. AI further supports this by identifying recurring themes across sources, helping to highlight important signals.

4.4.4 Making sense of the signals

The collected signals including the keywords and megatrends are then used to construct an understanding of present developments in the industry and their possible future trajectories. This understanding then has the ability to inform decision-makers and the product design.

Despite the initial filtering already conducted in scanning, the amount of information remains substantial. A key challenge is distinguishing which signals are most important and separating meaningful changes from irrelevant ones:

Trends come and go, and sometimes a lot of it's just noise and then you have to really kind of shift through the noise to find out does this have an impact or a large impact for the future. (Interviewee 5)

To further complicate the interpretation process, different sources emphasize and prioritize megatrends in various ways. The interviewee points out, however, that all megatrends are in principle relevant to the company or the client to some extent. Some of them have a larger impact in the present moment than others, and on the contrary megatrends that might currently seem unimportant, can be relevant the future. It is therefore essential to develop an independent view of which signals and trends are most relevant for the company and its clients, rather than relying solely on how external sources prioritize them.

Thus, during sensemaking, the interviewee begins building a comprehensive picture of the different trends and assessing what they mean. The aim is painting a bigger picture of the developments in the environment and analyze why certain developments are important. The evaluation of signals is largely based on the interviewee's experience, industry-specific knowledge, and understanding their clients. In practice, relevance is assessed in relation to the company's specific context, seeking to understand which megatrends are most likely to impact the industry, the company, its clients, or end-users. For example, demographic change and generational shifts are considered important, as they directly influence future demand and product use, which is why they are monitored. Historical trends and statistics further inform this assessment, for instance, declining consumption patterns of relevant goods among younger generations are considered likely to continue in light of statistical data, which may influence future demand and consequently shape product design decisions.

In addition to contextual interpretation, other ways of interpretation are also used to assess relevance. One indicator is the recurrence of signals across sources: when similar developments are identified in different sources, they are considered more credible and therefore more relevant. Relevance can also be assessed by examining whether similar trends are emerging in other industries. When a trend is observed across multiple industries, it suggests broader relevance and that the trend is already emerging, which requires closer examination and attention. Conversely, if a trend lacks sufficient support from multiple credible sources, it is not presented to management or clients. This does not mean that the trend is not important and should be disregarded – it might just be too early, and the trend might become more relevant later as more evidence accumulates over time. This reflects a deliberate effort to keep options open and acknowledging that assessing the relevance of trends can be difficult in the present.

Another challenge in sensemaking is the tendency to let personal judgement override data-supported findings, particularly when signals feel counterintuitive or premature. It is therefore important to ground interpretations in data and credible sources rather than solely on intuition. The interviewee illustrates this through an example situated prior to the COVID-19 pandemic. Despite having identified artificial intelligence as a potentially significant development, the interviewee had reservations about presenting it to management:

I really didn't like talking about AI, because it sounds so far-fetched, it sounds so science-fiction, and I was almost embarrassed to bring it up to our management.
(Interviewee 5)

Despite this hesitation, the interviewee continued raising the topic, trusting the gathered data. However, the example also highlights another challenge: even when data clearly signalled the

importance of AI, it did not indicate what to do in response, which might have further affected how it was interpreted and believed by others. Nevertheless, the topic was raised with management – and dismissed:

People brushed it off and the next thing you know, in 2022, ChatGPT comes out and they get 50 million users within five days and now we live in a world of AI.
(Interviewee 5)

The example underscores the importance of ultimately grounding interpretations of relevance in credible sources rather than personal intuition or opinions. The interviewee therefore emphasizes utilizing reliable resources from the beginning and conducting extensive research to verify the relevance of identified signals. This process illustrates the iterative relationship between scanning and sensemaking, as deeper analysis can assist information gathering.

Relevant information is subsequently stored and categorized in Excel together with the sources. In addition, PowerPoint presentations created over the years also serve as a repository and as a source of information of previously collected information and interpretations. Furthermore, while the interviewee mentions scenario planning as a tool for communicating insights to decision-makers, the development of alternative future views does not appear to be central part of this phase. Instead, the insights are presented in the form of megatrends and trends, that have been analyzed further by assessing the implications for the company and the client.

4.4.5 Translating insights into actions

When identified trends or megatrends are supported by sufficient evidence, they can be shared with relevant stakeholders. Internally, the insights can inform management, and commercial and sales departments, but they are usually presented to designers and engineers, who consider how the product could be designed if the trends were to materialize and assess whether certain developments are technically feasible. Externally, the insights are shared with the client. Additionally, foresight insights have influenced aspects that the interviewee was not able to disclose, which in itself reflects the significance of foresight.

Beyond product design, foresight insights inform other decisions as well. For instance, the company has identified that there will be a shortage of high-skilled labor in the future and has begun taking proactive steps to address this – including collaborations with universities and research institutions to support competence development and address future workforce needs. This illustrates how actions can be taken based on foresight insights before they materialize. Foresight can also serve as a

foundation for brainstorming by encouraging collectively think about new ideas and how to respond to identified trends in practice.

The flow of foresight information within the company is not thoroughly structured. Insights reach relevant people through meetings and workshops held throughout the month, but there is no fixed schedule for foresight-related meetings. The interviewee aims to present relevant trends as frequently as possible and include a different set of megatrends or highlight different aspects of the trends in each meeting.

The interviewee's role is to bring out relevant insights and explain why they are important, while managers, clients, and other stakeholders make the decisions about how to utilize the information. The interviewee may offer suggestions about which insights should be considered in product design or other decision but ultimately the decision-making authority is up to the others. How the insights are presented is essential. The insights need to be communicated in an understandable and convincing way:

If I send them data and a link to a website, they won't really pay attention, but if there's someone here [from the industry], and they bring the data for not just from one place but other reputable places together and tell the story about this this group here, then they have a responsibility to do something with that information. (Interviewee 5)

Similarly, the presentations and information are always tailored to the specific meeting, topic, and audience to ensure they are contextualized and relevant. The interviewee also utilizes scenarios to illustrate megatrends and trends to the decision-makers. Even when the scenarios differ, identifying and including common themes across them can help decision-makers recognize patterns and take emerging developments more seriously. Scenarios can thus simultaneously serve as a way of demonstrating relevance of the insights and make them more tangible for decision-makers.

However, translating foresight insights into action faces several challenges in Company D, particularly given that foresight is not yet fully established within the company. A central challenge is resistance to change, which is especially present in the conservative industry in which the company operates. It is challenging for incumbent companies to change ways of working because doing something new always entails risks to some extent:

Doing something that's not yet happening or preparing for it is very risky to a lot of people, so I think there's always that pushback of why would we prepare for something that hasn't happened, when what we've been doing has been working for decades – and it's always hard to argue that. (Interviewee 5)

Furthermore, the uncertain nature of foresight information further strengthens this challenge on multiple levels. As shown by the AI example discussed in the previous sub-chapter, even well-supported insights can be dismissed. While foresight insights can be grounded in reliable data, there is always some amount of uncertainty when it comes to the future; sometimes the insights prove correct, other times they do not, and equally, insights that are dismissed by others can later prove correct. The interviewee acknowledges that the scepticism is understandable and that it is difficult for others to trust that a predicted future pathway is correct. The aim of foresight is however ultimately not to predict exactly how the future will unfold but to enable better preparation and decision-making:

I always tell people that I don't know what the future looks like, but with data and trends you can point in a general direction of where it's headed and anticipate the future better than just to simply react. (Interviewee 5)

The AI example also highlights a related challenge is that the insights do not always indicate how the company should respond to the identified changes. When there is no clear course of action, it becomes even easier to dismiss the insight altogether than act on uncertain information. To minimize uncertainty related to foresight insights, the interviewee emphasizes grounding all insights in strong research and multiple reliable sources rather than personal opinions, which makes it more difficult to dismiss them.

At the same time, building credibility for foresight is a gradual process. Especially at the stage in which Company D is with foresight, it will take time that the benefits of foresight are more widely understood. Foresight insights can gain credibility over time as predictions prove correct, and materialized changes can serve as concrete triggers for action:

Time and trust are the two things most needed to get people to believe in foresight. (Interviewee 5)

Over time, correct predictions serve as a concrete evidence that foresight insights can be trusted. However, this works both ways, and incorrect predictions can equally undermine trust within the company. This emphasizes the need to conduct foresight rigorously.

Overall, while the process is at early stages, the company is able to utilize foresight in their decision-making. Translating foresight insights into actions in Company D starts from the beginning of the foresight process and is grounded in industry-specific knowledge and expertise. Making insights actionable requires utilizing reliable sources, finding sufficient evidence to support identified trends, and contextualizing the findings to the company's specific situation. Insights and presentations must furthermore be tailored to the audience and communicated in a clear and understandable way.

Crucially, as illustrated by the AI example, the interviewee emphasizes the importance of not letting personal biases interfere with interpretation of data. Similarly, it is important to understand that information that might currently not seem important, could be important in the future. Thus, maintaining an open mind and revisiting signals over time is crucial.

The interviewee demonstrates a strong belief in the value of foresight and clear ambition to integrate it more deeply into the company, seeing significant potential for foresight to grow within it. The current focus is on building trust and establishing a solid foundation for foresight, which is done by integrating foresight into daily work and making it familiar to others. The interviewee believes that with time, foresight will gradually earn the trust within the company.

4.5 Cross-case analysis

The aim of this study is to analyze foresight capabilities that enable companies to translate foresight insights into actions. This chapter compares the case companies to highlight similarities and differences in their foresight processes and capabilities. The analysis begins by examining the organizational contexts of the case companies, followed by an exploration of how foresight was organized and conducted in practice across the companies. The chapter then examines the capabilities that enable the translation of foresight insights into actions and how these capabilities support that process. Throughout the analysis, the perspectives of the expert interviewees are incorporated to provide an external and broader view of organizational foresight practice.

4.5.1 Organizational context

The foresight processes observed across the case companies differed considerably in terms of their formalization, continuity, organizational integration, and practical enactment. These differences were partly shaped by contextual factors, such as industry characteristics and organizational structure, but also how systematically foresight had been developed and integrated within the companies. In addition, the companies differed in how well foresight was understood and recognized within them.

Contextual factors appeared to influence companies' foresight activities. As emphasized by Expert A, not all companies need to conduct foresight with the same intensity, as the required level of foresight depends on operating environment and organizational characteristics. However, even in more stable industries, where the need for foresight is generally less extensive, foresight should still be conducted regularly. This was reflected in some of the differences between the case companies and within them. All companies operated in Finland which provided a relatively similar institutional context. However, the level of internationalization between the companies varied. Company A

operated globally with physical presence abroad, Company D mainly served international clients, Company B had some international operations while Company C operated solely in the domestic market. These differences affected how strongly global developments influence each company and what was scanned from the environment.

The companies operated in different industries, which directly shaped which trends and changes they were exposed to. Companies A and D both operated in manufacturing, although in different segments and with significant differences in their operations. Nevertheless, both were affected by global supply chain disruptions, geopolitical instability, and broader megatrends. Similarly, in these industries the changes may not be as rapid, but their impacts can be substantial. Company A was additionally exposed to raw material price fluctuations. In contrast, Company B operated in consumer-facing markets, where changes were rapid and shaped by evolving consumer trends. As highlighted by Expert A, this often increases the importance of foresight. Company C operated in service industries where demand was strongly influenced by regulation and broader societal changes, often on longer term.

A notable finding was that companies also internally prioritized foresight differently across their business areas. Especially in Companies B and C, as they had operations across different business areas, therefore foresight was more extensive in areas that experienced more rapid change. This was further shaped by resource constraints that determined how comprehensive foresight could be across all areas. In Company A, foresight appeared consistent across business areas, as it was embedded within the company's planning processes. Company D, in contrast, operated primarily within one industry, which enabled foresight to be more focused. This suggests that foresight needs to be contextualized to the needs of different business areas within the organization as well.

The organizational context also largely shaped the time horizon of the companies' foresight activities. Unlike the other companies, Company C monitored changes across three time horizons which enabled a comprehensive understanding of operating environment, ranging from daily signals to developments extending to over five years. In Company A, the time horizon varied according to different planning processes, ranging from short-term operational planning to long-term investment decisions extending up to 15 years. Company B had a relatively short time horizon due to operating within consumer markets and because Company D produced products with long lifecycle, it focused on long-term developments.

4.5.2 Organizing foresight

The formality and how established foresight was within the case companies varied considerably. Company C had the most systematic and structured approach to foresight. The foresight process had been planned before implementation, and foresight was formally integrated to the company's strategic processes and connected to the company's objectives. Foresight also had a clearly defined role within the company's operations. Similarly, in Company B foresight formed part of the responsibilities of the market and consumer insight team, although, compared to Company C, the process was less structured and organized, as it was conducted irregularly and largely depended on the need at hand. In Company A, foresight occurred alongside existing planning processes rather than through a separate foresight process making it partly informal and difficult to distinguish from planning practices. While the planning practices followed a clearly established structure, foresight was utilized in a more fragmented manner. Company D was still in the early stages of developing its foresight process and therefore its foresight activities lacked formal structure and policy within the company.

The experts emphasized the importance of structure and planning for foresight insights to lead to action. Ideally it would be advisable for companies to define what they want to understand about the future and what kind of foresight process and methods support those objectives, as well as determining who participates, who processes the foresight insights, and who owns the process overall. Particularly important is planning how insights will be utilized within the company so that they do not remain disconnected from decision-making:

A good foresight process includes the necessary tools, structure, continuity, and systematicity, but it also strongly involves the human aspect. Otherwise, it risks becoming merely a technical exercise carried out simply because that is how things are usually done, instead of genuinely influencing the kinds of decisions that are made based on foresight. (Expert A)

These considerations were most thoroughly addressed in Company C, where all these elements had been thought through prior to implementation. Furthermore, Expert B noted that people within the company need to feel inspired and motivated to engage with foresight and without this human element, even a well-structured process may fail to produce meaningful impact.

The continuity of foresight practices appeared to be influenced by the purpose of foresight within the company and the way it was organized. Company C was the only company with continuous foresight practice integrated to the rhythm of strategic work across different time horizons. This reflected its primary purpose of maintaining an up-to-date understanding of the operating environment. In contrast, when foresight was conducted only when needed, as in Companies B and D, it tended to be

conducted sporadically. In Company B, it was initiated when cooperatives or business areas identified a need, and in Company D it was driven mainly through client needs and the interviewee's individual initiative and available time. However, Company D was also focused on long-term developments which affected the required frequency, and the lack of established structure might have further limited the ability to make foresight continuous. The interviewee from Company D notably emphasized that people do not often realize they need foresight, which could suggest that perceived need may not always reflect the actual need. Company A represented a middle ground as foresight occurred formally within the time windows of planning processes but because individuals were required to independently follow developments in their area of expertise, it was informally more continuous.

Ownership and participation emerged as essential elements of an effective foresight process. The same information can be interpreted differently depending on perspective, and clear ownership helps to ensure that foresight is conducted and resourced. The expert interviewees emphasized that foresight ideally draws on people from different roles and backgrounds to produce richer insights. In Company C, ownership was clearly defined, and the company explicitly aimed to create shared views of the future through broad participation across the organization. Accordingly, it involved expert-level employees from relevant roles and recognized the value of external perspectives. It is common for larger companies to extend participation and engage in ecosystem-level foresight as noted by Expert A. Broad involvement was also important in Company A, where the planning processes at largest involved over hundred individuals, but inherently depended on the process at hand. However, the interviewees within the company had differing understandings of foresight, suggesting that despite broad participation, foresight was not explicitly recognized as such across all levels of the organization. Ownership was similarly defined as the group-level strategic function owned and led the planning processes. In contrast, in Companies B and D foresight remained primarily the responsibility of a single individual. While the interviewee from Company D involved colleagues in the process, it was highly informal.

The expert interviewees referred to such individuals as foresight agents: people who act as champions of foresight practices within companies. While individual-driven foresight can be valuable, it entails some risks:

It does not yet constitute an organizational-level capability [–] when anything depends on a single person, their initiative and their enthusiasm, then it's not yet an organizational-level matter. It is a good starting point for that, but it's not there yet.
(Expert A)

Individuals can have a crucial role in initiating and advancing foresight practice, as illustrated in Company D. Often however, individual initiative insufficient in the long run, as foresight dependent on a single person lacks systematicity and organizational embeddedness, according to the expert interviewees. If that person leaves, there is no one to continue the foresight practice either. Foresight therefore typically requires broader organizational support, participation, structure, and especially support from the management who can further ensure that foresight is resourced.

In Company B, individual-driven foresight was seen insufficient by the interviewee, who emphasized that broader participation would strengthen the foresight process. In Company D, in turn, the interviewee did not explicitly view the current approach insufficient, which may be explained by the more focused organizational scope and the interviewee's close collaboration with clients. Expert B similarly illustrated an example of a company where the CEO played a central role in driving foresight, which was enabled by the company's small size but also the CEO's decision-making authority. This indicates that while broad participation can enable a wide range of perspectives and contributes to more comprehensive foresight, it might not be necessary or feasible in all organizational contexts.

Importantly, within all case companies, foresight formed only part of a broader role of the participants. This partly reflected resource constraints but may also be beneficial. As the interviewee from Company C emphasized, embedding foresight within existing roles helps to keep it action-oriented and therefore closely connected to the company's objectives. When foresight is conducted by people in different functions, as also suggested by the experts the insights are grounded in the company's operations. Expert B however noted that the employees' willingness to dedicate time to foresight alongside other responsibilities is an important consideration.

In all companies, foresight and decision-making were conducted separately. Foresight was primarily used to support and inform decision-makers who made decisions based on the insights. Company A differed slightly in this, as the group-level strategy function participated in both foresight and strategic decision-making, although more significant decisions were still made by top management. Moreover, Companies A, B, and C operated across multiple business areas and decision-making was partly decentralized. In Companies A and B this complicated decision-making and translating foresight insights into actions insights. The decision-making structures and purpose of foresight across companies also reflected that foresight was not always aimed to, at least immediately, lead to actions. Similarly, it was difficult to detect which decisions foresight directly informed and within what timeline as the decision-making was separate.

Despite differences in how foresight was organized and utilized, foresight activities led to similar types of decisions and actions across the case companies. Foresight supported companies especially in decisions related to strategic direction, organizational planning, product and service development, and responding to changing customer and market needs. In Company A, foresight informed strategic planning, market expansion, investment decisions, resource allocation between business areas, and innovation decisions. It also informed shorter term operational decisions, such as production intensity in factories. In Company B, foresight was mainly connected to the development of new concepts, product lineups, and services and in Company C, it supported strategic decision-making and ensuring that services aligned with future customer needs. In Company D, foresight was connected to product design and understanding the long-term needs of clients and end-users, while also informing internal management decisions. As Expert B noted, the types of decisions foresight informs naturally vary across companies, depending on its intended purpose and organizational context.

The experts highlighted that foresight does not always have to be concern major transformational decisions about the existence of the company. Instead, foresight can and should also occur at operational level in everyday activities. For instance, Expert B described how an ERP system can function as a form of operational foresight. Similarly, even small businesses may engage in foresight by following emerging customer trends and adjust accordingly. This can include anticipating which hair colors customers may prefer in the near future and ordering products beforehand. The operational-level foresight was most evident in Company A whereas in other companies it was aimed more at strategic level, although in Company B it informed assortments and concept decisions on relatively short time horizon.

4.5.3 Foresight process in practice

The findings suggest that foresight processes typically involve the same underlying phases but how they are implemented in practice differ across companies. In all companies, foresight began with monitoring the operating environment by utilizing internal and external sources. At this stage, companies largely relied on their existing knowledge to determine which changes to pay attention to. The focus depended on the company, but the aim was overall to gain better understanding of their operating environment. Based on the collected information, the companies then aimed to form an understanding of the current operating environment and possible future developments. This involved interpreting the signals and constructing scenarios or alternative future developments. Following this, companies assessed potential consequences of the different future developments for the company and considered possible responses to them.

In practice, however, the boundaries between foresight process phases proved to be blurred across all case companies. The phases overlapped, interacted continuously and included multiple feedback loops. Interpretation was not limited to the prospecting phase but rather occurred throughout the process and begun already during scanning. This was reflected differently across the companies. In Company B, scanning and interpretation were closely intertwined while in Companies C and D the interpretation and translating insights to actions occurred simultaneously. Previous knowledge and earlier foresight activities also strongly influenced what companies paid attention to. All companies demonstrated strong understanding of their operating environments, which guided scanning and how interpretation was done.

The industry context also shaped which foresight activities could be implemented. The fact that Company C operated in service industry may have made it somewhat easier to adapt to operations than Companies A and D operating in manufacturing, as changes may require less resource commitments. Companies A and D also tended to rely more on quantitative data and established industry practices, which can reinforce path dependency. As Expert B pointed out, in some industries things have always been done in a certain way and there is an expectation that they should continue to be done so, which was evident in Company D for instance. Expert B furthermore noted that the complexity and nature of the required changes shape how feasible the translation is. Expert A echoed that driving larger change tends to be particularly difficult in more established companies. Company B operated in consumer markets within an industry that enabled to experiment through testing without requiring large investments. On the contrary, Company D operated in manufacturing where experimentation through testing was not feasible due to expensive products.

Table 5 summarizes the foresight processes and how they were organized across the case companies, enabling to compare them along structure, continuity, embeddedness, and the degree to which foresight had been deliberately planned and organized.

Table 5 Foresight processes across case companies

	Case company A	Case company B	Case company C	Case company D
Structure	No separate process for foresight	Formal role within the support function	Formally structured part of operations	Structure is emerging
Continuity	Continuous within planning cycles and individual monitoring	Sporadic; needs- and project-based	Continuous across three time horizons	Sporadic; dependent on individual initiative
Embeddedness	Embedded in planning processes but not recognized as foresight	Support function; not broadly integrated across the company	Integrated into strategic function and other processes	Not yet embedded, being introduced

Deliberateness	Implicit; foresight has evolved alongside planning processes	Partial; foresight has a formal role but has not been deliberately planned	High; foresight was planned prior to implementation	Emerging; being planned and introduced
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Company C emerged as the most deliberately planned and structured, with foresight integrated into strategic processes and conducted continuously. In Company A, foresight was conducted continuously as part of planning processes, but it was not explicitly recognized as foresight and lacked its own dedicated process. Foresight had a formal role in Company B, but it was conducted sporadically based on identified need. Company D was at the earliest stage and foresight was gradually being introduced, thus currently lacking formal structure and organizational embeddedness. These differences reflect the maturity of foresight practices across the companies and the contextual factors shaping each company's approach.

Foresight was considered important within all companies. The development needs of each company were perceived differently, and they reflected the systematicity within the companies. Because Company D was still developing its foresight process, the interviewee recognized most clearly what could be improved. The interviewee from Company B considered current foresight process insufficient for the company's needs and identified significant development potential, despite its formal role within the support function. In Company C where foresight followed a planned structure and was integrated into the company and its operations, the interviewee acknowledged that foresight is never fully complete and that there is always room for further development. Company A did not identify areas for improvement in terms of foresight organization, which may reflect the fact that foresight is not explicitly recognized as a separate process.

The comparison indicates that there is no single way of conducting foresight effectively. The companies conducted the process through same phases, but the exact practices differed. The process is shaped by contextual factors and how deliberately foresight has been developed. Nevertheless, the analysis points to planning, ownership, broad participation, and continuity as important factors in effective foresight process rather than individual practices within the process. Planning the process facilitates conducting foresight overall and makes it easier to create actionable insights, ownership ensures that foresight is conducted, while broad participation ensures that the process includes multiple perspectives and considers important things. Participation can also make foresight more widely accepted across the organization. Furthermore, continuous and systematically integrated foresight process may support the utilization of foresight insights more effectively than foresight

conducted only occasionally. Continuity enables companies to maintain a comprehensive understanding of the operating environment over time, rather than occasionally conducting it.

4.5.4 Perceiving capabilities

The perceiving phase across the case companies aimed develop a comprehensive understanding of the changes in their operating environment. All case companies drew on multiple sources, such as industry reports, academic publications, competitors, networks, and social media. The focus of scanning depended on the organizational context and the purpose of foresight. Company A followed key economic indicators and change drivers behind them, while Company D focused primarily on megatrends and emphasized collecting information from reliable sources, and in Company B the focus depended on the request at hand. Furthermore, Companies A, C, and D engaged in conversations with relevant stakeholders to complement other sources, and in Company A it was particularly important to rely on market and sales departments to gain information directly from the customer interface. A central challenge which was recognized by companies and the experts, was determining which information was actually relevant, given the vast amount of available information in the environment.

A common pattern across the case companies was that scanning the environment was guided by existing knowledge and understanding of the operating environment. Companies typically focused on signals or areas that they already considered relevant, which provided structure but also included the risk of narrowing scope of scanning. The experts identified this as a potential weakness in foresight practice:

It is very typical to limit scanning to one's own industry or to the technologies that are relevant to one's own operations, which means that things happening at the edges tend to go unnoticed very easily. Breadth is therefore one thing I would like to emphasize.
(Expert A)

Companies tend to concentrate developments within their immediate operating environment and on changes that are currently seen as important, which can lead to overlooking signals at the periphery that could become significant in the future. Expert B thus emphasized that scanning should extend beyond the company's operating environment and familiar sources, including developments that may not yet seem directly relevant, such as hidden customer needs that would go unnoticed by only listening to existing customers. The accelerating pace of change, including the convergence of new technologies across industries, further highlights this need, as the most significant disruptions can be difficult to anticipate from within a narrow scanning scope.

This was most evident in Company C, where it was explicitly recognized that significant developments occur outside what the company currently considers important and therefore actively worked to challenge the assumptions which guided its scanning. Company D similarly approached scanning with an awareness that all megatrends could potentially be relevant and therefore emphasized grounding interpretations of relevance in extensive research and reliable data.

However, broad scanning alone can be insufficient, and it often needs some kind of structure. As Expert B emphasized, scanning without structure risks becoming unfocused:

Foresight should be also conducted in strategically [–] so there is some kind of structure for how it is done; so that it is not scattered in every direction, because then it is not embedded in the processes. (Expert B)

Company B organized scanning through a framework it utilized to look at the industry at hand, complemented by domestic and global benchmarking. Furthermore, as foresight was initiated through specific requests, it helped to provide focus and limit the scope to what was relevant at hand. Company C in turn had divided scanning to three time horizons, which enabled to monitor short- and long-term developments in a structured manner. In Companies A and D scanning was structured more implicitly by the focus set by the purpose of their foresight practice and accumulated industry knowledge. This suggests that having some guidelines that define what foresight is intended to focus on may support more organized and purposeful scanning.

The analysis therefore indicates that effective perceiving requires balancing breadth and structure simultaneously. Relying on existing knowledge and established priorities provides a general focus and ensures that directly relevant developments can be captured. However, limiting scanning to only what is currently considered important can lead to missing signals at the periphery. This is challenging as companies may feel like they understand their environment well, but it does not exclude the possibility of significant disruptions emerging from outside what is currently considered relevant. Effective perceiving therefore requires actively challenge current interpretations of relevance as currently unimportant developments or developments outside the company's industry can prove important in the future.

4.5.5 Prospecting capabilities

Across the case companies, the prospecting phase focused on building an understanding of the changes detected. At the core of this phase is sensemaking, which is about creating meaning from collected signals and considering what they could imply in the future. This is a critical practice for foresight as emphasized by Expert A.

An important aspect of sensemaking across the companies was evaluating and contextualizing the collected information. This involved assessing which signals were significant enough to require further consideration and interpreting what those signals meant in each company's specific context. A common characteristic across case companies was that individual signals were rarely considered important on their own and typically there had to be more signals about a certain topic for it to be considered significant and require further attention. As the interviewee from Company C described, this also depends on the nature of the change as certain changes can be significant on their own as well.

Contextualization was central to making sense of the signals. This meant that the information was interpreted through the lens of each company's own industry and knowledge. Within all companies this included initial assessment of the possible implications of identified signals, although specific approaches differed. Company A assessed the reliability of sources, compared information from multiple sources, and examined how well it aligned with historical data, reflecting its reliance on quantitative estimates. As part of sensemaking, Company A also sought to position itself relative to competitors to understand where it stood in relation to the emerging developments. Company B similarly compared itself to competitors and utilized global and domestic benchmarking to find concrete evidence of signals in practice and to see if competitors had already responded to identified change. Company C conducted more detailed research on possibly relevant signals to understand their implications for the company and customers and applied a structured evaluation framework to assess the nature and quality of the signals. Company D likewise emphasized extensive research, utilizing statistics and historical data, and seeing if other industries experience similar changes. Importantly, Company D emphasized that lack of supporting evidence for potential change did not necessarily mean a signal was irrelevant. Rather, it could mean that it was too early to communicate more broadly. In such cases, the interviewee continued to monitor the identified developments over time.

A difficult but crucial part of prospecting was challenging existing assumptions. This was explicitly recognized by the experts and Companies C and D. The experts stated that it is common for organizations to selectively engage with information that confirms their existing views while ignoring developments that challenge them. Similarly, in Company C it was emphasized that developing alternative views of the future requires questioning current beliefs about what is important and what the future might look like. This should not be done randomly but systematically and through established methods. Company D illustrated through an example that despite personal hesitation about bringing forward an insight that seemed unlikely at the time, the development of AI, it was important to trust research and data over personal judgement, which can be seen a form of challenging

mental models. To illustrate this, the experts brought up the Nokia case. Part of its inability to regard Apple as a significant threat was measuring Apple through its own established metrics, which proved irrelevant when the industry shifted. This demonstrates that inability to question current assumptions that guide interpretation can prove detrimental.

However, this can be particularly difficult for companies that have long been successful, such as Nokia, as it can be hard to envision futures that differ from the present, observed by Expert A. Organizational culture plays an important role in enabling this. Interviewee from Company C recognized that the culture largely shapes what is considered important and where attention is directed. Crucially, the culture must also enable individuals feel safe to raise contrasting opinions:

It's really important that in foresight-related discussions, or in any strategic discussions, it is possible to bring forward observations that may be uncomfortable – that it is safe and accepted to raise issues that are not in line with the prevailing worldview of the management. (Expert A)

Thus, although individuals may be able to challenge assumptions, if the culture does not support it, the observations and efforts are unlikely to result in meaningful organizational change. This also requires a certain mindset; companies should aim to accept that future cannot fully be predicted, and that the goal of foresight is not to develop a single correct answer but to anticipate and prepare for a range of futures, emphasized by Expert A.

The prospecting phase thus also involved developing views of alternative futures. Scenario construction was highlighted by the experts as a central prospecting tool, and it enabled companies to explore how the future might unfold under different conditions. The companies engaged in this differently. Company A built scenarios as part of the planning processes to ensure more informed decision-making. Company B constructed alternative future views of the industry, drawing on megatrends and trends to explain what was happening in the operating environment and how it might evolve. Company C also developed future views and similarly updated its current views, as foresight was continuous. On the contrary, Company D, focused on categorizing and contextualizing the trends while also interpreting what they could mean in the future. Across the case companies, constructing views of alternative futures was seen as important for developing a better understanding of how the operating environment might evolve and what different developments could mean for the company, which in turn facilitated to consider possible responses subsequently.

Finally, the experts and Company C emphasized the importance of collective sensemaking and building shared organizational understanding. According to Expert A, collective sensemaking

produces insights that individuals alone could not generate and may also enable better organizational commitment to decisions based on foresight insights. Company C actively sought to build a shared view of the future by communicating future views and updates not only to top management but throughout the organization to individuals not directly participating in foresight. Furthermore, its networked approach to foresight further worked as a way of developing insights collaboratively. In Companies B and D, the construction of future views remained responsibilities of the interviewees, although the insights were communicated to the decision-makers.

The findings highlight that prospecting requires companies to interpret the changes by not only relying on current knowledge but also maintaining an open mind toward developments that can now seem unimportant or unlikely. Building views of alternative futures enables companies to be better prepared for different possible developments, while collective sensemaking and shared understanding may also increase organizational commitment to decisions based on foresight insights.

4.5.6 Probing capabilities

The probing phase was identified across both the case companies and the expert interviewees as the most challenging phase of the foresight process. It was the stage where companies encountered the most practical difficulties but also where broader organizational challenges emerged.

Probing phase began in all companies with assessing what the identified future developments could mean for the company and how it could respond. Company A approached this most systematically, as it designed a matrix including the created scenarios and then building options for each one. It then assigned probabilities for each scenario and aimed to illustrate the impacts in quantitative terms, which also helped it to choose a desired direction. Building options in advance enabled the company to prepare the broader organization for potential change and act more swiftly when needed. In Company B, the assessment of implications and creating responses was largely done by the decision-makers, who considered how the changes might affect operations and how they could respond. Company C combined foresight insights with internal data to evaluate impacts on its own operations and emphasized the importance of critically assessing the company's activities in light of future-oriented information to understand whether something should possibly need to be changed. In Company D, megatrends with their possible implications were presented to the relevant stakeholders who further considered them in decisions.

A key finding across all case companies was that foresight insights needed to be made concrete and credible for decision-makers. Abstract or uncertain future-oriented information can be difficult for

decision-makers to act on, and the companies therefore worked to ground insights in tangible evidence before bringing them forward. In Company A this was ensured by presenting the insights in financial figures to make them more concrete and comparable. Materialized change also served as concrete evidence to further verify their relevance. Company B relied heavily on benchmarking and testing to find evidence, as even small changes needed to be grounded on concrete data. The decision-makers required tangible evidence that others had already successfully responded to an identified change, or that a tested concept was successful. Similarly in Company D, materialized change made foresight more concrete and worked as a way of securing commitment. Furthermore, the interviewee emphasized grounding all recommendations in data from reliable sources, recognizing that the uncertainty of foresight makes decision-makers more hesitant to act without reliable evidence. In light of the findings, the need for concrete evidence could be particularly important in companies where foresight is not yet established and lacks broad organizational support.

Equally as important was how the insights were then communicated to the decision-makers and what was emphasized. Decision-makers are often occupied with competing priorities and may not have participated in creating the insights. A common finding was that the insights need to be presented in a digestible manner which often required tailoring them to the specific context and audience. As Expert B noted, there must be a connection to decision-makers' current way of thinking so that they can envision development paths from the present toward the anticipated future. In Company B, the insights were thoroughly assessed and refined but also adapted to the specific context of each business area or cooperative. Presenting insights in clear and digestible format was also emphasized in Company A. In Company D, the presentations were tailored to the topic and participants of each meeting, and the interviewee also aimed to differentiate which trends were brought forward to keep decision-makers engaged with the developments.

The format of communication also mattered. Expert B emphasized that engaging formats such as workshops are more effective than sending an email, as they create space for insights to be collectively discussed and meaningfully internalized. Company D found that having a person from the industry present the insights directly to the client worked better to secure commitment than simply sending the documents to the decision-makers. This also connects to the broader point raised by the experts and demonstrated by Company D: externally produced reports may lack organizational embeddedness which makes foresight easier to act upon. The decision-makers might feel that the external parties do not fully understand the company's unique context and therefore it is easier to dismiss the produced insights.

The experts identified a common tendency of decision-makers to be more comfortable interpreting familiar information. This connects to the limited capacity of the human mind to process information in decision-making – the more familiar the information, the easier it is to engage with:

It is very easy to exclude from decision-making things that do not confirm or support one's existing view – to selectively pick only those pieces of information that align with the decisions one wants to make, and to disregard the uncomfortable findings. (Expert A)

Foresight however aims to expand understanding of possible futures rather than merely confirming existing ones. Thus, the experts highlighted that the insights cannot simply confirm what decision-makers already believe but they also cannot be so far removed from existing thinking that they become impossible to act on. Importantly, the probing phase also requires challenging the existing ways of thinking. Just as the prospecting phase required the interviewee in Company D to challenge existing assumptions, the probing phase requires the same openness from decision-makers. Company C engaged in this by critically examining its current practices in light of different futures, fostering receptiveness to foresight insights.

For foresight insights to result in actions, they need to reach the people who are entitled to turn them into actions, which requires foresight to be connected to the company's processes and decision-making. As Expert B highlighted, if foresight is intended to inform decision-making, it should be connected to strategy. The case companies approached this differently, depending on the focus of foresight. In Company C foresight was explicitly part of the strategy function, ensuring that insights continuously informed decision-making. Furthermore, as it was widely utilized across the expert level, it was embedded in the company's operations. In Company A foresight was embedded within planning processes, through which it informed strategy and other decisions. In Company B foresight formed part of the responsibilities of the market and consumer insight team which provided support services for other units when needed. In Company D this was yet to be fully established, while the interviewee had already begun integrating it within different parts of the company.

Across all case companies it became evident that having organizational commitment to foresight is essential for it to become actionable, but it remains challenging. This was a challenge throughout the foresight process but materialized most visibly during the probing phase, where insights were expected to lead in action. The initiative to develop foresight can come from top down or bottom up and either way, the broader organization needs to be convinced of the value of foresight and people need to feel inspired to engage with it. In Companies B and D foresight was largely driven by one person, although in Company B foresight was formally part of the company. Company C strongly

emphasized that the value and purpose of foresight need to be communicated clearly and had implemented the networked approach make foresight more broadly known across the company.

Management support was identified particularly important, which could also explain why companies emphasized making insights tangible and presenting them convincingly. Similarly, resources emerged as a significant barrier and therefore also an enabler, which was also strongly connected to how valuable management perceived foresight to be. As Expert A observed, how open individuals within management are as people shapes how receptive they also are to foresight insights, and previous organizational experiences with foresight further influence this. In Company D it was therefore recognized that establishing foresight requires gradually building trust. Large part of this was by showing in practice through materialized trends how foresight can enable the company to anticipate future better.

Path dependency further strengthened this challenge. As explained by Expert A, organizations' current revenue streams and cost structures can constrain what decisions they are willing to make and the more established organization the more difficult this is. Likewise, companies might be hesitant to change ways working if they have proved successful over the years, which further underlines the importance of willingness to question and challenge the current ways of thinking. Expert A illustrated this by referring to Kodak: the company did not want to pursue digital photography further as it would have risked its primary revenue source, limiting its willingness to act on the knowledge they had. This was reflected in Company D, where resistance to change required supporting foresight insights with extensive research, yet trust in foresight insights remained limited. Company B illustrated a gradual approach to this, using testing as a way of embedding foresight insights into operations while simultaneously building organizational commitment by allowing others to see how the implemented changes worked.

The findings suggest that probing requires companies to assess the implications of different futures, make insights concrete and credible, and communicate them in a clear and engaging manner to relevant stakeholders. For insights to reach the decision-makers, foresight should be connected to organizational processes and decision-making. Crucially, probing also requires the ability to challenge existing ways of thinking and operating across the company.

Beyond the process-level capabilities of perceiving, prospecting, and probing, the findings point to a set of underlying factors that need to be in place for companies to be able to utilize foresight insights effectively. These can be understood as another capability that underlies the process capabilities: a capability to organize and sustain foresight practice within the company. Several factors can be

connected to this capability. It encompasses securing managerial support, which enables the insights to be considered in decisions but also adequate resourcing for foresight. Foresight should also have clear ownership, which would assign responsibility for the process and ensure that it is conducted. The findings also suggest that planning how foresight insights will flow through the organization supports the translation of insights into action. In addition, for the insights to inform action, foresight needs to be understood within the company in terms of purpose and value, as shared understanding of why foresight is valuable can increase organizational commitment.

In accordance, the experts drew on microfoundations by identifying three interacting elements that together produce organizational foresight capability: people and their competences, social processes and organizational culture, and structures that support the effective utilization of knowledge. This view emerged from the findings and suggested that developing foresight capabilities also requires considering these three elements. The findings therefore suggest that the ability to organize and sustain the foresight process is a capability that enables other foresight capabilities to develop and function effectively throughout the process.

Table 6 summarizes the foresight capabilities within each process phase across the case companies. It outlines the main characteristics of how each company enacts the identified capabilities, including the capability to organize and sustain foresight.

Table 6 Foresight capabilities across case companies

	Case company A	Case company B	Case company C	Case company D
Perceiving	Broad scanning guided by industry knowledge and key economic indicators	Focused and needs-based scanning, structured by requests and a framework	Broad and deliberate scanning across time horizons, emphasis on challenging assumptions	Broad scanning focused on reliable data, open to all potentially relevant developments
Prospecting	Systematic sensemaking and scenario development, relying on quantitative estimates	Driven by benchmarking, building views of the present and futures	Building and updating future views continuously, collective sensemaking and questioning views	Extensive research and contextualization, challenging biases
Probing	Building strategic options, clear and concrete communication	Testing to verify insights, decision-makers build strategic options	Insights are integrated to processes, new data is combined with internal data to assess implications	Clear and contextualized communication, relying on reliable sources
Organizing and sustaining	Implicit, not explicitly developed	Partially developed, need for broader development is recognized	Planned with clear ownership, management commitment and shared understanding	Early stage development of structures and practices

Company C demonstrated the most comprehensive capabilities across all phases as well as in organizing and sustaining foresight. The other companies showed more variation across the capabilities. The capability of organizing and sustaining foresight was partially developed in Company B while it was less developed in Companies A and D. Company A showed relatively strong capabilities especially in perceiving and prospecting through broad scanning and systematic approach to developing scenarios. Similarly, Company B demonstrated established perceiving and prospecting capabilities through benchmarking, and probing capabilities through testing, while Company D showed the most limited capabilities overall, reflecting the early stage of its foresight activity.

Based on the cross-case analysis, Figure 7 maps the case companies based on how established their foresight processes and capabilities are. The foresight process was assessed by its structure, continuity, embeddedness, and the degree to which it had been deliberately planned and organized, reflecting its overall formality. The capabilities were assessed by the extent to which they were developed and enacted across each process phase, reflecting how effectively the company is able to translate insights into actions.

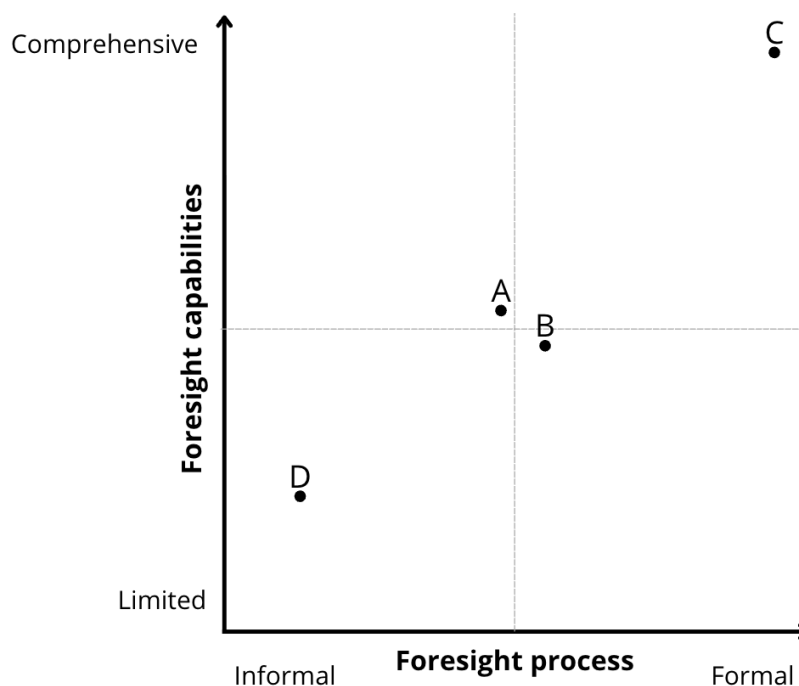


Figure 7 Foresight processes and capabilities of case companies

The process and capabilities were most established in Company C. Foresight was formally embedded in the company's operations, and it demonstrated strong foresight capabilities throughout each process phase. This was largely attributable to a clear understanding of the purpose of foresight and deliberate planning prior to implementation, enabling the definition of clear ownership and securing continuity. Company D, in contrast, represented a company where foresight is still at early stages. Its

foresight process currently lacked formal structure, organizational embeddedness and, as foresight was initiated by a single individual, it had not yet reached the level of organizational capability. Nevertheless, the company demonstrated the ability to translate foresight insights into actions, and its capabilities were assessed as slightly more established than its process. Importantly, Company D showed strong prerequisites for developing a more established foresight practice. The interviewee acted as a foresight agent with a clear understanding on foresight and commitment to advance it within the organization. With broader organizational support, these individual-level capabilities could potentially be transformed into organizational-level capabilities over time.

Companies A and B were positioned in the middle, close to each other. In Company A, foresight did not have a separate own process, but it was embedded within the planning processes, which is why it was assessed as somewhat less formal in terms of process. Furthermore, foresight was not explicitly recognized as such within the organization, as the interviewees had different understandings of foresight, which could suggest that the company did not have a shared and clear understanding of foresight, making it more informal and limited. Nevertheless, the company demonstrated relatively strong capabilities, especially in the perceiving and prospecting phases. In Company B, foresight had a formal place within the support organization, making it somewhat more established than that of Company A. However, the practice remained irregular and not broadly embedded across the organization. The company demonstrated good capabilities particularly in translating insights into concrete evidence through benchmarking and testing, although the overall scope was limited by its need-based nature. The following chapter discusses the findings of the cross-case analysis in relation to the existing literature.

5 Discussion and conclusions

The aim of this study is to identify how companies carry out their foresight processes and which foresight capabilities support the translation of foresight insights into actions. This chapter synthesizes the empirical findings in relation to existing literature and discusses the theoretical and managerial implications. The chapter concludes with acknowledging the limitations of the study and suggestions for future research.

5.1 Discussion

5.1.1 Contextual factors shaping foresight

The findings of this study reflect the context-specific nature of foresight, as suggested by existing research. Rohrbeck (2011, 72, 115–116) argues that how foresight is implemented largely depends on its intended value creation and organizational context, which was clearly reflected across the case companies. Consistent with the systemic view adopted in this study, the development and enactment of foresight capabilities in the case companies was shaped not only by the external operating environment but also by internal organizational factors such as culture, structures, participation, and managerial support (Daheim & Uerz 2008; Rohrbeck 2011; Dörr et al. 2024).

Externally, the industries in which the companies operated influenced the scope and focus of foresight, feasibility of different foresight activities, and time horizons, as suggested by Schoemaker and Day (2005) and Rohrbeck (2011). Company B that operated in fast-moving consumer markets had relatively short time horizon and was able to experiment more freely, while companies in capital-intensive manufacturing industries, such as Companies A and D, faced larger constraints in acting on foresight insights due to long investment cycles and established cost structures. Furthermore, the impact of external environment was also reflected within organizations. Companies A, B, and C operated across different business areas, which impacted the scope, focus, and frequency of foresight practices across different parts of the organization.

Internally, organizational structures, culture, management support, and the degree to which foresight had been deliberately developed all shaped how foresight capabilities were enacted in practice, which was consistent with the view that internal factors either enable or constrain foresight (Dörr et al. 2024; Rohrbeck 2011; Schreiber 2019). Management support emerged as a particularly critical factor, in line with existing research identifying it as essential for the continuity, visibility, and strategic impact of foresight (Daheim & Uerz 2008, 326; Peter & Jarratt 2015, 57). This was most evident in the contrast between Company C, which had deliberately designed its foresight practice with

management support and broad organizational participation, and Companies B and D where foresight was driven by a single individual and lacked broader organizational involvement. Existing theory emphasizes the importance of heterogeneous expertise and diverse perspectives in foresight (Gordon et al. 2019, 37). The findings largely support this but additionally highlight that it is largely dependent on the context as well. In Companies A and C, wide organizational participation was considered essential, and similarly Company B aspired to develop a more organization-wide practice. However, in contrast, in Company D broad participation was not seen as a prerequisite for effective foresight process. This may partly be explained by its more focused organizational scope as it operates within one industry with less need to understand various industry contexts than companies operating in multiple business areas with decentralized decision-making.

5.1.2 Foresight process

Addressing the first sub-question of how companies carry out their foresight process, the literature review drew on the three-phase model developed by Rohrbeck & Kum (2018) and Højland & Rohrbeck (2018) consisting of perceiving, prospecting, and probing. While none of the companies explicitly utilized this model, all three phases were identifiable within each company's foresight activity. In practice, the boundaries between the phases were not clear-cut and they overlapped considerably. This aligns with existing literature as Højland and Rohrbeck (2018) suggest that rather than being strictly sequential, the phases are rather complementary and iterative. Interpretation began already during perceiving and continued throughout the process, and earlier foresight work guided what companies focused on currently. This also suggests that foresight practice evolves over time as companies accumulate knowledge of their environment.

While largely consistent with prior research, the findings also suggest that in practice, the foresight process phases are less formalized. During perceiving, all companies engaged in scanning to identify changes that are currently impacting their industry and those that could impact it in the future by drawing on multiple sources (Horton 1999, 6; Vecchiato 2015, 30; Rohrbeck et al. 2018, 14). The expert interviewees identified that a common weakness during this phase was that companies struggle to scan outside their immediate industry. Apart from Company C, the case companies did not explicitly identify narrow scanning as a challenge. The cross-case analysis demonstrated that scanning however tended to be guided by existing knowledge and familiar sources, which entails a risk of limiting scanning to the immediate environment, emphasized by existing literature (Rohrbeck et al. 2018, 14; Torres & Pena Jr 2021, 479). The literature furthermore suggests that during perceiving, companies categorize signals along dimensions such as impact and maturity (Højland &

Rohrbeck 2018, 735); however, this level of categorization was not widely done, and companies tended to rather assess the relevance of signals more informally.

The prospecting phase within the case companies similarly included the two interrelated practices of sensemaking and futuring identified in the literature (Gordon et al. 2019, 36, 38). Companies interpret the collected signals, further assessed their relevance and consequences, and aimed to develop an understanding of the present and alternative futures. The findings highlight contextualization as a particularly important aspect of this phase which helps companies to understand the possible consequences of signals when interpreting them within their context. During futuring, companies built alternative future views to explore how identified developments might unfold. Existing literature suggested that this phase often involves creation of scenarios (Gordon et al. 2019, 36; Schwarz et al. 2023, 3), but it was formally utilized only in Company A, whereas others approached futuring in less structured ways.

The probing phase in turn involved turning the developed future views into decisions and strategic responses, as described in literature (Højland & Rohrbeck 2018; Gordon et al. 2019, 37). The findings confirmed that probing activities included assessing the consequences of alternative futures to the company, evaluating existing operations in light of future-oriented information, and developing plans on how to respond (Rohrbeck & Kum 2018, 107; Beckert 2021, 2; Demneh et al. 2023, 15). The role of testing and experimentation, emphasized in the literature (Gordon et al. 2019, 38), was most clearly observable in Company B, where testing was an integral part of the foresight process. It began small and was scaled up if it proved successful. In Company A foresight insights could inform innovations, but testing was a separate process, while in other companies it was not a notable part of the foresight practice. The findings also confirm that foresight does not necessarily lead to immediate action (Gordon et al. 2019, 37–38), rather it works to inform about environmental changes and build organizational readiness for change. This was however largely dependent on the company context and nature of the change needed to be implemented. In Company C important signals often prompted deeper research and closer monitoring, while also informing service development. In Company A foresight could support taking proactive steps towards an anticipated future, such as allocating resources toward market that was predicted to grow, but in some situations, action was not taken until change materialized. Company B in turn verified foresight insights by taking concrete actions by testing.

The findings corresponded with earlier research suggesting that probing emerges as the most challenging phase of the foresight process (Schwarz 2024, 155). While the challenges relate to the

entire process, they were most visible during probing because that is when insights are to be translated into actions. The key challenges identified across the case companies were the inherent uncertainty of the foresight insights resulting in lack of trust, resistance to change, and difficulties in securing organizational commitment, especially from the management. These findings are in line with existing literature (Rohrbeck 2011, 157; Hines & Gold 2015, 103; Beckert 2021, 2; Bezold 2010, 1516). The lack of tangibility in foresight was especially challenging in Company A as the company strongly relied on quantitative estimates, which made it difficult to act on future-oriented information without concrete evidence. This is consistent with Bezold's (2010, 1516) observation that resistance is typically particularly evident in units that tend to prefer concrete forecasts. In Company D in turn resistance to change was compounded by strong path dependency, making it difficult to secure organizational commitment and trust. Partly resulting from lack of organizational commitment, resource constraints also emerged as a recurring challenge, limiting foresight practices across all case companies, as recognized by existing literature (Hines & Gold 2015, 102–103).

5.1.3 Foresight capabilities

Addressing the second and third sub-questions of what foresight capabilities are required and how they support the translation of foresight insights into actions, the findings are largely consistent with existing theory while also extending it. The identified challenges in the probing phase in particular revealed that translating foresight insights into actions does not only depend on capabilities enacted within perceiving, prospecting, and probing, but also on broader organizational conditions that enable the process to function effectively. While deliberate organizing and sustaining foresight was not within the scope of this study, it emerged consistently throughout the cross-case analysis as an important enabling capability of effective foresight practice, most clearly demonstrated by Company C.

These findings are broadly consistent with existing research emphasizing the importance of organizational structures, culture, and management involvement in enabling foresight capabilities (Daheim & Uerz 2008; Rohrbeck 2011; Dörr et al. 2024). This also aligns with microfoundations thinking, which was emphasized by the expert interviewees, suggesting that organizational foresight capability emerges from the interaction of people and their competences, social processes and culture, and organizational structures. Therefore, extending the theoretical framework, the findings suggest that companies need the *capability to organize and sustain foresight practices* within the company to suit its unique organizational context, paying attention to ownership, managerial commitment, building a shared understanding of foresight's purpose and value, and ensuring that information flows

effectively within the company. This capability is partly enacted before the foresight process begins, through planning, but it continues throughout the process itself, as demonstrated by Companies C and D where building organizational trust and familiarity with foresight was an ongoing effort conducted alongside foresight activities.

The cross-case analysis supports existing literature on perceiving capabilities. All case companies drew on multiple sources in their scanning, which demonstrated the importance of *scanning broadly* for effective perceiving (Paliokaitė & Pačėsa 2015, 167; Baškarada et al. 2016, 432; Demneh et al. 2023, 2). While Company C structured scanning across multiple time horizons and utilized methods such as PESTEL to ensure broad scope (Gordon et al. 2019, 35), other companies relied more implicitly on accumulated industry knowledge and expertise to guide their scanning. Similarly, the focus of scanning and time horizons varied considerably across companies, shaped by industry characteristics and the purpose of foresight, further confirming that appropriate scanning scope is highly context-specific (Day & Schoemaker 2005, 2; Paliokaitė et al. 2014, 164). This reflected the capability identified in the literature of *aligning scanning scope and depth with organizational context and strategic needs* (Day & Schoemaker 2005, 2; Paliokaitė et al. 2014, 164; Baškarada et al. 2016, 415). However, the findings suggest that in practice, this alignment often occurred automatically rather than deliberately, which also pointed to a risk of limiting scanning without conscious awareness. This further supports the finding that the capability to plan and organize the foresight process is an underlying capability supporting perceiving.

While the companies did not strongly emphasize leveraging external and internal networks in scanning as suggested by literature (Paliokaitė et al. 2014, 164; Peter & Jarratt 2015, 60), they were both recognized as important sources of data, most explicitly in Companies A and C. Therefore, this capability could be understood as part of the capability to scan the environment broadly. The findings also confirmed the *capability to challenge perceptual frames and underlying assumptions* during scanning (Gordon et al. 2019, 35–36; Pouru et al. 2019, 88). The findings demonstrated that consciously extending scanning to also consider signals that may not currently seem important is critical, as illustrated by Companies C and D, which actively aimed to question existing interpretations of relevance. However, this is also challenging because the scope of scanning was limited by current knowledge and without consciously paying attention to the perceptual frames, much can go unnoticed.

The findings on prospecting capabilities largely align with previous research, but not all previously identified capabilities were supported by the cross-case analysis. The findings revealed that

companies assess which signals are significant, guided by both previous knowledge and recurrence of signals across multiple sources. This is in line with what theory suggested as the *capability to interpret large volumes of data and identify strategically significant factors* (Horton 1999, 6; Paliokaitė et al. 2014, 165; Kononiuk 2022, 76). Supporting this, the companies contextualized signals to their specific situations, making it easier to assess significance and implications. Notably, the initial assessment done in perceiving, seemed to already limit the amount of data, demonstrating how interpretation occurs partly during scanning.

The *capability to challenge prevailing mental models and consider a wide range of future developments*, including undesirable ones (Demneh et al. 2023, 15; Hines & Bishop 2006, 149) was in findings regarded as challenging yet important. All companies built alternative future views, but the degree to which they consciously examined their assumptions varied. In Company C it was understood more widely, while in Company D it remained more an individual-level capability, regardless, in both it was considered important, supported by expert interviewees. Furthermore, this capability is closely linked to how well foresight is understood within an organization and the openness of organizational culture, also recognized by Dörr et al. (2024, 3). *Shared organizational understanding of future developments* emerged as an important part of prospecting (Horton 1999, 4; Rohrbeck et al. 2018, 16; Schwarz 2024, 155), as it influences how well foresight insights are received and whether they lead to action. Company C addressed this through the networked approach and open communication of future views across the organization. While this capability did not emerge from all case companies, its absence may partly explain why foresight insights received more skepticism in the other companies, as shared understanding increases organizational commitment to foresight (Horton 1999, 4).

The findings provided limited evidence regarding the capability to select and apply appropriate foresight methods, which existing literature identifies as critical for effective prospecting (Kononiuk 2022; Laakkonen et al. 2025; Rohrbeck 2011, 76–77). Although Company A utilized scenario planning and Company C mentioned utilizing structured methods, it was not a pronounced feature across the case companies. The findings rather emphasized that companies relied on more informal approaches, which could also indicate that utilizing foresight methods is a more advanced capability.

The cross-case analysis supports and furthermore extends existing literature on probing capabilities. The *capability to assess the implications of alternative futures for the organization and translate them into concrete strategic options* (Horton 1999, 7; Hines et al. 2017, 9) was pronounced across the case companies. While Company A approached this most systematically, others engaged in it more

informally by assessing consequences and leaving option development more to decision-makers. Consistent with existing research, the companies combined existing and new information to understand implications of alternative futures (Baškarada et al. 2016, 423; Luo & Child 2015, 389) and assessed their current practices in light of different future developments (Demneh et al. 2023, 9; Carayannis et al. 2024, 17505).

Similarly, the findings support the need for the *capability of critically examining prevailing mental models in future-oriented decision-making* (Rhisiart et al. 2015, 126; Demneh et al. 2023, 14). Because decision-making and foresight were done separately in case companies, the cross-case analysis highlighted that while this capability was required from foresight practitioners during prospecting, it is equally required from the decision-makers during probing. If decision-makers are unable to question their existing assumptions, even well-grounded insights may fail to inform decisions. The findings further suggest that the insights need to challenge existing thinking while remaining connected to current understanding to be actionable.

An essential capability was the *capability to secure organizational commitment to action* (Rohrbeck 2011, 115). Management support was identified as a particularly important factor. While existing literature emphasized open and continuous communication (Dörr et al. 2024, 9; Battistella & Attanasio 2025, 27), the findings extend this by specifying what this requires in practice. Because decision-makers face competing priorities, the insights need to be communicated in a digestible manner and furthermore tailored to the audience and occasion to enable more informed decision-making. Moreover, the credibility of insights is enhanced when presented to decision-makers by someone within the organization or with sufficient contextual expertise, rather than through external reports that may be dismissed (Horton 1999, 4). Similarly, to foster organizational commitment, engaging ways such as workshops are more effective (Horton 1999, 4). Because managers often prefer to make decisions based on facts (Rohrbeck 2011, 157) they also favor concrete insights. The case companies demonstrated varied approaches to this: combining foresight insights with quantitative estimates and presenting insights in financial estimates, identifying materialized trends, benchmarking, and testing. Testing in particular may prove effective in contexts where experimentation is feasible, as it provides concrete evidence while simultaneously building organizational commitment.

The capability to integrate foresight into organizational strategy and processes is also essential to ensure that the insights can be translated to actions (Fergnani 2022, 828; Rohrbeck 2011, 79). The findings suggest that how foresight is connected to existing processes significantly shapes whether

insights reach those entitled to act on them. This was most effectively demonstrated by Company C, where foresight was explicitly integrated into the strategy function, ensuring that the insights continuously informed decision-making. However, this can be rather understood as part of the established capability to organize and sustain foresight practices within the company, as this is more of a prerequisite that enables probing rather than a capability that is enacted during probing.

As illustrated in cross-case analysis (See Figure 7), the case companies varied in both foresight process maturity and capabilities. The findings suggest that a more deliberately organized foresight process may support stronger capabilities across all phases, resulting in more established foresight practice overall. Company C, which had planned its foresight practice, demonstrated the strongest capabilities and process, while companies where foresight was less deliberately organized, particularly Company D, showed more limited capabilities and practices. However, even when processes are less formalized, certain capabilities may still be relatively strong, and companies may still be able to translate insights into actions.

The findings also indicate that although the processes and practices can differ considerably, as in Companies A and B, the underlying capabilities can be similar, while how they are enacted in practice is shaped by contextual factors. As discussed in Chapter 5.1.1 both internal and external contextual factors shape foresight (e.g., Rohrbeck 2011; Dörr et al. 2024), and designing and organizing the foresight process to suit the company's organizational context may therefore be essential to develop strong capabilities and an effective foresight process. Furthermore, foresight capabilities are dynamic and can be developed over time throughout the foresight process itself (Grim 2009; Dufva 2015; Schreiber 2019), which was reflected particularly in Company D, where foresight was conducted alongside building organizational familiarity and developing organizational-level foresight capabilities.

5.1.4 Revised theoretical framework

The discussed findings can be synthesized into a revised theoretical framework, which is presented in Figure 8. It builds on existing literature while incorporating the empirical findings on foresight capabilities that enable translation of foresight insights into actions effectively.

Challenging mental models and underlying assumptions emerged an important capability throughout the process, and is therefore included across all three process phases. Building on the initial theoretical framework, the perceiving capabilities were refined by combining two capabilities into one. The capability to leverage internal and external networks was incorporated into the capability to broadly

scan the operating environment across multiple dimensions for future oriented information, forming the capability to broadly scan the operating environment across multiple dimensions and sources.

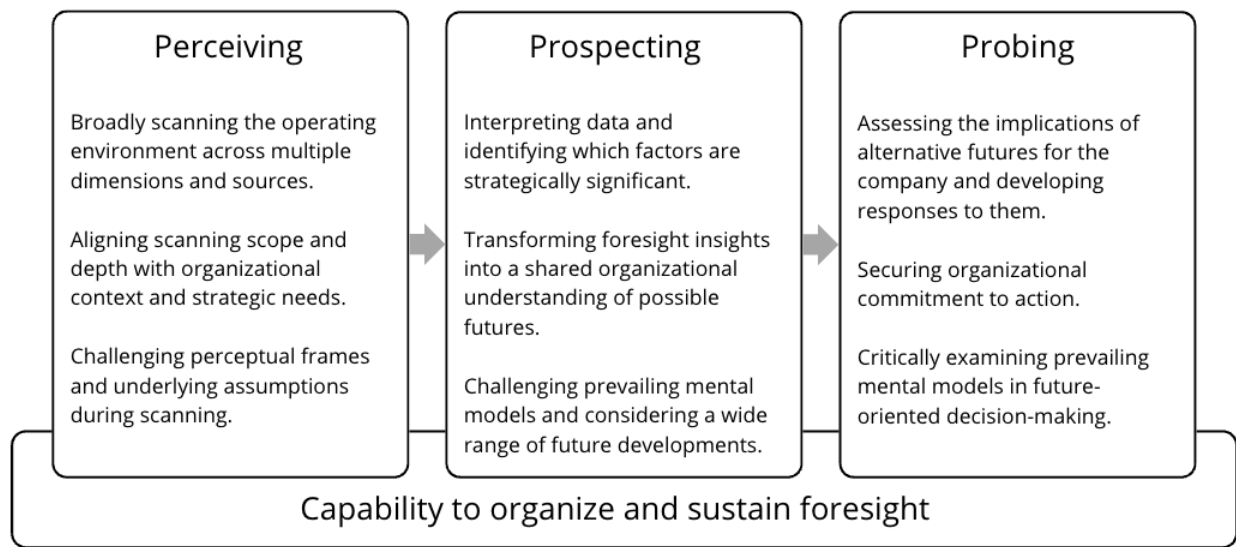


Figure 8 Revised theoretical framework

In prospecting the capability to select and apply appropriate foresight method was not strongly supported by the findings, and therefore it was excluded from the revised framework. This may indicate that it is a more advanced capability, rather than suggesting that it is unimportant. In probing, the capability of integrating foresight into organizational strategy and processes emerged as essential but was excluded from probing capabilities as the findings suggested that it can be more accurately understood as part of the capability to organize and sustain foresight.

Organizing and sustaining foresight was identified as an enabling capability that supports effective foresight practice across and beyond the process phases and thus contributes to translating insights into actions. Furthermore, it connects to clear ownership, managerial commitment, information flow, and developing a shared understanding of foresight's purpose within an organization, as well as additionally integrating foresight into organizational strategy and processes. This capability extends beyond the foresight process and relates more broadly to organizational readiness to foresight and factors that enable foresight. Therefore, it is only briefly addressed as a more detailed examination goes outside of the scope of this study. Having discussed the findings in relation to existing literature, the following chapter discusses the managerial implications of this study.

5.2 Managerial implications

The findings of this study offer several practical insights for managers and organizations seeking to develop their foresight capabilities and better translate foresight insights into actions. The findings

suggest that companies benefit from deliberately planning and organizing their foresight process. This includes defining the purpose of foresight, determining clear ownership, ensuring management commitment, and planning how the insights will flow within the company and reach the decision-makers. This enables companies to design a foresight process that is suited for the company's context and needs. However, this does not need to be fully established before conducting the process. As illustrated by Company D, foresight can be gradually integrated into the organization alongside practicing it, and the process itself can help to further embed foresight over time. Furthermore, the findings indicate that building a shared organizational understanding of foresight is an ongoing effort that supports both the enactment of the process and the broader acceptance of the possible changes resulting from foresight insights. Planned structure and clear practices enable companies to enact the process more effectively and assist in developing the process-level capabilities over time.

How foresight is organized is context-specific and depends on both the company's internal and external context. The context shapes the suitable frequency of foresight, although even in stable environments foresight should be done regularly. It also determines the scope and practices within each phase. While not necessary in all contexts, broad participation can be beneficial, especially during perceiving and prospecting, as collaborative discussions and sensemaking can generate insights that individuals alone may not have been able to create.

The findings suggest that scanning tends to be guided by existing knowledge, which can entail a risk of companies feeling confident in their understanding of their environment while remaining unaware of developments at the periphery. Companies should therefore consciously broaden their scanning scope beyond their immediate environment and familiar sources to capture diverse signals. This requires actively challenging existing assumptions about what is considered relevant, understanding that changes that might currently seem unimportant could prove important in the future. Scanning can further benefit from established structure and continuity, and utilizing structured methods such as a trend radar or PESTEL can help to widen the scope of scanning.

More broadly, this study highlights the importance of questioning what is currently considered important throughout the entire process. Companies should be willing to consider unlikely and unfavorable scenarios as those can reveal new opportunities and competitive advantages that would have otherwise remained unrecognized. This is particularly important when translating insights into actions, and decision-makers must be open to consider and utilize insights that challenge their current assumptions in decision-making. To support this, companies could reflect on their organizational

culture and aim to encourage one that supports open discussion and willingness to challenge the existing ways of thinking.

Considering a wide range of alternative futures enables companies to be better prepared for different developments. This can both widen perspectives and challenge existing assumptions but it also itself requires a willingness to question the prevailing beliefs. To enable more informed decision-making, companies should also consider the implications of these futures for their own operations and develop responses to the different possible situations. Particularly valuable can be combining the foresight insights with the company's own internal data to concretely understand what the identified developments could mean in practice.

The findings also emphasize the importance of making foresight insights concrete and credible before presenting them to decision-makers. The appropriate approach depends on the company's context, and the findings identified several ways to achieve this. Companies can combine the insights with financial estimates or illustrate insights entirely through quantitative measures, seek concrete evidence from other companies through benchmarking, conduct extensive research, or test the responses in practice. Especially testing can be valuable as it validates the insights but also helps to gradually implement foresight insights to practice. Tailoring the insights to the specific audience and occasion and presenting them in engaging formats further increases the likelihood that they will be considered in decision-making.

Finally, the findings highlight that foresight does not always need to lead directly to action. Its purpose can also be to inform decision-makers about changes in the environment, building readiness to respond to changes when they materialize. It is therefore important for companies to define what is expected from foresight and organize the practice accordingly. Translating foresight insights to actions requires not only the capabilities within each phase of the foresight process but also structure and conditions that enable insights to reach the decision-makers and implement change.

5.3 Limitations and suggestions for future research

The focus of this study was to explore how companies carry out their foresight process and which capabilities enable to translate foresight insights into actions. While this study provides valuable insights into corporate foresight capabilities, several limitations must be acknowledged.

This study focused on foresight capabilities within the foresight process. However, the findings pointed to a broader capability that enables the process, encompassing ownership, management commitment, and shared understanding of foresight. While this emerged as an important finding, it

falls partly outside of the scope of this study and related more broadly to organizational readiness to foresight and was therefore only addressed briefly.

Although qualitative case studies typically involve a small number of cases, the four cases included in this study can limit the generalizability of the findings. Similarly, the case companies operated in different industries, and therefore industry-specific contextual factors may have influenced how foresight was conducted. Including companies from the same or similar industries would have enabled a more controlled and comprehensive comparison. The study is furthermore limited to the Finnish context which may restrict the transferability of the findings to another geographical settings.

Moreover, this study relied on a small number of interviewees per case. While the objective was to conduct two interviews per company to capture diverse perspectives within each company, this was only fully achieved in Company A. In the remaining cases, a single interviewee was interviewed. Although each respondent was selected as the most knowledgeable person regarding foresight practices in their organization, a single perspective inevitably limits the comprehensiveness of the findings and may not capture the full range of views within each company. This is especially important as in all case companies, foresight activities and decision-making based on foresight insights were separated. In most cases only individual who participated in foresight activities was interviewed.

The sampling approach introduced further limitations. Convenience sampling was used alongside purposive sampling to identify suitable participants for this study. This was partly because it was difficult to assess from the outside whether companies conduct foresight and how developed their foresight practice is. As a result, foresight maturity varied across the case companies. It would have been preferable to focus on companies with similar maturity to enable better comparison.

In this study the interview data was supplemented by publicly available secondary data, namely annual reports and company websites, as internal foresight related documents were not accessible from the companies. However, internal foresight documents might have provided a more comprehensive perspective of foresight practices. This limited the extent to which the findings could be triangulated and verified because companies did not disclose foresight activities within the publicly available data.

Despite these limitations, the study provides valuable empirical insights into how foresight is practiced in large Finnish companies and contributes to the understanding of the capabilities that enable foresight insights to be translated into actions.

Several directions for future research emerge from the findings of this study. While this study did not aim to examine how companies' foresight is organized, it emerged as an essential finding. Future research could examine how this capability, alongside the process-capabilities, is built in practice. A longitudinal or action research approach that would follow an establishment of a foresight process within a company that currently does not have one could offer valuable insights into how foresight practices and capabilities develop over time. This would enable to examine how foresight is planned and embedded into organizational processes, and how organizational commitment and trust are built.

The findings highlighted that translating foresight insights into actions depends significantly on decision-makers, but this study examined those that are responsible for foresight. Future research could focus on the decision-making side of foresight by interviewing both foresight practitioners and decision-makers who receive the insights. Understanding what happens to foresight insights once they are presented to decision-makers and what factors influence whether they lead to action would provide valuable complementary insights to the findings of this study.

While the contextual factors provided interesting perspectives, a similar study conducted within a single industry would enable a more focused comparison by minimizing the influence of industry-specific contextual factors. This could provide a more detailed understanding of how foresight capabilities develop and are enacted within a specific operating environment.

The role of artificial intelligence in foresight emerged as a relevant theme across multiple-case companies and among the expert interviewees. Future research could examine both the opportunities and risks AI poses for foresight practice. For instance, whether AI could support companies in developing organizational foresight capabilities – broadening the scope of scanning, processing large volumes of data, scenario planning, or enhanced awareness of prevailing mental models. At the same time, as suggested by the experts, AI entails risks that could in turn hinder the capability development, such as biases or the possibility that certain scenarios are entirely blocked.

6 Summary

Companies operate in increasingly uncertain and rapidly changing environments and corporate foresight has gained increasing interest among companies. Despite the increasing utilization of foresight, companies still face significant challenges, particularly in utilizing the insights in decision-making and actions. The aim of this study was to examine how companies can translate foresight insights into actions by developing their foresight capabilities. To achieve the aim, this study was guided by three sub-questions: how companies carry out their foresight processes, what foresight capabilities are required to effectively translating foresight insights into actions, and how these capabilities support the translation.

The literature review began by conceptualizing corporate foresight and establishing a systemic perspective that combines capability and process perspectives while considering internal and external organizational context as critical shaping factors of foresight practices. The foresight process was examined through a three-phase model consisting of perceiving, prospecting, and probing, followed by an examination of foresight capabilities required at each process phase. Together, these formed the theoretical framework guiding the empirical analysis.

The empirical research was conducted as a qualitative multiple-case study across four large Finnish companies operating in distinct industries. The method was chosen to understand foresight within its organizational context and provide practical insights into how it is implemented. The data was collected through semi-structured interviews with five company representatives, complemented with an expert interview with two experts. In addition, case companies' annual reports and websites were utilized as secondary data for contextualization and data triangulation purposes.

The findings largely confirmed prior research while also providing new insights. The three-phase foresight process was identifiable across all case companies, although the phases were found to be overlapping and iterative. The findings confirmed that organizational context shapes how foresight is organized and enacted, both the environment and internal factors, such as organizational culture, structure, and management support, influences how foresight capabilities were developed and utilized.

A capability that emerged central throughout the foresight process was challenging existing assumptions and mental models. The capability shaped which signals are noticed, how they are interpreted, and whether decision-makers are open to consider the insights in decision-making. During perceiving, broadly scanning the operating environment and aligning scanning scope with

organizational context were confirmed as essential capabilities. During prospecting, interpreting collected information and identifying relevant information for the company, as well as developing a shared organizational understanding about the alternative futures were identified as central capabilities. Probing was identified as the most challenging phase and the key capabilities included assessing the implications of alternative futures for the company and securing organizational commitment through tangible, tailored and engaging communication. Furthermore, the findings pointed to an enabling capability of organizing and sustaining foresight. It encompasses developing management support, clear ownership, shared organizational understanding on foresight's purpose, and ensuring effective information flow within the company. This capability underlies all process-level capabilities, and extends the theoretical framework of the study.

Based on the findings, the theoretical framework was revised in conclusions. Practical implications were derived to guide managers and organizations in developing their foresight capabilities in translating insights into actions more effectively. The study concluded by acknowledging limitations and identifying suggestions for future research.

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Appendices

Appendix 1 Company interview questions

1. Could you start by telling me your position and how long you have been working in this company?
2. What is your background with corporate foresight, and how are you currently involved in your company's foresight process?
3. What does the corporate foresight process in your company look like in practice? Can you describe it with examples?
4. How is foresight organized in your company? Are there established routines or guidelines?
5. Who is typically involved in the foresight process, and why?
6. How do you monitor changes in your company's environment?
7. How do you decide which information is relevant for your company?
8. What usually happens after you have identified potentially significant information from the environment?
9. How do you assess what changes in the environment mean for your company?
10. How is the information collected through foresight activities used in practice, and what kinds of actions does it lead to? Could you give examples?
11. On what basis do you decide whether a change detected in the environment requires attention or further consideration?
12. When you identify a possible change or trend through foresight, how does your company typically start considering possible responses or courses of action?
13. How does your company test or experiment with new ideas before implementing them?
14. What kinds of decisions are made based on insights from foresight? Can you give examples?
15. Who typically participates in these decisions?
16. Could you give an example of a situation where information collected through foresight has led to concrete actions?
17. Have there been situations where insights from foresight did not lead to actions? Why?
18. What helps your company to turn insights from foresight into practical actions?
19. How do you see the role of foresight evolving in your company in the future? Do you think there is still untapped potential?

Appendix 2 Expert interview questions

1. Could you start by telling me your name, your position, and your background in foresight?
2. How should companies monitor and analyze changes in their operating environment?
3. How would you describe a typical foresight process in companies? What characteristics does a good foresight process include?
4. What challenges do companies typically face in relation to foresight?
5. How do you think the foresight process should be organized?
6. Who should be involved in foresight activities in companies, and why?
7. In what kinds of decisions and actions should foresight insights be utilized? Could you describe this with examples.
8. How are foresight insights typically integrated into decision-making and practical actions in companies?
9. How can companies develop and test new courses of action based on foresight insights?
10. What capabilities and factors are most critical for turning foresight insights into concrete decisions and actions?
11. Could you give an example of a situation where foresight has led to practical actions in a company? What contributed to this?
12. In what kinds of situations do foresight insights typically fail to lead to action? What are the main barriers? What should companies do differently? Could you give concrete examples of this.
13. How do you see the role of foresight evolving in companies in the future? Do you think there is still untapped potential?
14. Can you think of any companies in Finland that you consider forerunners in foresight?

Appendix 3 Interview information sheet

DESCRIPTION OF THE STUDY

Master's thesis: Translating foresight insights into action: The role of foresight capabilities

Invitation to participate in the research

You are invited to participate in a study that examines companies' capabilities in utilizing foresight information in decision-making and practice. The aim of the study is to understand which capabilities support the translation of foresight insights into strategic choices and concrete actions. The study examines the company's foresight process, with an emphasis on the stage where foresight information is linked to strategy and action. The study is structured around the following sub-questions:

- 1) How do companies carry out their foresight process?
- 2) What capabilities are required for effective probing (the phase of translating insights to actions)?
- 3) How do probing capabilities support translating insights to actions?

The study will be conducted as a multiple-case study. The data will be collected through interviews and may be supplemented with separately agreed company documents. Individuals who participate in the company's foresight process will be invited to take part in the study, including individuals who participate in the evaluation of foresight results, decision-making based on them, and the practical application of foresight insights. Approximately 5–8 people are expected to participate in the study.

Voluntary consent

Participation in this research is voluntary. You can withdraw from the research or cancel your participation at any time without assigning a reason for this decision. Withdrawing or cancelling your participation does not result in any negative consequences. In case you decide to withdraw your consent, the data collected until that point will be used for the purpose of this study in an anonymized and confidential form.

Please, read this description of research with care. If you have any questions, you can be in contact with the researcher. The contact details are provided at the end of this document. If you decide to participate in this study, you will be asked to fill a separate consent form.

Responsible researcher

The responsible researcher of this study is Lea Kemppainen as a master's student with International Business major at the Turku School of Economics at the University of Turku.

Lea Kemppainen operates as the keeper of the register and thereof is responsible of the lawful processing of the personal information gathered within the research. In scientific research the processing of personal data is based on the societal task of universities defined in the university law and it progresses public good.

The research method

The study will be conducted as qualitative research and the data will be collected through semi-structured interviews. The interviews focus on the company's foresight process, its various stages, and how and for what purposes foresight information is used in practice.

The interviews are estimated to last approximately 60 minutes and will be conducted remotely via Teams. With the interviewee's permission, the interviews will be recorded as both audio and text files. The interviews can be conducted in Finnish or English.

The study may also utilize the company's public or separately agreed documents to provide contextual information for the study.

The possible harm and discomfort related to the research

The study does not deal with personal or sensitive topics. However, you can withdraw from the interview at any time if you wish.

Confidentiality and data privacy

In this study, your identity will only be known to the researcher, who is bound by confidentiality as the author of a master's thesis. All information collected about you will be treated confidentially, and your information cannot be identified in the research results, reports, or publications related to the study.

Only personal data necessary for the purpose of the study will be stored in the research register. The researcher will not disclose your name or contact details to third parties. In the research results and other documents, you will only be referred to by an identification code, such as initials or a pseudonym. The register will be stored in the University of Turku's Seafire service until the research is completed. Register data and research data will be stored separately.

Costs of research and funding

Participation in the study is free of charge, and no remuneration will be paid for participating in the study. The researcher is responsible for funding the study.

Further information

If you have any questions about the study, please contact the researcher. You can discuss any questions that may arise during the study and other issues that are on your mind with her.

Contact information:

Lea Kemppainen, xxxx@utu.fi, +358xxx

Appendix 4 Consent form

INTERVIEW CONSENT FORM

I have been asked to participate in a master's thesis. I have read the study information sheet and the privacy notice, and I have received sufficient information about the study and the collection, processing, and disclosure of data. I have had sufficient time to consider participating in the study and the opportunity to ask questions regarding it.

I understand that participation in this study is voluntary. I have the right, at any time during the study and without giving a reason, to withdraw from the study or to refuse to answer individual interview questions. Withdrawing my consent will not result in any negative consequences for me. I am aware that data collected prior to the withdrawal of consent will be used as part of the research material, in an anonymized and confidential manner. I also understand that my participation cannot be removed from the final thesis after it has been completed.

The interview will be conducted via Microsoft Teams and will be audio-recorded with the participant's consent. The recording will only be accessible to the researcher and will not be used in the research results or in any publication. The recording will be used solely for the purpose of transcribing the interview. Participants may request to review a transcribed version of the interview and ask for specific sections to be removed from the material. Direct quotes from the interview may be used in the thesis.

The participants' identities will be treated confidentially. No personal information will be published in the thesis, and the results will be presented in such a way that neither the participants nor the company can be identified.

I consent to the interview being audio-recorded:

☐ Yes ☐ No

I consent to my job title being included in the published thesis:

☐ Yes ☐ No

Confirmation:

☐ By checking this box, I voluntarily consent to participate in this study and agree to the conduct as well as collection, processing, and analysis of the data in accordance with the study procedures.

Name and date: *Fill here*

Contact information:

Lea Kemppainen, xxxx@utu.fi, +358xxx

Appendix 5 Data management plan

1. Research data

Research data refers to all the material with which the analysis and results of the research can be verified and reproduced. It may be, for example, various measurement results, data from surveys or interviews, recordings or videos, notes, software, source codes, biological samples, text samples, or collection data.

Research data type	Contains personal details/information*	I will gather/produce the data myself	Someone else has gathered/produced the data	Other notes
Data type 1: Semi-structured interviews	x	x		
Data type 2: Annual reports			x	Publicly available
Data type 3: Company websites			x	Publicly available

* Personal details/information are all information based on which a person can be identified directly or indirectly, for example by connecting a specific piece of data to another, which makes identification possible.

2. Processing personal data in research

I will prepare a Data Protection Notice and give it to the research participants before collecting data
☐

The controller for the personal details is the student themselves ☒ the university ☐

My data does not contain any personal data ☐

3. Permissions and rights related to the use of data

3.1. Self-collected data

Necessary permissions and how they are acquired:

Data type 1: Interviews: Written informed consent will be obtained from each participant prior to the interview. The consent form includes permission to audio-record the interviews and to use participants' job titles in the thesis. All participants and companies are anonymized.

3.2 Data collected by someone else

Rights and licences related to the data:

Data type 2: Not applicable. Publicly available materials.

Data type 3: Not applicable. Publicly available materials.

4. Storing the data during the research process

In the university's network drive ☐

In the university-provided Seafile Cloud Service ☒

Other location, please specify: ☐

The university's data storage services will take care of data security and backup files automatically.

5. Documenting the data and metadata

5.1 Data documentation

All data is handled in a way that can be traced back to the original documents.

To document the data, I will use:

A field/research journal ☒

A separate document where I will record the main points of the data, such as changes made, phases of analysis, and significance of variables ☒

A readme file linked to the data that describes the main points of the data ☐

Other, please specify: ☐

5.2 Data arrangement and integrity

I will keep the original data files separate from the data I am using in the research process, so that I can always revert back to the original, if need be. ☒

Version control: I will plan before starting the research how I will name the different data versions and I will adhere to the plan consistently. ☐

I recognise the life span of the data from the beginning of the research and am already prepared for situations, where the data can alter unnoticed, for example while recording, transcribing, downloading, or in data conversions from one file format to another, etc. ☐

5.3 Metadata

Metadata is a description of your research data. Based on metadata someone unfamiliar with your data will understand what it consists of. Metadata should include, among others, the file name, location, file size, and information about the producer of the data.

I will save my data into an archive or a repository that will take care of the metadata for me. ☐

I will have to create the metadata myself, because the archive/repository where I am uploading the data requires it. ☐

I will not store my data into a public archive/repository, and therefore I will not need to create any metadata. ☒

6. Data after completing the research

I am responsible for the data even after the research process has ended. I understand that I am responsible for destroying the data, even if I am no longer a student at the university.

I will store the data until 31.12.2026. All data will be destroyed after that.

Appendix 6 Use of Generative Artificial Intelligence

I used generative artificial intelligence in this study to assist with planning and the writing process. The tools, their purpose, and the verification measures are detailed below. I have not used AI to produce any text directly for this study, and all textual content originates from me. I confirm that I have used all AI tools with the necessary care and caution, have fully disclosed their use in accordance with university policy, and take full responsibility for all content presented in this thesis.

1. Tool: OpenAI's ChatGPT (Version: GPT-4)

Stage of Use: Ideation, scoping, and research planning

- **Purpose of Use:** ChatGPT was used to brainstorm topic ideas and refine the focus of the research. It was also used to identify potential international Finnish case companies that actively utilize foresight insights.
 - **Example Prompt 1 (August 2025):** "I am beginning to write my master's thesis, and I am interested in researching the practical application of corporate foresight. What could I research and how?"
 - AI Response 1: Suggested topics such as strategic decision-making & foresight, organizational implementation of foresight, foresight methods, and foresight culture.
 - **Follow-up Prompt 1:** "I am interested in examining the practical benefits of foresight regarding competitive advantage, managing uncertainty, and innovations. Suggest some thesis titles."
 - AI Response 1: Suggested titles including: "From signals to strategy: How corporate foresight supports decision-making in turbulent times" and "Corporate foresight in turbulent times: Best practices for companies navigating change".
- **Verification:** ChatGPT helped me better clarify my interests and I began brainstorming different ideas while researching foresight implementation. Ultimately, I decided to focus on finding a topic that make foresight implementation more attainable for companies.
 - **Example Prompt 2 (February 2026):** "I am writing my master's thesis on foresight capabilities. I will be conducting a case study of a company that engages in corporate foresight and utilizes foresight insights in decision-making, strategy, innovation etc., i.e. foresight leads to concrete actions. Could you list companies that would be suitable for my thesis? The companies must be international Finnish companies. The data will be collected through interviews."
 - AI Response 2: Provided a list of 11 international Finnish companies, categorized by suitability, along with descriptions of their foresight practices.

- **Verification:** The suggested companies were further researched for their adequacy. Many of the suggested companies I had already identified through my own research, which helped verify their suitability. Only some of the companies that were identified solely through ChatGPT suggestions were ultimately included among the contacted companies. Furthermore, to ensure fit, the research objectives and criterion for case companies were clearly communicated to all contacted companies.

Stage of Use: Composition, editing, and revision

- **Purpose of Use:** ChatGPT was used to rephrase individual sentences and identify synonyms to improve linguistic clarity and academic tone, as English is not my native language. Additionally, the tool was used to receive feedback on the logical flow between paragraphs and drafted sections, which helped to ensure clarity throughout the text.
 - **Example Prompt (October 2025):** "How can I write this in a clearer way: To understand the core elements of corporate foresight, it is crucial to discuss some of the key definitions of corporate foresight and outline how it is conceptualized in this study"
 - **AI Response:** Suggested four different ways of phrasing the sentence.
- **Verification:** I critically assessed the different options or suggestions provided by the tool. I did not copy any of the suggestions directly but used them as inspiration together with dictionaries and other AI tools to form my own phrasing and structure. All suggestions were treated as supplementary and used to identify errors or improvements in my own writing. The tool was only applied to text written by me and not by other authors.

2. Tool: Anthropic's Claude (Version: Claude Sonnet 4.6)

Stage of Use: Composition, editing, and revision

- **Purpose of Use:** Claude was used to rephrase individual sentences and identify synonyms to improve linguistic clarity and academic tone, as English is not my native language. Additionally, the tool was used to receive feedback on the logical flow between paragraphs and drafted sections, which helped to ensure clarity throughout the text. It was also used to verify that the reference list was formatted correctly.
 - **Example Prompt (April 2026):** "Can you give different ways to express “This chapter examines...” in academic language?”
 - **AI Response:** Provided a list of alternative ways to express it.
- **Verification:** I critically assessed the different options or suggestions provided by the tool. I did not copy any of the suggestions directly but used them as inspiration together with dictionaries and other AI tools to form my own phrasing and structure. All suggestions were treated as supplementary and used to identify errors or improvements in my own writing. The tool was only applied to text written by me and not by other authors.

3. Tool: UTU Transcribe

Stage of Use: Methodology and data analysis

- **Purpose of Use:** UTU Transcribe was used to transcribe the interview audio recordings.
- **Verification:** I listened to each audio recording thoroughly and manually corrected all errors and gaps in the generated transcripts to ensure data accuracy.

4. Tool: QuillBot Paraphrasing Tool (Free Version)

Stage of Use: Composition and editing

- **Purpose of Use:** QuillBot was used to rephrase sentences written by myself to improve the flow and academic tone of the text as well as to find synonyms for words.
- **Verification:** The suggestions were used as inspiration and the different options were critically evaluated and modified to ensure that the final phrasing fit the context and reflected my thinking and original ideas.

5. Tool: DeepL

Stage of Use: Composition and editing

- **Purpose of Use:** DeepL was used for translating words, sentences, and paragraphs between Finnish and English to ensure clear and accurate language.
- **Verification:** I proofread the provided translations to ensure that the original meaning and nuances were preserved. I used alternative dictionaries or other translation tools to verify correctness and select the most appropriate terminology.